



Faculdade de Design,
Tecnologia e Comunicação
 Universidade Europeia

2023

**Miguel Ângelo
Luís Sanches**

**INVESTING IN INNOVATION:
THE RELEVANCE OF DESIGN THINKING
FOR PORTUGUESE STARTUP INCUBATORS**



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Dissertação apresentada ao IADE - Faculdade de Design, Tecnologia e Comunicação da Universidade Europeia, para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Design Management realizada sob a orientação científica da Doutora Sara Patrícia Martins Gancho, Professora Auxiliar do IADE - Faculdade de Design, Tecnologia e Comunicação da Universidade Europeia.

Dedicated to all the entrepreneurs who believe in and invest in Portugal as the home country for their new ventures.

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Palavras-Chave

Design Thinking, Startup, Inovação, Estratégia, Empreendedorismo.

Resumo

O design thinking é cada vez mais reconhecido enquanto uma poderosa metodologia para o desenvolvimento de negócios e uma forma eficiente de promover a melhoria contínua de processos. Apesar deste reconhecimento, ainda se verifica uma falta de investimentos significativos em muitos ecossistemas empreendedores. Este estudo tem como objetivo compreender a relevância desta metodologia no ecossistema português de startups e perceber como investimento crescente em práticas de design thinking pode promover uma maior probabilidade de sucesso para startups. A investigação envolve uma criteriosa triangulação de métodos, relacionando práticas quantitativas e qualitativas, a fim de aumentar a validade e garantir a qualidade dos resultados. Na primeira etapa, é realizada uma revisão de literatura com foco em *The Value Of Design In Business* e *Startups As A Way Of Entrepreneurship*, para melhor compreender as atuais circunstâncias em que estes conceitos estão envolvidos. A fase de recolha de dados envolve uma abordagem direta ao ecossistema nacional avaliando a relevância do design thinking na perspetiva de 37 incubadoras de startups portuguesas através de um inquérito online. Os principais insights deste processo, que conduziram ao desenvolvimento da *Design Thinking Investment Scale*, revelaram a necessidade de uma discussão mais aprofundada destes insights, que se materializou através do desenvolvimento de 11 entrevistas estruturadas com as mesmas incubadoras de startups, a fim de adequar o potencial percebido às suas reais necessidades, objetivos e expectativas.

Ao promover uma abordagem coordenada que sustenta a inovação e a competitividade, este estudo revela o potencial do design thinking enquanto ator fundamental para elevar o empreendedorismo nacional ao próximo nível.

Keywords

Design Thinking, Startup, Innovation, Strategy, Entrepreneurship.

Abstract

Design thinking is growingly recognized as a powerful methodology for business development and an efficient way to promote processes' continuous improvement. Besides this recognition, it still lacks investment in many entrepreneurial ecosystems. This study aims to understand the relevance of design thinking for the Portuguese startup ecosystem and to perceive how growing investment in its practices can promote a higher chance of success for startups.

The investigation involves a mindful triangulation of methods, relating both quantitative and qualitative practices, in order to increase validity and ensure the quality of the results. In the first stage, a literature review focused on *The Value Of Design In Business* and *Startups As A Way Of Entrepreneurship* is conducted to perceive better the current circumstances in which these concepts are involved. The data collection stage involves a direct approach to the national ecosystem by evaluating the relevance of design thinking for 37 Portuguese startup incubators through an online survey. The main findings of this process, which ultimately led to the development of the *Design Thinking Investment Scale*, revealed the need for a closer discussion of these findings, which was accomplished by developing 11 structured interviews with the same startup incubators in order to adequate the perceived potential to their actual needs, goals, and expectations.

By promoting a coordinated approach towards innovation and competitiveness, this study reveals the potential of design thinking to become a pivotal player in taking national entrepreneurship to the next level.

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Chapter 1 - Introduction

1.1. Context And Problem Identification

Design thinking is a methodology towards innovation that still faces challenges in achieving a solid position in the business world. Besides knowing the unique benefits of design practices in an organization's core (Lockwood, 2011), the iterative process inherent to design can be frightening for most companies. As Brown (2009) argued, "design thinking is fundamentally an exploratory process." (p. 16).

According to Lockwood & Papke (2018), conscious that organizational culture is "critical to guide the implementation of design thinking in a way that the culture will accept, implement, integrate, and embed" (p. 49), it is imperative to be aware of all the synergies involved within the organization. The authors argue that this acknowledgment will allow us to properly understand how the process can be addressed to the specific characteristics of an environment in a balanced and effective way.

Promoting culture change is a deep and defaulting process often too hard to fight, as argued by Mozota (2003). Conscious of this restraint, the primary challenge of this investigation is to identify how the benefits of design thinking are applied and recognized in environments that embrace positive organizational cultures, where innovation can flourish and effectively promote tangible outcomes (Oliver, 2002).

Startup incubators are characterized by creative and thriving environments that promote business best practices, gathering specialists in the most different areas and advisors on business planning and strategy (Kaivo-oja, 2011). These collaborative and active learning atmospheres promote healthy outcomes and try to evolve new or existing ideas into profitable and sustainable businesses (Pattnaik et al., 2020). Moreover, startups are proven to be the kind of organizations with the most successful championing, the best internal politics and involvement, the slightest risk aversion, and the most potent support of top managers compared to SMEs, multinationals, and design-oriented companies, which ultimately provides a unique opportunity to investigate if and how design thinking practices are taking place in startup incubation programs, knowing that startups most significant pains are related to unclear boundaries and no design culture (Ravasi & Stigliani, 2011). Furthermore, the success rate in startups is indeed tragically low. According to Patel (2015), 9 in 10 startups fail. Most of the reasons for this low rate relate to weaknesses in topics that have the potential to be addressed in a differentiating way with effective design thinking planning.

1.2. Research Framework, Questions, And Goals

Conscious of the potential of design thinking in business development and evolving processes (Brown, 2009), this investigation aims to explore and heighten the relationship between design thinking and startup incubation practices toward innovation, deepening our thoughts on the Portuguese case for a more practical understanding of the overall ecosystem. The ultimate goal is to understand the relevance of design thinking in this ecosystem and thus understand if a growing investment in design thinking can or not promote a higher chance of success for startups' business development. This study will be developed through multidisciplinary research on design and entrepreneurship. In the design field, the reflection is headed to the performance of design management as a design discipline, deepening our thoughts in the design thinking methodology by approaching its genesis, tools, and ways of action. In entrepreneurship, the given attention is headed to startups as early stage companies, focusing on the incubation programs that these companies usually rely on in their first stages of activity. The following theoretical framework, presented in Figure 1, ultimately aims to relate the design thinking methodology and startup incubation programs as this study research area:

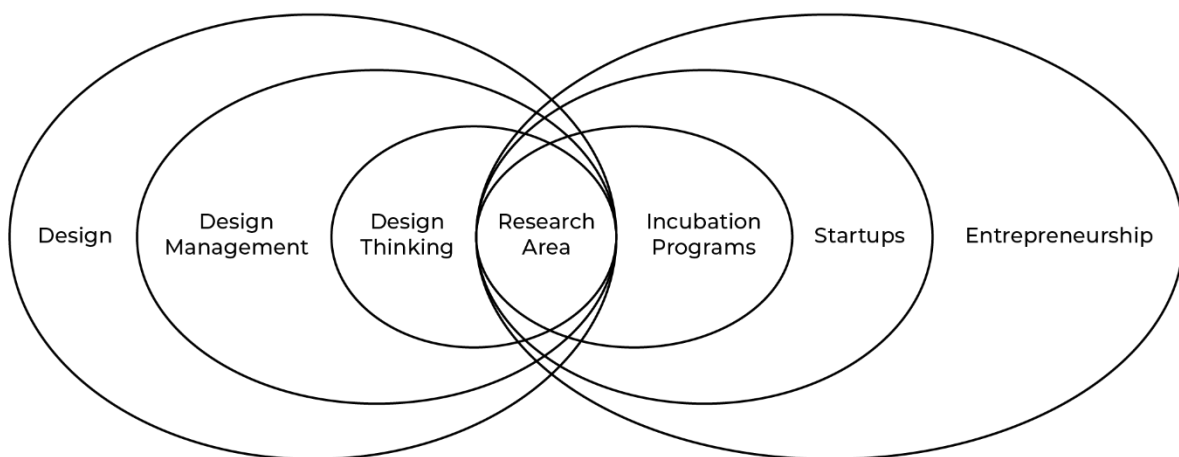


Figure 1 | Theoretical Framework - Venn Diagram

Ultimately this investigation aims to answer two sequential main research questions, subdivided into two secondary research questions each, according to Table 1:

Table 1 | Research Questions

A. Can growing investment in design thinking practices promote a higher chance of success for startups?	A1. Which aspects influence design thinking performance in startup incubation programs?
	A2. What are the biggest challenges and opportunities when implementing design thinking in startup incubation programs?
B. How relevant is design thinking in the Portuguese startup ecosystem?	B1. What is the role of design thinking in Portuguese startup incubators for promoting innovation?
	B2. What are the most effective ways to measure the level of investment in design thinking practices in Portuguese startup incubators?

Understanding the impact of design thinking on startups' performance is vital. We must clarify if more significant investments in this methodology can drive a higher chance of success for startups (Question A). The need to justify this relationship is primordial since the ultimate reason to invest is to promote a more efficient performance and, thus, a higher chance of success for startups. We need to clarify why investment in design thinking makes sense and the advantages related to it. As such, it is essential to perceive, through this contact, which aspects influence design thinking performance in startup incubation programs (Question A1). Conscious that a growing investment process might have some limitations, it is also essential to perceive the biggest challenges and opportunities when implementing design thinking in startup incubation programs (Question A2), encouraging a more competent approach adapted to the identified virtues of each startup incubator.

Understanding the relevance of design thinking in the Portuguese startup ecosystem (Question B) will allow us to develop a framework that reflects the current value perception of this methodology in the national incubation panorama. This understanding will allow us to define wiser and more conscious strategies to improve business performance adapted to the specific characteristics of this ecosystem. The need to develop this framework is justified by the identified lack of information relating to design thinking in the Portuguese startup ecosystem. As such, it is essential to understand the role of design thinking in national incubation programs (Question B1) by inquiring Portuguese startup incubators about if and how they approach this methodology and then by developing a way to classify their practices through an evaluation

system. These metrics are expected to allow a more transparent comparison between practices and levels of investment in design thinking among Portuguese startup incubators (Question B2).

In order to answer the defined research questions, it is considered vital to deepen understanding of all the concepts which this investigation involves for a more competent correlation of findings. In the first stage, it is essential to clarify the relationship between design management, design thinking, and business innovation. The defined goals to reach in this stage are:

1. Understanding design management as a core competency in business;
2. Understanding the concept of design value and its characteristics;
3. Understanding how design thinking can represent a competitive advantage;
4. Approaching different ways to incorporate design thinking in business;
5. Analyzing which kinds of companies are more willing to embrace these practices;
6. Reflecting on the challenges and constraints of this implementation process;
7. Deepening understanding of organizational culture and how it can influence change;
8. Realizing how business environment characteristics can stimulate innovation.

In the posterior phase, the study object reflects on the performance of startups and how incubation programs can influence the results and outcomes of those in the market. As such, the goals to be reached about this subject are:

1. Analyzing how the startups market has been evolving;
2. Deepening understanding of startup culture;
3. Realizing how startup incubation programs are developed and conducted;
4. Critically interpret the dynamics in these environments;
5. Evaluating the given relevance of design thinking in these hubs;
6. Analyzing the potential to increase the impact of design thinking practices by investing in this methodology for startup incubation programs.

1.3. Investigation Plan

As a way of developing a consistent process for ultimately answering the defined research questions, an investigation plan was developed, offering a sequential methodology aligned with the goals to be achieved. As such, this document is organized into five chapters. The first chapter - *Introduction* - aims to give a first approach to this research project's motivations and reflects on the *Context And Problem Identification, Research Framework, Questions, And Goals, and Investigation Plan*.

The second chapter - *Literature Review* - begins by presenting its *Themes & Interconnections* as it pretends to recall the current state of the art of two main research topics - *The Value of Design in Business* - which exposes the influence of design in business with an *Introduction to Design Management, Design Thinking, its Performance, Challenges and Constraints*, and *The Impact of Positive Organizational Cultures* - and *Startups As A Way Of Entrepreneurship* - which aspires to approach its *Structure And Ecosystems*, present a *Business Outlook*, approach *Global Indicators*, and analyze *The Portuguese Case* and reflect on *Involving Design Practices* in this field. Each of these research topics is synthesized in its own *Main Findings* sections.

The third chapter - *Research* - presents the *Methodology*, which provides structured guidance to the field of action relating to *Design Research* specifications and *Qualitative, Quantitative, And Mixed Methods*. The *Data Collection* stage takes place by gathering information and dissecting it through reflective practice, approaching an introductory *Overview*, the used methods - *Literature Review, Online Survey, and Structured Interviews* - and the established *Triangulation of Methods* between them.

The fourth chapter - *Finding and Results* - intends to systematize the existing and new findings on the developed investigation, relating information, perceiving new acknowledgments, and recognizing potential developments from the *Online Survey* and *Structured Interviews* processes.

The fifth and final chapter - *Conclusions* - inquires about a final reflection and reunites all the main processes and findings across the investigation, including the *Discussion Of Findings Against Research Questions, Contribution To Knowledge, Limitations, and Future Work*.

The overall process and each chapter's primary purposes can be visually interpreted through Figure 2:

1. Introduction

Context And Problem Identification

Provides an introductory reflection on Design Thinking and Startup Ecosystems.

Research Framework, Questions, And Goals

Reflects on the investigation's purpose, its main challenges, and the objectives to be achieved throughout this process.

Investigation Plan

Exposes the overall investigation process and the dissertation's structure as an evolving reality.

2. Literature Review

Themes & Interconnections

Highlights the research relevance of the approached themes and the way they complement each other.

The Value Of Design In Business

Aims to create a conceptual framework and identify gaps by relating the most relevant topics in this field.

Startups As A Way Of Entrepreneurship

Aims to create a conceptual framework and identify gaps by relating the most relevant topics in this field.

3. Research

Methodology

Exposes the concepts of Design Research and Qualitative, Quantitative, And Mixed Research Methodologies.

Data Collection

Approaches the genesis of Literature Review, Online Survey, Structured Interviews, and Data Triangulation.

4. Findings And Results

Online Survey

Describes the Online Survey process, its analysis, and its main findings.

Structured Interviews

Describes the Structured Interviews process, its analysis, and its main findings.

5. Conclusions

Discussion Of Findings Against Research Questions

Summarizes how the investigation outcomes answer the defined research questions.

Contribution To Knowledge

Describes the way this investigation provides added value to the existing knowledge framework.

Limitations

Retrospection of all the factors that might have influenced the investigation outcomes.

Future Work

Reflects about the ways in which this work could evolve into complementary or new investigation processes.

Figure 2 | Investigation Plan

Chapter 2 - Literature Review

2.1. Themes & Interconnections

In this chapter, we will conduct extensive research focusing on the two main themes of this investigation: Design Thinking and Startup Incubation Programs. Understanding the synergies between these two domains and establishing their current state of the art is crucial to effectively address the defined research questions (Table 1). To facilitate this elucidatory research process, we will undertake a comprehensive literature review divided into two main sections:

- *The Value Of Design In Business*: This section will introduce key concepts of design management and explore the genesis of design thinking. We will explore design's performance relevance, examine its challenges and constraints, and delve into the role of positive organizational cultures in promoting successful outcomes. By understanding these aspects, we aim to highlight the relevance of coordinated design integration within an organization's core.
- *Startups As A Way Of Entrepreneurship*: This section will explore startup structure and ecosystems. We will achieve perceptions of the current business outlook, analyze global indicators, and examine the specific metrics and performance of the Portuguese entrepreneurial ecosystem. Additionally, we will investigate the integration of design, particularly design thinking, in startups' innovation strategies for business development.

By synthesizing these findings, we aim to comprehensively understand how these two main themes correlate, unlocking the potential for transformative insights and paving the way toward a more impactful and purposeful study development.

2.2. The Value Of Design In Business

2.2.1. Introduction To Design Management

Even though design used to be unfairly assumed as a discipline that only relates to aesthetics or the final stages of a product, today it is growingly being recognized as "an entire mindset and skillset." (Design Council, 2020, p. 5).

Mindful companies recognize design's value as a fundamental competitive advantage to succeed in increasingly competitive markets. Beyond a tactical approach, companies recognize design as a unique way to inspire and embrace opportunities, besides offering a wide range of distinct value propositions their customers desire (Hands, 2018). This statement is reinforced by Frog (2018), who says that "Companies seeking to drive growth and competitive advantage are increasingly committing to design as a core aspect of their approach (...) to generate tremendous value" (p. 16).

Design integration in companies used to role an isolated activity, often linked with marketing, management, or strategy. Nowadays, the potential of design is widely recognized as it plays an impetus role in promoting integration and coherence. By linking methods and objectives between departments with different approaches and establishing shared goals, design aims to play a decisive catalytic role in organizations (Best, 2010). This understanding is also defended by Knošková (2011), that argues that "Companies invest in design and consequently improve design management skills. This improvement increases design effectiveness." (p. 100).

Best (2010) states that design uses a user-centered approach when developing new products and services rather than relying on traditional competencies and hierarchic systems. Thinking of the users as the leading actors in the design process provides a more conscious experience where the ultimate satisfaction of their needs, desires, and ambitions is the primary goal.

If creativity can be described as the generation of new concepts or ideas, design connects creativity and innovation, seamlessly transforming ideas into practical and appealing value propositions for users and customers (Cox, 2005). Following this thought, "good design is created when a company is able to realise the functional, social, and economic potentials inherent in the use of design." (Best, 2010, p. 168).

Companies embrace design as a universal role with the ambition to innovate and increase productivity and competitiveness. Moreover, it has been revealed to be an effective way to face market gaps and address internal organizational issues (Meyer, 2011). The author adds, "In the business world, the design of products, services, processes and systems can unlock new

markets, drive new revenue and keep an organization running efficiently. Design can launch a new company, or it can renew and sustain an existing one." (p. 188).

When design performance in business becomes indisputable, more than applying design in companies, Lockwood (2011) defends the development of efficient internal design organizations with adequate models to promote integration. Moreover, the author argues that this is a crucial approach knowing that "design has more potential to lead change, enable innovation, influence customer experience and add value to the triple bottom line than any other business function." (p. 244). That said, it is unquestionable that design management has gained relevance as businesses recognize design's role as a value creator (Sun et al., 2011).

2.2.2. Design Thinking

Design thinking is a problem-solving methodology known for its iterative process. Tim Brown, the founder of IDEO, defends that design thinking is "A discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity." (Brown, 2008, p. 2).

The nonlinear nature of this approach is evident in its intrinsic exploratory and iterative process. Such as, there is not a secret formula or one-way road to success but a wisely developed and evolving path for each challenge. As so, it is crucial to recognize that "learning only occurs when we step away from the familiar and accept the uncertainty that inevitably accompanies new experiences. Innovation means moving into uncertainty." (Liedtka, 2011, p. 14). As Brown (2009) argued, a short vision bias around design thinking says it takes too much time compared to the fastness required in the business industry. The author believes that "a team that understands what is happening will not feel bound to take the next logical step along an ultimately unproductive path. (...) Fail early to succeed sooner." (p. 17).

As design thinking has been increasingly implemented in organizations' core, the mindset about design being only used for developing products and services is overpast. (Fayard et al., 2017). As so, the current mindset faces the full potential of design thinking, playing a catalytic role in organizations by having the potential to "Expand the innovation ecosystem by looking for opportunities" (Brown, 2008, p. 8).

Even conscious of the benefits of these practices, some companies still sidestep design thinking in the first stages of their activity due to its integration being more of a cultural process than merely adopting a tool (Feldman & Pentland, 2003). As reinforced by Martin (2010), "For most businesses the transformation towards the design-thinking organization will not be easy, but the potential payoff is enormous" (p. 41). However, those who persist in design thinking achieve more profound levels of understanding and more remarkable results than those who approach traditional methods - whether the process results in a great solution or not, the learning experience will always have value (Meyer, 2011).

From the perspective of Björklund et al. (2020), organizational leaders have embraced a new mindset in which strategy-making is recognized as a purposeful endeavor rooted in design principles to achieve added value and extraordinary competitive advantages. Conscious that the value perceived by customers is the ultimate achievement of most organizations, it is fundamental for design thinking to use that strength and develop a broader and evolving plan capable of facing external turbulences (Volkova & Jākobsone, 2016).

According to Lockwood (2010), "Design thinking is essentially a human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and concurrent business analysis, which ultimately influences innovation and business strategy." (p. XI). The author claims that the final goal is to develop a whole system where designers, teams, leaders, and consumers can cooperate towards a shared development of an evolving process on products, services, or systems. Following this perspective, Brown (2008) defends that as sooner design thinking is involved in the process, the better. As so, the author encourages companies to "Involve design thinkers at the very start of the innovation process, before any direction has been set. Design thinking will help you explore more ideas more quickly than you could otherwise" (p. 8).

Despite being a dynamic process, there seems to be a pattern in the methods of involving design thinking processes in business planning. Table 2, developed by Sarooghi et al. (2019), compares the most significant design thinking models (IDEO HCD, Hasso Plattner Institute of Design, Design Council Double Diamond, Google Design Sprint & DMI Design) about their processes and stages:

Table 2 | Design Thinking Models - Comparison Between Application And Stages (Adapted)

Model	Description	Application	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
IDEO HCD	Process for creating human-centered products, services, and internal processes	Evaluating ideas and launching products	Discover	Interpret	Ideate	Experiment	Evolve
Hasso Plattner Institute of Design	Methodology for applied creative problem solving	General problem solving	Empathize	Define	Ideate	Prototype	Test
Design Council Double Diamond	A practical methodology for refining and narrowing design ideas	General design ideation strategy	Discover	Define		Develop	Deliver
Google Design Sprint	Framework for learning without building solutions or launching them	Evaluating projects and product offerings	Understand	Define	Diverge	Prototype	Validate
IBM Design	Set of principles to understand the solution sets that fulfill a client or user's problems	Enterprise solutions	Observe		Reflect		Make

Source: "Design Thinking and Entrepreneurship Education: Where Are We, and What Are the Possibilities?" by Sarooghi, H., Sunny, S., Hornsby, J., & Fernhaber, S. (2019). *Journal of Small Business Management*, 57(1), 78-93. <https://doi.org/10.1111/jsbm.12541>

The IDEO (2012) *Design Thinking for Educators Toolkit* exposes the IDEO HCD (Human-Centered Design) model as having five crucial stages - Discovery, Interpretation, Ideation, Experimentation, and Evolution, developing through time with a natural iterative course between stages. At the same time, throughout the stages, it is essential to know that convergence and divergence stages compromise the workflow. The outlook of the overall process of this model can be easily perceived in Figure 3:

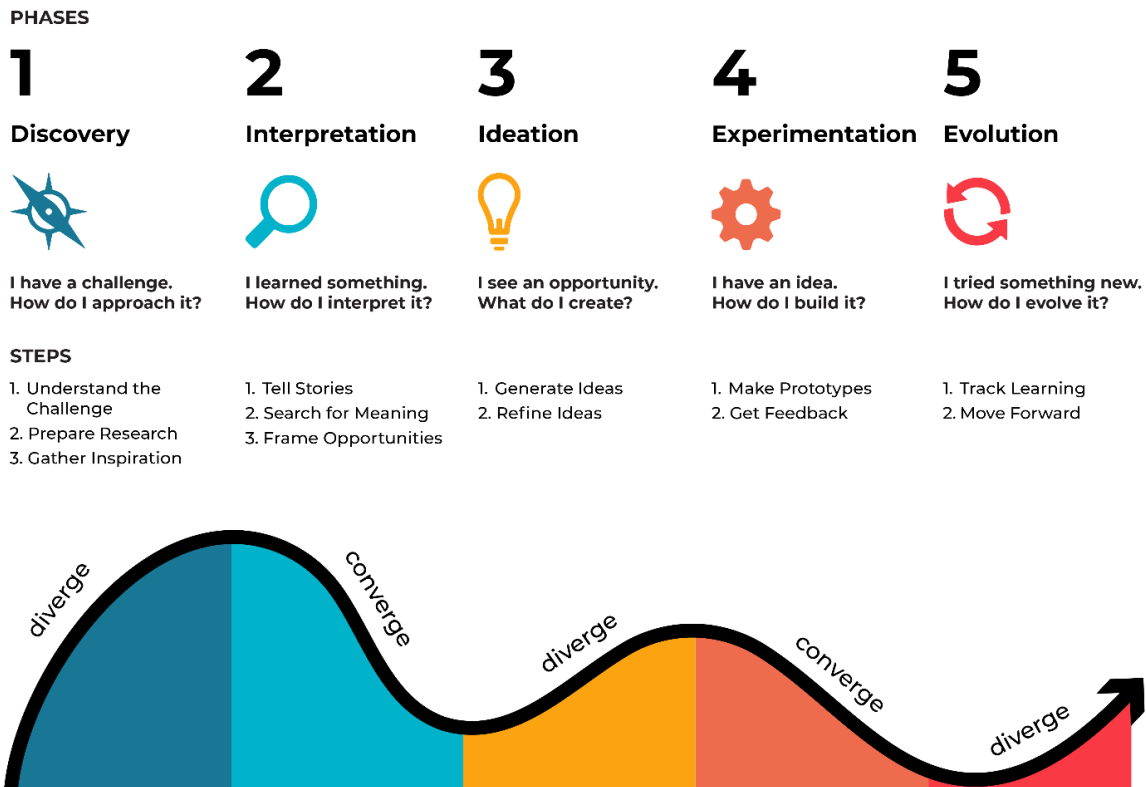


Figure 3 | IDEO HCD Design Thinking Model (Adapted)

Source: "Design Thinking for Educators" by IDEO. (2012). <https://page.ideo.com/design-thinking-edu-toolkit>

According to IDEO (2012), the first step when employing a design thinking methodology is to define a challenge as "Every design process begins with a specific and intentional problem to address (...) A challenge should be approachable, understandable and actionable, and it should be clearly scoped." (p. 19).

The first stage - Discovery - is meant to allow teams to discover the challenge, prepare research and gather inspiration - "Discovery builds a solid foundation for your ideas. Creating meaningful solutions (...) begins with a deep understanding for (...) needs. Discovery means opening up to new opportunities and getting inspired to create new ideas." (p. 26). Useful tools can be: sharing personal perspectives, defining an audience, identifying sources of inspiration, selecting research participants, building a question guide, immersion approaches, and learning from experts or users.

The second stage - Interpretation - is meant to allow teams to tell stories, search for meaning, and frame opportunities - "Interpretation transforms your stories into meaningful insights. It involves storytelling, as well as sorting and condensing thoughts until you've found a compelling point of view and clear direction for ideation." (p. 39). Useful tools can be: capturing learning, sharing inspiring stories, finding themes, making sense of findings, defining insights, creating visual reminders, and making insights actionable.

The third stage - Ideation - is meant to allow teams to generate and refine ideas - "Ideation means generating lots of ideas. Brainstorming encourages you to think expansively and without constraints. It's often the wild ideas that spark visionary thoughts." (p. 49). Useful tools can be: brainstorming sessions with a focused goal, high energy, wild ideas, visual concepts, and a non-judgmental environment that gathers the most diverse techniques. It is also vital to share back, expand, and evaluate ideas.

The fourth stage - Experimentation - is meant to allow teams to make prototypes and get feedback - "Experimentation brings your ideas to life. Building prototypes means making ideas tangible, learning while building them and sharing them with other people." (p. 57). Useful tools can be: creating prototypes (storyboards, diagrams, stories, ads, mock-ups, models, role-plays), identifying sources of feedback, building question guides and selecting participants, promoting feedback sessions, capturing and integrating feedback learnings in the process, and identifying new needs.

The fifth stage - Evolution - is meant to allow teams to track learning and move forward - "Evolution is the development of your concept over time. It involves planning next steps, communicating the idea to people who can help you realize it, and documenting the process. Change often happens over time, and reminders of even subtle signs of progress are important." (p. 67). Useful tools can be: defining success, documenting progress, planning the next stages, engaging others, and building a community.

Knowing that design thinking is a problem-solving methodology used in many contexts and environments (and not always led by designers), Brown (2008) argued that that are some characteristics that may identify good design thinkers besides their background:

1. Empathy - Understanding people's deepest needs, ambitions, and wills is fundamental for developing solutions that breed purpose and value.
2. Integrative Thinking - Having the sensibility to perceive consistent intercourse between all elements in a given problem represents an opportunity to go beyond and face inner challenges that can be improved in unexpected ways.
3. Optimism - Trusting the process and developing consistent work allows one to achieve different outcomes. Better than the existing or not, the process will always have value.
4. Experimentalism - Questioning everything and repeatedly combining things in different ways may be the road to getting the most surprising results.

5. Collaboration - As we think together, by involving different disciplines and approaches, we share a more significant range of perspectives on a process that ultimately will outcome in much richer and more diverse solutions.

2.2.3. Performance

Evaluating the ongoing influence of design in companies by emerging in its practices has proven to be the first good step in design process (Hands, 2018). This acknowledgment, to be achieved within the companies, provides a wiser perspective on how design is currently used and reveals the true potential of design to be grown and developed. What is more, the potential of design in organizations has been showing tremendous results as "firms that do succeed at becoming design-driven outperform their competitors, with the positive impact of design on business performance apparent in many measures (e.g., time-to-market, adoption rate, share of wallet, market share, revenue growth, profitability, and brand value)." (Björklund et al., 2020, p. 101).

The *Danish Design Ladder* (Danish Design Centre, 2015) is an effective tool to assimilate the integration level of design. This system approaches four elementary stages of design maturity:

Stage 1 - No Design. This approach represents the most archaic practices in product and service development. The outputs usually do not rely on consumers' expectations or needs, and designers are not involved in any part of the processes.

Stage 2 - Design As Styling. This approach faces design as a merely visually appealing tool. Its integration only occurs at the latest stages of the development processes, and its relevance is low overall. Not always expert designers are the ones to face these assignments.

Stage 3 - Design As A Process. This approach faces design as a significant competence from the early stages of processes. Its value towards innovation is recognized, and the processes are more coherent and effectively address the particular needs of its consumers.

Stage 4 - Design As A Strategy. This approach represents the greatest and most influential level a company can achieve. Design has a holistic influence on all organizational departments acting as a leading integrator. The design activity is built within companies values and developed alongside long-term objectives.

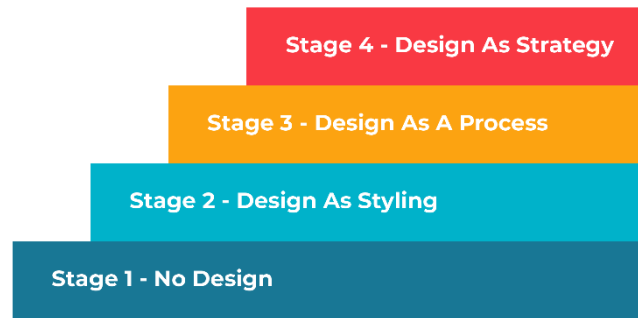


Figure 4 | Danish Design Ladder (Adapted)

Source: "The Danish Design Ladder: Four steps of design use." by Danish Design Centre. (2015). <http://danskdesigncenter.dk/en/design-ladder-four-steps-design-use>

The *Design Value Index* is a fundamental tool for evaluating the performance of design-centric companies. According to Rae (2016), "Based on a portfolio of publicly traded stocks from companies considered to be design-driven showed a 211% return over the way that designers approach the challenge of framing and creating successful solutions to problems sets them further apart from many business processes" (p. 5). The author completes that the typical stage-gate development models used in many companies, which aim to minimize risk by calculating projections and locking features before proceeding to subsequent steps, do not readily sympathize with design nonlinear ways of working.

Complementing, Rae (2016) refers to six fundamental premises used by the Design Management Institute for including companies in the *Design Value Index*:

1. "Design operates at scale across the enterprise." (p. 5).
2. "Design holds a prominent place on the company organizational chart and either sits on the leadership team or directly reports to a leadership team member." (p. 5).
3. "Experienced executives manage the design function." (p. 5).
4. "Design sees a growing level of investment to support its growing influence." (p. 5).
5. "Design enjoys senior leadership support from the top tier of the organization." (p. 5).
6. "The company has been publicly-traded on a U.S. exchange for the last ten years and thereby adheres to GAAP¹ accounting rules." (p. 5).

The results of the Design Management Institute research on the impact of design-centric companies' performance between 2005 and 2015 compared to the S&P500² can be analyzed in Figure 5:

¹ Generally Accepted Accounting Principles

² Standard and Poor's 500

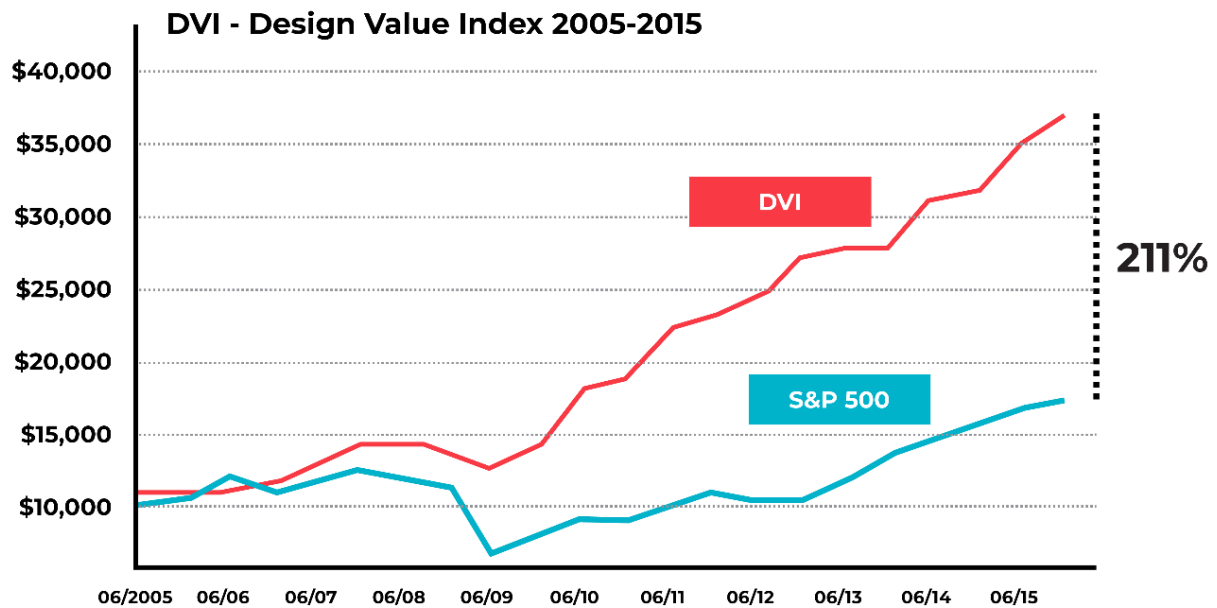


Figure 5 | Design Value Index 2005-2015 (Adapted)

Source: "The Power & Value of Design Continues to Grow across the S&P 500" by Rae, J. (2016). DMI Journal, 27 (4), 4-11.
<https://www.dmi.org/page/2015DVlandOTW>

Innovation led by design is an effective way to achieve more remarkable results. It is proven that organizations that embrace design in their daily operations are more willing to chase and effectively promote innovation (Best, 2010).

According to the results achieved by Innobarometer in 2015, a survey based on the European Union Innovation Trends, "47% of companies that say design is integral, and 51% of those that use design as a last finish say they have introduced innovative marketing strategies, compared to 29% of companies that do not use design systematically, and 22% of those that do not use design at all" (European Commission, 2015, p. 17).

Measuring the value of design in quantitative terms can be pretty challenging. According to Frog (2018), it is now accepted that design can effectively address business challenges and improve customer experience, but "as design becomes integral to the business strategy, there remains a need to justify the spend. Traditional metrics provide a way to gauge possible returns, but the rigid application of ROI³ measures can kill radical ideas in favor of opportunities closer to the core business." (p. 16).

³ Return Over Investment

At Frog (2018), the impact of the projects developed within the company is measured by their clients in five key sources of value:

1. "Increase speed to market - Reduce development costs and timeline, meet or exceed target revenue, generate MVP-focused customer feedback, and shorten breakeven and cycle times." (p. 7).
2. "Extend market reach - Market share, increase in share of wallet, and percentage of revenue from new products." (p. 9).
3. "Drive engagement and loyalty - Customer acquisition, customer retention, revenue, market share, and brand equity." (p. 11).
4. "Enhance internal capabilities - Increased collaboration and knowledge sharing, improved employee engagement, reduced reliance on outside experts, talent retention and learning agility, and executive alignment." (p. 13).
5. "Visionary transformation - New product revenue, ability to attract talent, improved cultural metrics, market reputation, and brand value." (p. 15).

The Design Economy: People, Places and Economic Value is a report from the Design Council (2022) that "explores the wider social and environmental value of design, as well as its economic contribution." (p. 4) in the United Kingdom. According to this report, the design economy encompasses designers operating in various design sectors. These sectors include designers working directly within design industries, individuals in supporting roles that contribute to the primary functions of those industries, and designers employed in non-design sectors of the economy.

According to the gathered information, design has been revealed to be a significant contributor to the UK economic growth, representing in 2019 "£97.4bn GVA⁴ (...), 4.9% of total UK GVA" (Design Council, 2022, p. 13) and its service export was valued in "£55.9bn GVA (...) responsible for 18% of all UK service exports" (p. 23). According to 2020 data, 1.97 million people (1.62 million designers) were working in the design economy, representing 1 in 20 workers in the country. An important finding is that "77% of all designers now work in non-design sectors such as finance, retail, and construction." (p. 13). In 2021, the UK counted 80665 design businesses, 55% more than in 2011, representing twice the overall growth rate. The performance and attractiveness of digital design business revealed even more significant outcomes, resulting in a 76% growth rate. In 2020, most businesses were microenterprises employing under ten people (92%).

⁴ Gross Value Added

2.2.4. Challenges And Constraints

Ravasi & Stigliani (2011) conducted a design study with the will to approach and deepen understanding of the critical factors to consider when developing projects between corporations and design consultancies. The researchers have inquired over one hundred industrial design consultancies to perceive behavioral patterns. They asked these companies about their challenges with their clients, including SMEs⁵, multinationals, design-oriented companies, and startups. Through the research, the investigators have reached the main reasons that might imply the failure of projects in these kinds of companies. The results are on display in Figure 6:

⁵ Small and Medium-Sized Enterprises

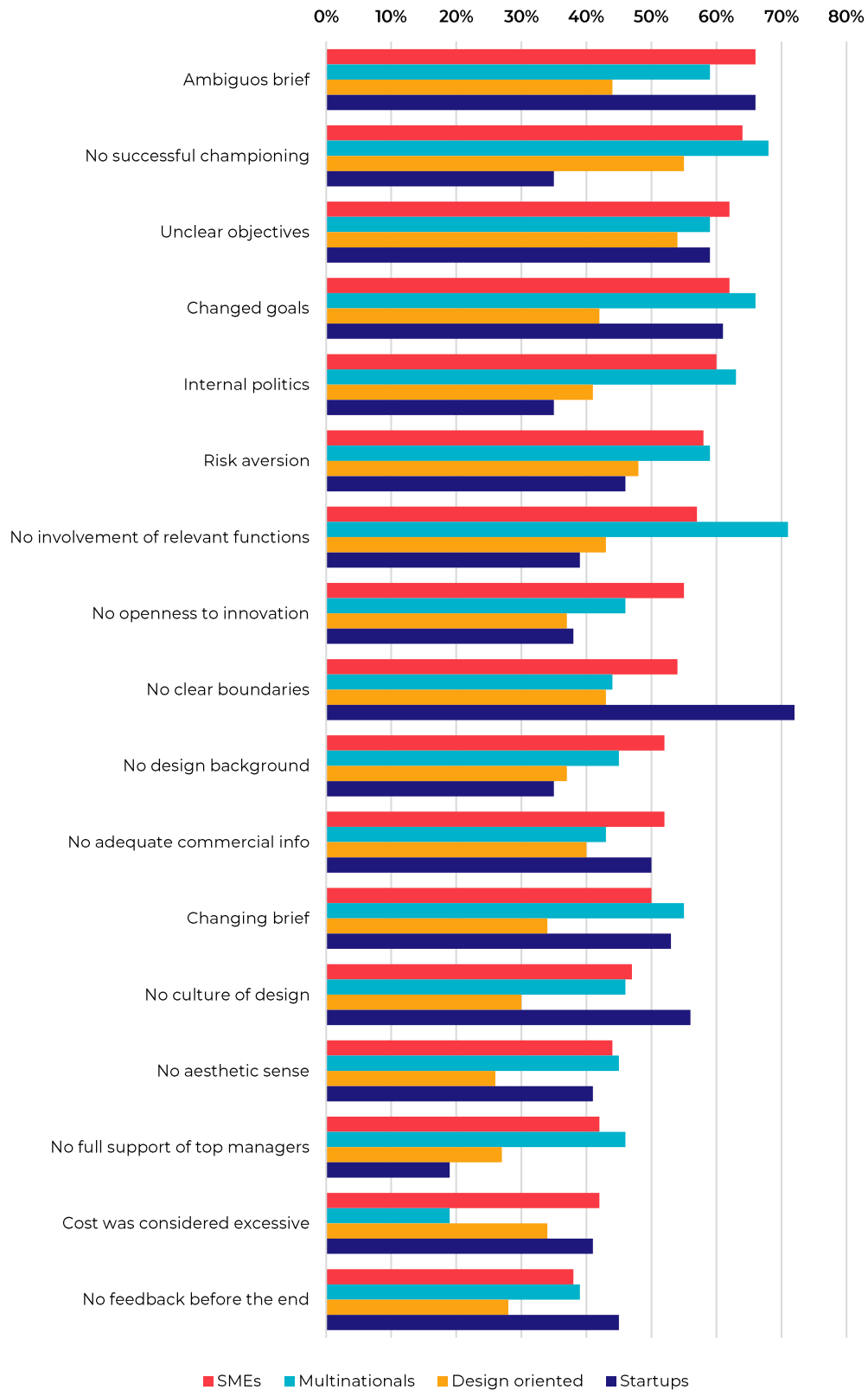


Figure 6 | Reasons For The Failure Of Projects In Different Kinds Of Companies

Source: "Successful Design Management in Small and Medium-sized Businesses." by Ravasi, D., & Stigliani, I. (2011). In R. Cooper, S. Junginger & T. Lockwood (Eds.), *The Handbook of Design Management* (pp. 231-243). Bloomsbury.

For startups, more than in any other kind of organization, the ultimate problems are related to an ambiguous brief, no clear boundaries, no culture of design, and no feedback at the end. On the other side, startups had the most extraordinary successful championing, the best internal politics, the slightest risk aversion, the best involvement/relevant functions, and the full support of top managers compared to SMEs, multinationals, and design-oriented companies (Ravasi & Stigliani, 2011).

In opposite to the conduct of design thinking, most organizations "in terms of strategy, structure, process, and culture, have tended to favor exploitation and reliable replication of a proven success formula (...) over exploration and search for a new formula that might be more relevant in the future" (Martin, 2010, p. 41), which might be the most significant factor to compromise innovation and overall progress in those organizations. The more companies are obsessed with efficiency, certainty, and quantification, the more difficult it is to promote newer and greater ideas through design (Dunne, 2018). The main differences between Design, Engineering, and Business-oriented management models related to Ways Of Working, Problem-Solving, Learning, and Innovation, can be easily perceived in Table 3, developed by Björklund et al. (2020):

Table 3 | Differently Typical Orientations Toward Questions And Learning As Sources Of Tension

	Design	Engineering	Business
Ways Of Working	Nonlinear, costumer-driven, and abductive	Linear, technology-driven, and deductive	Linear, business result-driven, and inductive
Problem-Solving	Reframing or finding	Solving given problems efficiently	Solving given problems efficiently
Learning	User research, prototyping to ask questions	Technological development, prototyping to validate	Performance assessment, numbers, and data-driven
Innovation	Tailored solutions opening up new possibilities for generalizations	Technical solutions opening up new possibilities for generalizations	New generalizations opening up new possibilities for specifications

Source: "Integrating Design into Organizations: The Coevolution of Design Capabilities" by Björklund, T., Maula, H., Soule, S., & Maula, J. (2020). California Management Review, 62 (2), 100-124. <https://doi.org/10.1177/0008125619898245>

The integration of design thinking in organizations must be done with effective expectations management. Design thinking will not magically solve all an organization's problems. However, it can effectively face some of them, like "strategy and planning, business models, internal processes, or other organizational infrastructure such as roles and governance (...) subject matters that have the most to gain from a design approach." (Meyer, 2011, p. 197).

According to Martin (2010), "Design thinking empowers the design of business, the directed movement of a business through the knowledge funnel (...) and then the utilization of the resulting efficiency to tackle the next mystery and the next and the next." (p. 41). This finding is ultimately promising to perceive how traditional management approaches these needs.

From the perspective of Dunne (2018), based on its research "that included 29 semi-structured interviews, 20 in 10 organizations in the public, private, and non-profit sectors, between 2014 and 2017" (p. 6), "Organizations often hope to accomplish a number of goals simultaneously through design thinking: innovation, cultural change, improved customer focus, attracting and retaining talent. However, the optimal form for design thinking in an organization depends on its purpose" (p. 13). About the supposed lack of outcomes that design thinking might result in, the author defends that its nature, purpose, methods, and limitations must be, more than anything, fully understood by all parties involved to use it most effectively and pleasantly as "Design thinking has value, but may not be right for all organizations in all circumstances" (p. 14).

2.2.5. Positive Organizational Cultures

The essence of organizational culture can define a company. Mozota (2003) states, "Culture is a set of representations, symbols, values, and beliefs shared by the human group that constitutes the institution. Culture allows the different members to recognize themselves in the institution through tangible elements, such as day-to-day management practices, behaviors, and symbols" (p. 153). Summing up, culture represents "a system of shared values and beliefs (...) the way things are done in a particular community" (Oliver, 2002, p. 161).

A strong culture is defined by clear prioritization, widespread adoption, and profound commitment to its values (Peters & Waterman, 1982). Investing in cultural well-being within companies is one of the best business practices to advance performance. As an experienced design consultant, Jenkins (2010) argues that "the real challenge for design leaders is to reshape the modern organization to create an ecosystem that is conducive, not antagonistic, to design (...) they actually need to undertake an entire cultural transformation." (p. 24). According to the author, this transformation must be wisely developed at the values level and not only by being part of apparent changes such as dress codes, work hours, or physical spaces.

As so, Jenkins (2010) has identified nine mindsets commonly adopted by organizations that might be sacrificing the potential of design to flourish. On the other hand, the author introduced nine alternative approaches to these environments to become more open to design practices. Table 4 shows how this shift can be approached:

Table 4 | Mindsets In Dysfunctional And Design-Friendly Environments

Dysfunctional Organizational Cults	Design-Friendly Cultural Environments
Cult of control and hierarchy	Culture of empowerment and authorization
Cult of performance and short-term success	Culture of learning from failure and looking for long-term outcomes
Cult of efficiency and cost-cutting	Culture of effectiveness and value creation
Cult of productivity and busyness	Culture of reflection and focused action
Cult of competition and empire-building	Culture of collaboration and shared purpose
Cult of compliance and assurance	Culture of judgment and trust
Cult of risk avoidance	Culture of possibility and experimentation
Cult of blame-shifting and arse-covering	Culture of truth-telling, of honest critique
Cult of rigorous process as salvation	Culture of heuristics and agility

Source: "Creating the Right Environment for Design." by Jenkins, J. (2010). In T. Lockwood (Ed.), *Design Thinking: Integrating Innovation, Customer Experience, and Brand Value* (pp. 23-34). Allworth Press.

Nowadays, design is perceived as a "tool to facilitate the process for organizational change" (Björklund et al., 2020, p. 101). By embracing design, organizational leaders unlock the potential for transformative change, empowering them to shape their marketplace identity with openness and neutrality (Bucolo et al., 2012).

According to Elsbach & Stigliani (2018), based on their review of 33 empirical studies, the impact of design thinking on culture must be confidently promoted as "it is time to take a second look at the value of design thinking as more than a set of tools and, instead, as a cultural component of organizations (...) more than solve specific design and innovation problems (...) the effective use of design thinking tools in organizations had a profound effect on organizational culture." (p. 2).

Through their research, the authors also analyzed 38 empirical studies that show that the use of design thinking tools (e.g., need-finding, idea generation, and idea testing) was more appealing to organizations supported by values of collaboration in contrast to 25 empirical studies that show that these tools were widely rejected by organizations supported by values of productivity and efficiency (Elsbach & Stigliani, 2018).

2.2.6. Main Findings

Design is recognized as a critical competence by companies that look forward to fostering growth and becoming more competitive (Frog, 2018), saying that it has the ability to "lead change, enable innovation, influence customer experience and add value to the triple bottom line than any other business function." (Lockwood, 2011, p. 244).

Designers' inner sensibility for matching people's needs, combined with the right approach for ecosystem synergies, is expected to outcome in added customer value and market opportunities. As Brown (2008) defended, design thinking is an adequate methodology to promote an evolving process toward innovation. According to Liedtka (2011), innovating depends on stepping off the traditional way of doing business to new experiences that will naturally provide uncertainty. As such, implementing design thinking can be challenging for most businesses, but its long-term potential is expected to be immense (Martin, 2010).

When approaching a design process, which must always begin with a defined and specific problem (IDEO, 2012), the influence in which companies compromise design can be a decisive factor in its success (Hands, 2018), as companies that invest in design as a consistent and regular way are more willing to chase and effectively promote innovation (Best, 2010).

Organizations often misunderstand design thinking as an answer to a wide range of challenges simultaneously. Identifying an organization's purpose is essential to understand how design thinking can contribute more effectively to its cause (Dunne, 2018).

The inner challenge that design leaders face is understanding how to reshape organizations to promote environments that encourage design practices along with an integrated cultural transformation (Jenkins, 2010). According to Elsbach & Stigliani (2018), more than solving business development challenges, design thinking has the impact of profoundly improving organizational cultures.

2.3. Startups As A Way Of Entrepreneurship

2.3.1. Structure And Ecosystems

More than ever, the business world is thriving across new, fast-changing realities, being characterized by "turbulent business environments, scarcity of resources, hyper-competition and globalization, which have stepped up the challenges to higher and more difficult stages where the performance pressure is tremendous" (Volkova & Jākobsone, 2016, p. 63). As a result of new contexts, "Countries have found that there is no other path to economic development than entrepreneurship. Therefore, countries are trying to take an effective step in this direction by providing the infrastructure needed for entrepreneurship" (Mohammadi & Shaffie, 2021, p. 1).

A startup can be perceived as "a young company or project, launched by a group of entrepreneurs to create, develop, and/or validate a scalable and repeatable economic model, typically in the form of an innovative product and business model and/or a new market segment." (IDC et al., 2021, p. 16) or even as "any business that applies an innovative technology-enabled solution that has the potential to achieve scalability (...) innovation can be a product or service, process, or business model." (StartupBlink, 2022, p. 12).

A startup ecosystem, the whole spectrum in which a startup takes place, can be defined as "a set of interconnected entrepreneurial actors (both potential and existing), entrepreneurial organizations (e.g., firms, venture capitalists, business angels, and banks), institutions (incubators and accelerators, universities, public sector agencies, and financial bodies), and entrepreneurial processes." (IDC et al., 2021, p. 16).

As startups are subjected to a natural evolution process within business growth and refinement, there are different stages of maturity in which they can be classified according to IDC et al. (2021):

- Pre-Seed and Seed: Companies that are just starting and whose business plans are in an embryonic stage of development. This stage usually involves ongoing research and concept development preceding the startup's launch. Since it is a preliminary process, there are expected to be no revenues besides the initial needed investment.
- Early Stage: Companies that are in the process of refining their products and services' value proposition and market fit. This stage usually involves higher cost levels, supported by investors, besides being expected incomes along with their activity statement.
- Growth / Scaleup: Companies that are strengthened to scale up and expand their activity internationally due to acquired high-end performance. In this stage, the amount of profit is remarkable. The investment risk is significantly lower since the achieved maturity provides higher confidence and revenue stabilization.

According to IDC et al. (2021), along with the maturity process, there are suitable catalysts/enablers to promote a more remarkable business development adapted to each startup's purpose, needs, and expectations:

- Incubators: Organizations that provide long-term specialized support to pre-seed, seed, and early stage startups, mainly providing business development guidance, training, or funding.
- Accelerators: Organizations that provide a focused and fierce strategy to promote agile startup growth in the short term.
- Other Support Programs: Short-term applied programs that include “competitions, boot camps, events, seminars, and capacity-building workshops” (p. 16).

The overall relationship between the startups' maturity process and the most suitable enablers/catalysts to support each of its stages can be perceived in Figure 7:

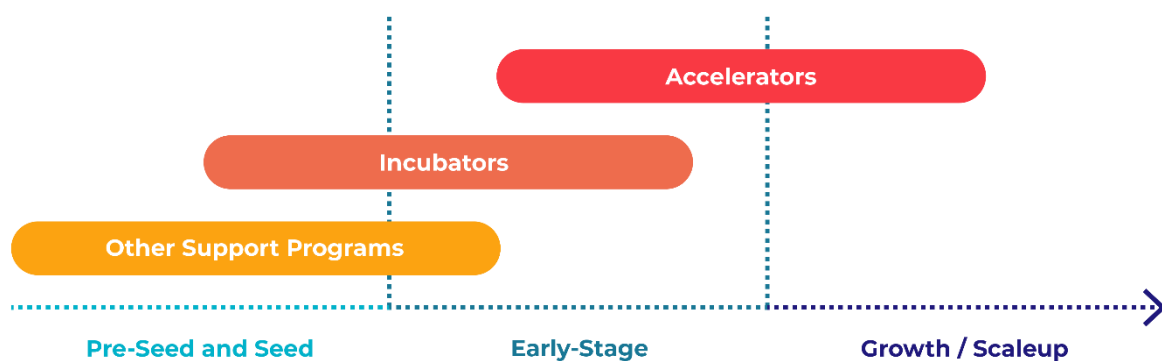


Figure 7 | Startup Evolution Process - Stages And Enablers/Catalysts (Adapted)

Source: “Startup & Entrepreneurial Ecosystem Report 2021.” by IDC, Startup Portugal, & Portugal Digital. (2021). <https://idcportugal.com/portugal-the-best-place-to-startup/startup-entrepreneurial-ecosystems-report-2021/>

2.3.2. Business Outlook

It is undeniable that "In the last decade startups have become an integral part of innovative modernization of many highly developed countries. (...) But despite the fact that they are so effective, startups in most cases remain without adequate support and funding and are implemented at their own risk." (Vnukova et al., 2022, p. 139). The performance of startups, as the most significant outcome of entrepreneurship, is defined by a particular uncertainty and vulnerability level as "they must constantly adapt their offers to the needs of their customers, leading to the adoption of a more reactive and consequently more flexible organizational mode." (Ousghir & Daoud, 2022, p. 20). Booz & Hamilton (1968) early defended that "startup success depends on identification of existing market need(s), gaps in market offers, developing innovative and new products, marketing products to a profitable customer segment, acceptability by customers and accumulating & responding to feedback" (as cited in Pattnaik, 2020, p. 365).

The CB Insights (2021) investigation, based on interviews with 111 startups' post-mortems⁶ since 2018, reveals that the biggest reasons for startup failure are funding problems (38%) and lack of market need for the provided products or services (35%). The following reasons are getting outcompeted, having a flawed business model, legal challenges, cost issues, not having the right team, product mistimed, poor product, disharmony among team/investors, pivot went bad, and being burned out. The overall results can be analyzed in Figure 8:

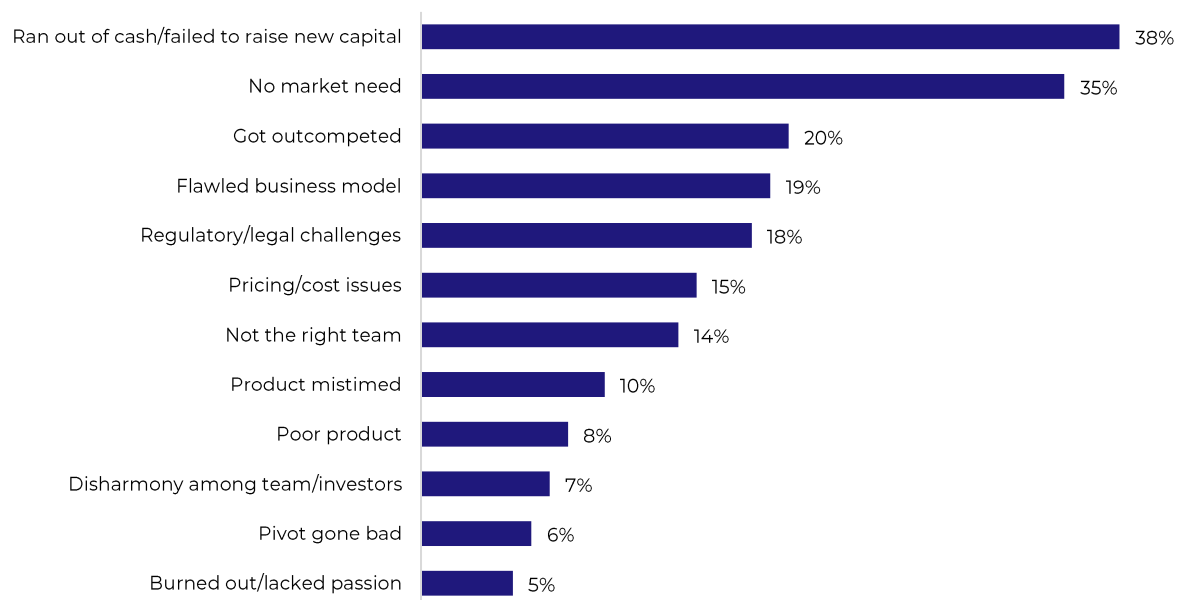


Figure 8 | The Top 12 Reasons Startups Fail

Source: "The Top 12 Reasons Startups Fail." by CB Insights (2021). <https://www.cbinsights.com/research/startup-failure-reasons-top/>

⁶ A way to assess if a project meets its business goals

2.3.3. Global Indicators

According to *The Global Startup Ecosystem Report GSER 2022*, by Startup Genome & Global Entrepreneurship Network (2022), the global startup ecosystem ranking has reaffirmed Silicon Valley as the world-leading hotspot, being ranked with 10/10 in all the evaluated aspects (Performance, Funding, Connectedness, Market Reach, Knowledge, and Talent + Experience). New York City, London, Boston, and Beijing are the following leaders among the top 5 (Startup Genome & Global Entrepreneurship Network, 2022).

Lisbon, the only Portuguese city in the rank, only shows up in 46th place of the most emerging ecosystems, scoring 5/10 in performance, 7/10 in Funding, 3/10 in Market Reach, and 4/10 in Talent + Experience. Since Lisbon took 17th place in 2021, the 2022 reposition represented an abrupt fall for this ecosystem. Beyond that, according to the authors, "Portugal's startup ecosystem is on the rise, and the decision-makers and organizations that power it have no intention of slowing down." (Startup Genome & Global Entrepreneurship Network, 2022, p. 128).

Compared to the previous report, the *Global Startup Ecosystem Index 2022*, developed by StartupBlink (2022), states that San Francisco Bay (equivalent to Silicon Valley) consistently affirms itself as the world's leading region in the startup racket. New York City, London, Los Angeles Area, and the Boston Area are the following leaders among the top 5. The evaluated aspects gather quantity, quality, and business environment scores defined to specific metrics that outcome in overall scores that determine the position in the index. As the USA reaffirms its leading position, Portugal dropped to 28th in 2022 (-1 than 2021). Lisbon assumes the 83rd position in the world index in 2022 (-1 than 2021) (StartupBlink, 2022).

The report exposes some curious conclusions - even though Europe is the world region with the most startups in the world (42.6% vs. North America 29.8%), the majority of the world's total early and late-stage startup funding is being invested in North America (52.3% vs. Europe 18.3%) (StartupBlink, 2022).

2.3.4. The Portuguese Case

According to IDC & Startup Portugal (2022), "The Portuguese startup ecosystem has evolved positively in the last decade and is now reaping the rewards." (p. 4). More than ever, Portugal is perceived as an attractive country for startup investment due to the impact of world-leading universities, the outstanding digital infrastructure, and the growing investment in the seven unicorns⁷ established in the country. This performance has made the world perceive Portugal as attractive to foreign investors. Beyond the recognized "quality of life, safety, climate, a favorable geographical location" (p. 4), the Portuguese environment is described as having "An open society and quality educational environment (...) that actively encourages startup activity." (Startup Genome & Global Entrepreneurship Network, 2022, p. 129).

This engaging environment is reinforced by national initiatives such as special visas for entrepreneurs and investors - gold, startup, and tech visas - and a "special non-habitual residence tax regime offering significant tax cuts for foreign income, freelancing, and crypto currency, among others." (Startup Portugal, 2022, p. 3). This statement is reinforced "With government initiatives aimed at promoting and developing the startup ecosystem, and with easy access to the European market and the Schengen Zone, Portugal has the potential to become one of the strongest startup economies in Europe." (StartupBlink, 2022, p. 143).

According to StartupBlink (2022), "The business environment in Portugal has greatly improved over the years as the country has begun to create a favorable climate for entrepreneurship, foreign investment, and digital nomads." (p. 143). IDC & Startup Portugal (2022) also share the same perspective, saying that "Portugal has gone from a country of tourism to a country with huge potential for innovative businesses" (p. 4), as the Portuguese market is made to date by 2200 registered startups. In 2021, "Portugal's startup ecosystem garnered over \$1 billion in funding - a growth rate of 100% over the previous year.", revealing the galvanizing advancement in this industry (Startup Genome & Global Entrepreneurship Network, 2022, p. 128).

Since 2016, the establishment of Lisbon as the host city for *Web Summit*, one of the largest tech conferences in the world, has brought numerous benefits to Portugal, as the national startup economy has been one of the most benefited stakeholders. This annual conference gathers the best speakers, investors, and entrepreneurs worldwide, representing a unique opportunity to network with the most influential allies and usufruct the high projection scenario to boost new projects and ideas. In conclusion, this world-scale initiative promotes "massive branding benefits for Portugal and its startup economy" (StartupBlink, 2022, p. 143), as the country is "in

⁷ Startups valued at over \$1 billion

the spotlight in terms of innovation at a global level" (IDC & Startup Portugal, 2022, p. 4). Lisbon is also part of *Scale Cities*, an alliance of European cities that thrive by working together on empowering local startup ecosystems by sharing networks and learnings. The primary goal is to "deploy strategies to allow both their local and global ecosystems to grow." (Startup Genome & Global Entrepreneurship Network, 2022, p. 128).

Born through a government initiative in 2016, *Startup Portugal*, a wide-scale incubator for early stage startups, steered the spectrum of entrepreneurship in Portugal as a significant promoter of the national strategy for innovation by providing structured support, international exchanges, and increased funding access for entrepreneurs (StartupBlink, 2022), which impact ultimately led the country to be near to fulfilling its full potential.

The *National Network of Incubators* was created as part of *Startup Portugal's* strategy. Its role is to promote cooperation and share resources and knowledge to improve products and services available to entrepreneurs and companies. In 2020, there were 169 incubators and 2325 incubator rooms in Portugal (IDC et al., 2021).

Dealroom is the data platform used for measuring the evolution of the Portuguese startup ecosystem. In 2022, the platform registered "2039 startups and scaleups (...) with 49.800 employees, and with a total valuation of 34,5 billion euros in 2022." (IDC & Startup Portugal, 2022, p. 18), representing over 1% of Portugal's GDP⁸.

The *Startup & Entrepreneurial Ecosystem Report* by IDC & Startup Portugal (2022) is the national annual report for measuring the performance and evolution of the Portuguese startup ecosystem. The 2022 version is based on 125 surveys of startup founders conducted in 2022 (IDC & Startup Portugal, 2022). In this survey, 71% of the respondents considered tax reduction the best way to enhance Portugal's startup ecosystem, followed by investment offers for private investors in startups (55%) and simplifying administrative services (50%) (IDC & Startup Portugal, 2022). As such, the Portuguese panorama is not always that sunny: "Valuable startups put their headquarters outside Portugal because of capital and taxation. To keep companies in Portugal, these two aspects need to change" (p. 21).

This report also reflects on the characteristics of Portuguese startups. It is perceived that most Portuguese startups run in the Information and Communication Technology industry sector (39%), were established in the given year (2022 - 20%), and are located in the Lisbon region (43%), according to Figure 9, 10 and 11:

⁸ Gross Domestic Product

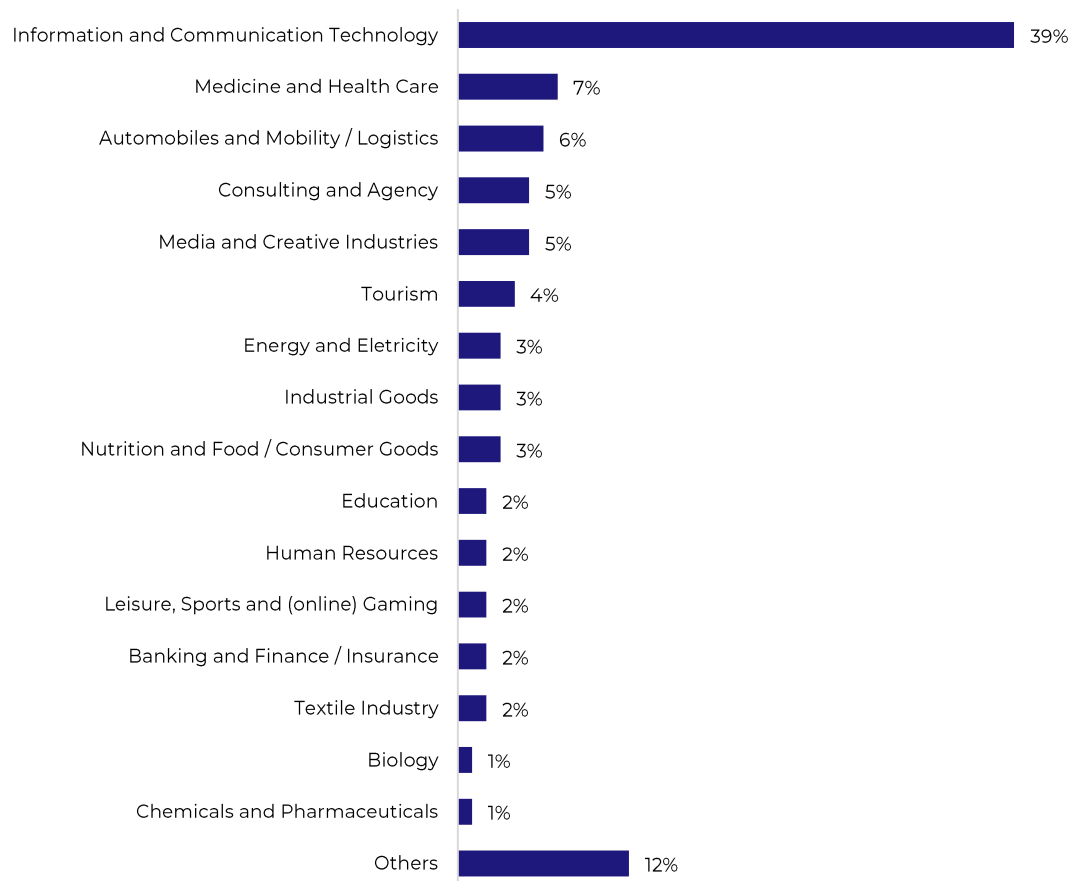


Figure 9 | Portuguese Startups Primary Industry Sector

Source: Startup & Entrepreneurial Ecosystem Report 2022." by IDC, & Startup Portugal. (2022). <https://idcportugal.com/build-a-scaleup-nation/startup-entrepreneurial-ecosystems-report-2022/>

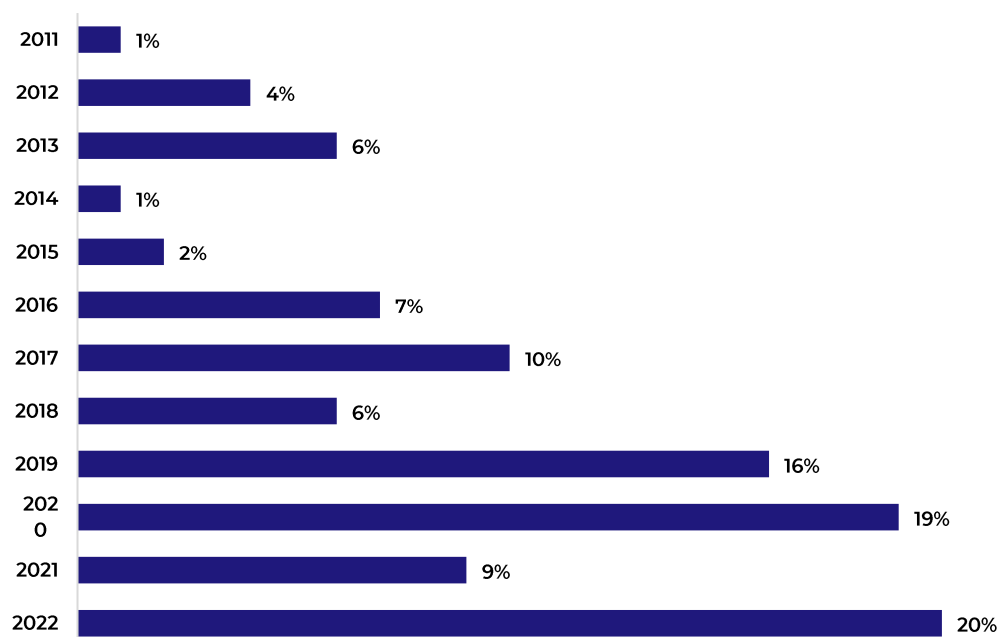


Figure 10 | Portuguese Startups Foundation Year

Source: Startup & Entrepreneurial Ecosystem Report 2022." by IDC, & Startup Portugal. (2022). <https://idcportugal.com/build-a-scaleup-nation/startup-entrepreneurial-ecosystems-report-2022/>

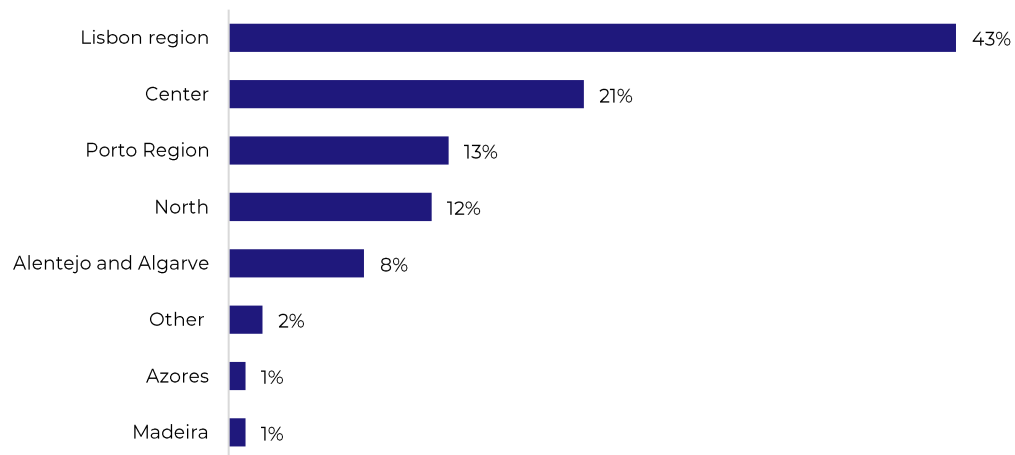


Figure 11 | Portuguese Startups Location

Source: "Startup & Entrepreneurial Ecosystem Report 2022." by IDC, & Startup Portugal. (2022). <https://idcportugal.com/build-a-scaleup-nation/startup-entrepreneurial-ecosystems-report-2022/>

Focusing on the founders' profile, most of them are Portuguese (80%), men (73% vs. 27% women), and hold a master's degree (67%). The most prominent field of study of the founders is engineering (56%), followed by management (41%) and computer sciences (27%).

The *Startup & Entrepreneurial Ecosystem Report 2021* (IDC et al., 2021) is based on 155 surveys of startup founders conducted in 2021. This survey explores the willingness expressed by founders to launch their businesses, according to Figure 12:

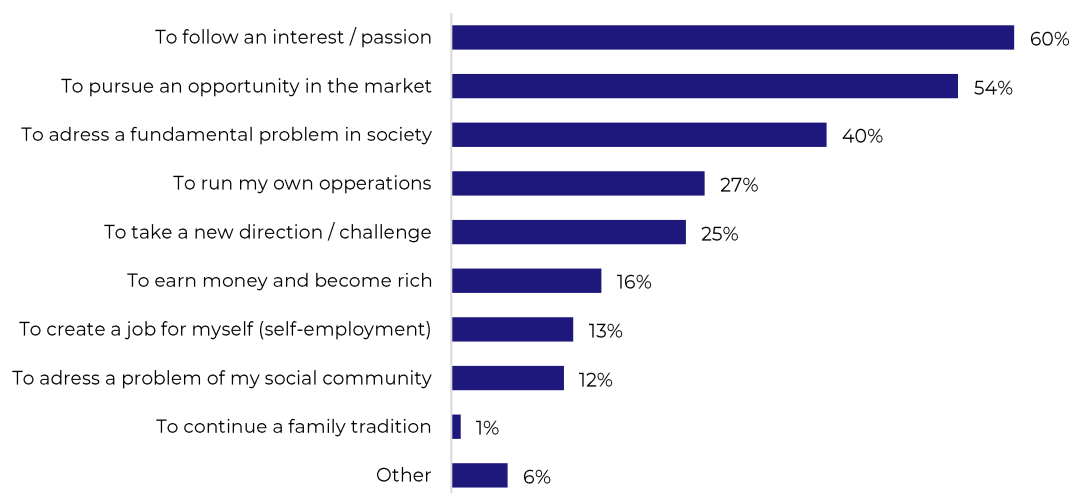


Figure 12 | Portuguese Startup Founders' Motivations To Launch Their Businesses

Source: "Startup & Entrepreneurial Ecosystem Report 2021" by IDC, Startup Portugal, & Portugal Digital. (2021). <https://idcportugal.com/portugal-the-best-place-to-startup/startup-entrepreneurial-ecosystems-report-2021/>

Most of the Portuguese startups are placed in the seed stage (62%), followed by early growth (28%) and late growth (10%). In operational terms, B2B⁹ is the most popular approach (63%), with B2C¹⁰ holding second place (29%) and B2B+B2C being the least adopted (8%) (IDC et al., 2021).

Among the institutions fostering the growth of the Portuguese business community, incubators have made the most significant contributions as they play a vital role in enhancing the survival rate of ideas and innovative startups (IDC et al., 2021). 65% of the respondents said that they resorted to incubators and 50% to acceleration programs in the first steps of their startups. Most startups only abandoned incubators after five years of activity, and 51% prefer to embrace incubation virtually rather than physically (IDC et al., 2021). Figure 13 shows the ratio of services delivered by startup incubators in Portugal:

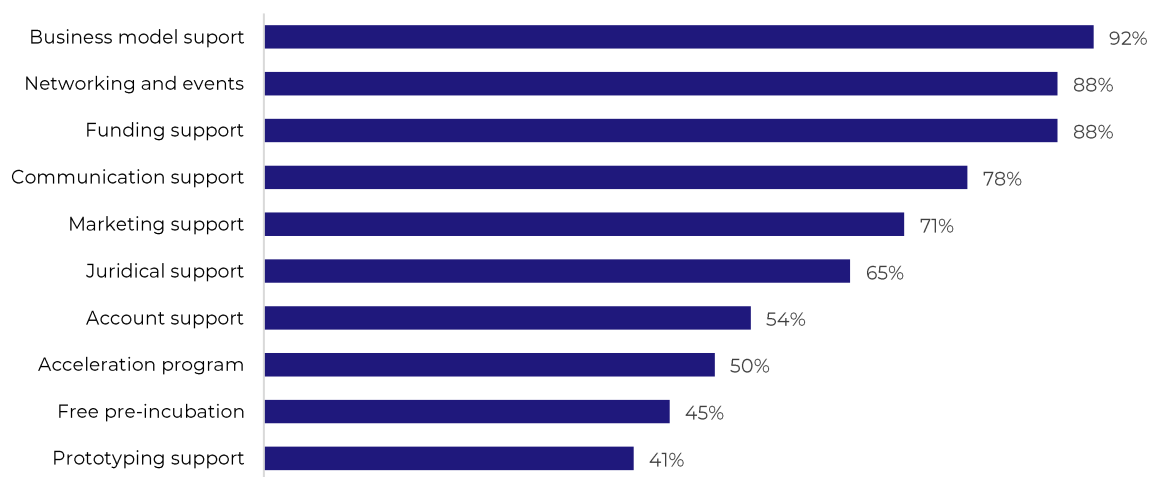


Figure 13 | Services Delivered By Portuguese Startup Incubators

Source: "Startup & Entrepreneurial Ecosystem Report 2021" by IDC, Startup Portugal, & Portugal Digital. (2021). <https://idcportugal.com/portugal-the-best-place-to-startup/startup-entrepreneurial-ecosystems-report-2021/>

The Portuguese market is not as attractive as other European countries in performance parameters. As such, Portuguese startups must target international markets, including Europe, capitalizing on the open economic zone. Some startups even prioritize the USA market and formerly adopt a global approach. (IDC et al., 2021). Apart from the acknowledgment of the overall efforts, "Portugal is losing its rhythm, as can be seen from the drop in some positions in international rankings (...) for the development of the ecosystem, it is necessary to see it as strategic for Portugal, and enthusiasm is not enough; it is necessary to have a clear value proposition, define concrete objectives and the way to get there." (IDC & Startup Portugal, 2022, p. 44).

⁹ Business To Business

¹⁰ Business To Consumer

2.3.5. Involving Design Practices

From the perspective of Val et al. (2019), "Entrepreneurial skills, such as, creativity, problem-solving, self-confidence and collaboration are deeply rooted in the Design Thinking discipline." (p. 112). As these touch points are growingly recognized, the investigation of how design thinking can be effectively helpful for entrepreneurial purposes has been increasing (Garcia et al., 2017, Val et al., 2019, & Chou, 2018, as cited in Carella et al., 2022).

This mindset is being strengthened as the trend of approaching design thinking concepts responds to the shifting business landscape toward new paradigms that face problems that are not susceptible to inquiry based on pure analytical skills traditionally taught in business schools (Sarooghi et al., 2019). The author adds that design thinking for entrepreneurship must address problem-solving issues and primarily develop business models and ensure their implementation. It is essential to have the consciousness that "when integrating such principles and elements to the usage of tools and activities is that these tools are merely representation of the design thinking principles in the business context and manifest themselves as such." (p. 90).

From the perspective of Vnukova et al. (2022), "Innovation and design thinking, together with funding, are fundamental factors for the development of a successful startup." (p. 137), as using design thinking as an approach to innovation offers startups an increased competitive advantage and, thus, higher chances to succeed in a highly competitive market. This mindset is shared by Ousghir & Daoud (2022), as they assert that at every stage of the project, from ideation to growth, creating a startup involves a continuous pursuit of innovation as a "holistic and conceptualized approach." (p. 25).

Despite this, the usual journey of startups does not embrace this kind of methodology as "there is a difference between the simplicity needed to explain design, and the complexity of implementing a design process that creates significant value." (Design Council, 2020, p. 10). Design thinking can be used as a powerful tool to align goals and a strategic plan, as "The key to success of an organization is in understanding and providing for customer needs rather than producing and selling what the organization is good at." (Levitt, 1960, as cited in Pattnaik et al., 2020, p. 368). That said, it is majorly about finding the right problems to deliver the right solutions and being conscious that "failure is an act of learning (...) enabling the failure to occur earlier and at lower levels of investment." (Bicen & Johnson, 2015, p. 290). Vnukova et al. (2022) supplement that this methodology can be highly effective in "startup business planning (...) identifying and resolving the problems of all project stakeholders, identifying the target audience, reducing risks and approving management decisions." (p. 144).

It is undeniable that startups have limited resources. According to specific contexts, the value of physical, human, relational, informational, legal, and organizational resources may vary from the specific will, method, or conduct that each startup embraces (Bicen & Johnson, 2015). As so, "Firms should think and act like designers and use design thinking methodology to tackle resource limitations." (p. 296).

Pattnaik et al. (2020) developed an investigation with the will to understand the perspective of incubators' top leaders, startup founders, and startup employees in integrating design thinking into their cultures and the level of integration of design thinking into their operations. The study methodology included "semi-structured interviews, review of internal documents, FGD with key informants, and the website of T-Hub for data triangulation." (p. 370). The main findings state that design thinking was valuable in saving money by avoiding developing inadequate prototypes but majorly by gathering people together and promoting active discussions and co-creation habits (especially in small teams) that outcome in more prosperous and more adequate solutions. That said, "there was a significant relationship between design thinking and inculcating a culture of humane centric innovation within the startups. Such a relationship (...) yielded positive results and reduced failures as well." (p. 379).

Carella et al. (2022) developed research with 50 participants at the CREA Summer Academy, a "design thinking educational program directly related to entrepreneurship." (p. 3). The program included design thinking lessons in which learning should be applied to developing new business ideas. The methodology adopted included interviews with the participants. The main goal of the study was to "understand what practical design abilities they developed within the program through their adoption of design thinking and how these skills contributed to the development of their entrepreneurial activities." (p. 3). The main findings state that the design thinking methodology and tools "help entrepreneurs test and obtain feedback on their assumptions of business ideas to refine an addressed problem, as well as the way to solve it." (p. 14) and "entrepreneurs can see in the diverging and converging thinking dynamics for on hand the opportunity to search for diversity and differentiation (diverging), for the other, the intrinsic need to provide a whole sense to the novel business idea (converging)." (p. 15). After all, the study was revealed to be significant in a way that the inherent iterative genesis of design thinking was proven to be a "relevant role to put entrepreneurs in front the idea to continuously explore the problem statement with novel perspectives in order to search for creative solutions." (p. 16).

In conclusion, it is proven that a wisely developed design thinking methodology for a specific startup context "increases the viability of success, the speed of market entry and reduction of investment risks in innovation." (Vnukova et al., 2022, p. 144).

2.3.6. Main Findings

The fast-paced business world is more than ever subjected to the influence of the uncertain reality of our times. The impact of resources shortage, keen competition, and globalization have increased performance pressure due to stepped-up challenges in growingly hawkish markets (Volkova & Jākobsone, 2016). Along with these findings, and to overcome these constraints, many countries have realized that economic development must be based on entrepreneurship as an essential competence of the national strategy for innovation (Mohammadi & Shaffie, 2021).

The startup ecosystem is one of the most profuse entrepreneurship expressions, and it can be defined as the integral range of touch points to which startups are concerned, including entrepreneurial actors, organizations, institutions, and processes (IDC et al., 2021). A startup is a blossoming company or project with the potential for scalability, usually associated with an ingenious product, process, or business model (StartupBlink, 2022). The startup evolution process evolves from the Pre-Seed/Seed to the Early Stage to Growth/Scaleup according to different criteria, and the journey is usually supported by specialized entrepreneurial institutions such as incubators, accelerators, and other support programs that ensure conscious business development along with ultimate practices (IDC et al., 2021).

As startups have played an essential role in modernizing entrepreneurial ecosystems (Vnukova et al., 2022), many still face funding and support problems, being the most common cause of failure in this sector (38%) (CB Insights, 2021).

Silicon Valley is consistently the dominant global hub for startups, ranked 10/10 in all the evaluated aspects of *The Global Startup Ecosystem Report GSER 2022* by Startup Genome & Global Entrepreneurship Network (2022). In this report, Lisbon holds 46th place worldwide. *Global Startup Ecosystem Index 2022*, developed by StartupBlink (2022), sets Lisbon in the 83rd position, stating that the ecosystem has been evolving in the last years by establishing a favorable climate for entrepreneurship, attracting foreign investment, and embracing digital nomads.

According to IDC & Startup Portugal (2022), Portugal has emerged as a highly attractive destination for startup investment, primarily driven by its world-leading universities, exceptional digital infrastructure, and the remarkable growth of its seven unicorns. This achievement has switched perceptions of the country from a tourism destination to a business-attractive market. The establishment of *Web Summit* in Lisbon in 2016, one of the world's largest tech conferences, has contributed significantly to this refreshing perspective of the Portuguese entrepreneurial ecosystem. The biggest challenge in retaining companies on Portuguese soil is still the high national taxation. IDC & Startup Portugal (2022) considers it necessary to define a clear strategy

for the national ecosystem to define a straightforward value proposition and achieve concrete goals as the country is losing traction in international rankings.

In order to align the ecosystem purposes, Vnukova et al. (2022) suggest that innovation and design thinking are essential elements for developing a successful startup, as using design thinking as an approach to innovation offers startups an increased competitive advantage and, thus, higher chances to succeed in a highly competitive market. Ousghir & Daoud (2022) adds that innovation in startups must be faced as an integral and prevalent approach for business development as it can be highly effective in enhancing the chances of success, accelerating market entry, and minimizing investment risks in innovation (Vnukova et al., 2022).

Chapter 3 - Research

3.1. Methodology

3.1.1. Overview

In the preceding chapter, we explored the connection between design thinking and the enhancement of business competitiveness. Additionally, we clearly understood how startup ecosystems can serve as catalysts for systemic innovation and economic growth. However, we also found that design thinking and startups do not often relate consistently. The massive impact that design practices are proven to have on business development (Sarooghi et al., 2019) is not ultimately recognized as a competitive advantage for most startup companies (Ravasi & Stigliani, 2011). This gap is reinforced by the generalized lack of studies on integrating design thinking practices in startup business planning. In addition, research about Portuguese startups' performance or *modus operandi* is almost nonexistent as the available studies relate to merely quantitative analysis of the national/regional panoramas. This investigation aspires to determine and demystify the gap between design thinking value proposition and its relevance for Portuguese startup incubators, recognized as the most influential catalyst in the national entrepreneurial ecosystem (IDC et al., 2021).

Deepening research is mandatory to perceive and explore the identified gap. The research methodology works as a tool that promotes a structured way to achieve the desired outcomes. Gancho (2015) states that "Exploring research methodology helps researchers refine and specify research methods." (p. 120). An adequate definition of the research methods is crucial to the research process. In this section, we will reflect on the guidelines of research methodology, primarily related to design research, including quantitative, qualitative, and mixed research methods.

3.1.2. Design Research

According to Muratovski (2016), the evolving need for designers to become "strategic planners and professional 'thinkers'" (p. 19) has given design a cross-disciplinary essence due to the intrinsic need to reach and explore different knowledge areas. This approach is considered fundamental to "provide results that can be applied or as a source of inspiration for new, overarching research questions and exchange of methods and conceptual frameworks" (Aagaard-Hansen, 2003, as cited in Aagaard-Hansen & Yoder, 2007, p. 426).

Muratovski (2016) states that cross-disciplinary design research can result in different approaches: Interdisciplinary design (relating different knowledge areas within the same discipline), multidisciplinary design (relating at least two different disciplines), and transdisciplinary design (adopting ways of working from other disciplines to address a complex challenge that cannot be addressed by a specific method). Considering the type of challenge to be addressed, Buchanan (2001) argues that design research can be clinical (research for design), applied (research through design), or basic (research about design). These concepts can be easily perceived through Figure 14 by Frankel & Racine (2010), inspired by the work of Buchanan (2001):

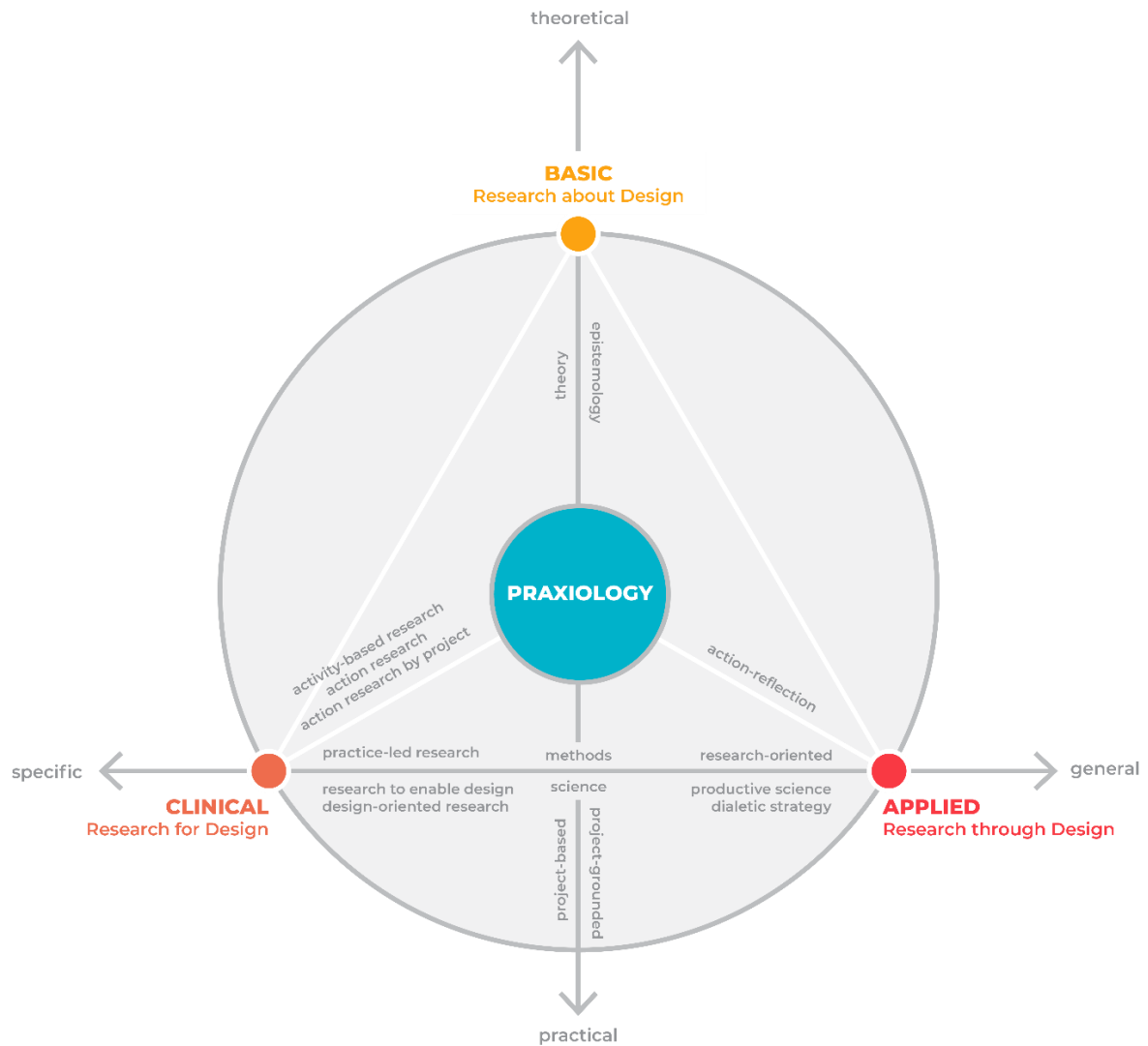


Figure 14 | Design Research Praxiology (Adapted)

Source: "The Complex Field of Research: for Design, through Design, and about Design" by Frankel, L., & Racine, M. (2010). Design and Complexity - DRS International Conference 2010. <https://dl.designresearchsociety.org/drs-conference-papers/drs2010/researchpapers/43>

3.1.3. Qualitative, Quantitative, And Mixed Approaches

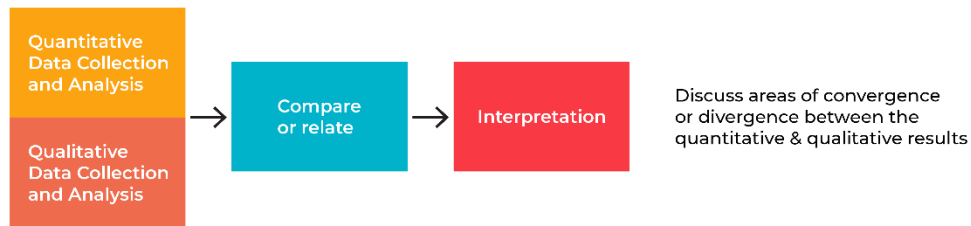
Walliman (2010) defines research methodology as the techniques used to gather, organize, and analyze information, leading to valid conclusions and the creation of structured knowledge. By employing suitable methods, researchers are expected to effectively communicate their findings and maintain an engaging research process that ensures validity.

The qualitative methodology reflects how the world is seen and experienced by singulars, as this approach is "typically used to explore new phenomena and to capture individuals' thoughts, feelings, or interpretations of meaning and process." (Given, 2008, p. XXIX). Muratovski (2016) adds that incorporating qualitative methods proves beneficial when there is a need to acquire new or profound insights into a specific problem and a smart decision where there is limited information available on the topic of interest, when the variables are unknown, or when the existing theory base is insufficient or absent. The author adds that ethnography, phenomenology, historical research, diachronic research, case studies, and grounded theory are some of the most convenient approaches for qualitative research methodology.

The quantitative methodology gathers sources of empirical and quantifiable data on a numerical basis. According to Gancho (2015), "It has its emphasis on large-scale and representative sets of data and is often perceived as being the collection of 'facts'" (p. 128). Muratovski (2016) argues that conclusions drawn in quantitative research are derived from experimentation, objective observations, systematic observations, and statistical analysis. Creswell (2003) states that quantitative research is a good approach when the goal is to gather statistical data or to test and verify an existing theory. Questionnaires, surveys, and experiments are some of the most convenient approaches for handling quantitative research methodology.

The mixed methodology is a problem-solving framework that relates quantitative and qualitative approaches in parallel or simultaneous ways (Creswell, 2003). When approaching this kind of methodology, there are three different paths in the way the research can be conducted: convergent parallel, explanatory sequential, and exploratory sequential, according to Figure 15:

Convergent Parallel Design



Explanatory Sequential Design



Exploratory Sequential Design



Figure 15 | Design Research Mixed Methods (Adapted)

Source: "Getting Started With Mixed Methods Research" by Harvard Catalyst. (2021). https://catalyst.harvard.edu/wp-content/uploads/2021/09/HCAT_CEP_MixedMethodsResearch-Accessible.pdf

3.2. Data Collection

3.2.1. Framework

This section will explore the correlation between the defined research methods for this investigation, aiming to enhance the coherence of the overall process. The need to expand our research is justified by exploring the identified gap in the relationship between design thinking value proposition and its relevance for Portuguese startup incubators. This process is expected to ultimately answer this investigation's two main research questions. The way to achieve and develop this interchange will be structured into primary research, which aims to directly get in touch with the Portuguese startup incubation ecosystem through an online survey and structured interviews, and secondary research, through the development of a wise collection of the most relevant findings on these two research areas through an extensive literature review.

Within the specific design research methods, this investigation process can be described as use-inspired research, as it combines the relevance of immediate application and relevance for knowledge advancement, accordingly to the evaluation of Pasteur's Quadrant by Stokes (1997). By analyzing the characteristics of this process, it is clear that the conducted approach can be defined as research through design, as the design practice is used as a knowledge enabler/creator through reflection (Frayling, 1994), also considered as applied design research by Buchanan (2001).

3.2.2. Triangulation Of Methods

In order to increase validity and ensure the quality of the results that will outcome from this investigation process, defining a strategy that connects different types of data was crucial to ensure more consistent findings, as this approach aids in establishing a credible, valid, and reliable research practice (Muratovski, 2016). As such, in this investigation, we will promote methodological data triangulation, defined by Morse (1991) as “the use of at least two methods, usually qualitative and quantitative, to address the same research problem” (p. 120). This approach will, this way, promote corroboration between methods, as argued by Bryman (2006). These efforts will ultimately provide multiple measures for understanding the same phenomenon (Yin, 2003).

Thereupon, the promoted data triangulation in this study will occur through the correlation between quantitative methods, through an online survey, and qualitative methods, through literature review and structured interviews. As such, the ultimate approach of this investigation is characterized by its mixed genesis, relating to a convergent parallel design approach where both qualitative and quantitative approaches are simultaneously correlated to achieve new acknowledgments (Harvard Catalyst, 2021). The way in which the data triangulation is related to the defined research questions can be analyzed in Table 5:

Table 5 | Research Questions - Triangulation Of Methods

RESEARCH QUESTIONS		METHODS	APPROACH
A. Can growing investment in design thinking practices promote a higher chance of success for startups?	A1. Which aspects influence design thinking performance in startup incubation programs?	Literature Review Online Survey Structured Interviews	Qualitative Quantitative Qualitative
	A2. What are the biggest challenges and opportunities when implementing design thinking in startup incubation programs?		
B. How relevant is design thinking in the Portuguese startup ecosystem?	B1. What is the role of design thinking in Portuguese startup incubators for promoting innovation?	Online Survey Structured Interviews	Quantitative Qualitative
	B2. What are the most effective ways to measure the level of investment in design thinking practices in Portuguese startup incubators?		

3.2.3. Literature Review

A literature review is a research process for the existing studies about given subjects within a theoretical framework. Verma & Beard (1981) argue that "theory is an essential tool of research in stimulating the advancement of knowledge still further." (p. 10) as this process is about consulting, analyzing, and relating the existing material to strengthen knowledge and clarify critical findings about the research subjects. Among the benefits of this process is the opportunity to identify how and what has been done, look forward to new perspectives and approaches, face research problems and gaps, and realize the current state of the art (Leedy & Ormord, 2010). From the perspective of Bell (2005), "All researchers collect many facts, but then must select, organize and classify findings into a coherent pattern" (p. 104). Muratovski (2016) states that literature reviews can be organized into different categories: chronologically organized, historical, thematic, methodological, and theoretical.

A systematic methodological literature review was the first data collection stage for this investigation process, driven between September and December 2022. According to Muratovski (2016), methodological literature reviews "examine various methodologies by which a particular issue can be studied (...) for the purpose of assessing their effectiveness and finding ways for improvement" (p. 33). This process aims to deepen knowledge about the defined theoretical framework. This process must not be restrained to analyzing strict topics such as design, design management, design thinking, entrepreneurship, startups, and incubation programs but promote a profuse interrelationship between them. Combining the gathered information is fundamental to clarifying and exposing the identified research gap. As such, study cases relating to design thinking and startup ecosystems were strongly considered to perceive the ongoing and recent research approaching the exchange between these areas. The literature review methods and guidelines were different when approaching different knowledge areas: design, entrepreneurship, and when relating both.

Design is the first research subject in the literature review (Section 2.2). This process began with scrutinizing some of the best reference books and articles about design, design management, and design thinking. We considered several publications in this stage, according to the given relevance in the area, whose purpose was to build a solid theoretical basis for this subject. Renowned authors like Best, K., Brown, T., Hands, D., Lockwood, D., Mozota, B., and Muratovski, G., were strongly considered in this research by assembling the most relevant findings of these authors, among other relevant sources. In order to get a practical perspective, an active search for official design reports that reflect and expose quantitative data about design performance in organizations, countries, and economic/political unions were also conducted. Among the

analyzed reports was *Design Economy - People, Places and Economic Value 2022* by Design Council (2022). This kind of data was unavailable in databases as it is directly made available by the responsible institutions. There were considered the most recently available reports in this search.

Entrepreneurship is the second research subject in the literature review (Section 2.3). As this study focuses on startups as a way of entrepreneurship, these kinds of companies were the main search topic in this stage, more than entrepreneurship itself, which was only approached as a context-based introduction source. The main goal in this stage was to understand all the synergies involved in a startup ecosystem, the impact these new ventures have in a determined societal and economic environment, and evaluate their overall performance. As this investigation takes place in Portugal, the Portuguese entrepreneurial ecosystem was taken into higher confidence in this analysis, being the research focus. There were only considered English-written online reports from business consultancies, entrepreneurial organizations, and government initiatives published in 2021 or 2022, as the ever-changing reality is even more significant in startup environments. As such, the considered data must be the most recent available to stick to the more trustworthy analysis. In the international panorama, there were analyzed the *Global Startup Ecosystem Index 2022* by StartupBlink (2022) and *The Global Startup Ecosystem Report GSER 2022* by Startup Genome & Global Entrepreneurship Network (2022), with particular attention to the index's top 10 and the positions stated by Portugal in these reports. In the national panorama, the *Startup & Entrepreneurial Ecosystem Report 2021* by IDC et al. (2021) and *Startup & Entrepreneurial Ecosystem Report 2022* by IDC & Startup Portugal (2022) were analyzed.

In the last stage of the literature review, it was essential to relate design and entrepreneurship as this synergy represents this investigation's whole fundamental research area. In order to find out which outcomes the research has evolved over the last years, there were considered the search for papers, articles, and case studies available in the online database b-On. By relating design thinking and entrepreneurship/startups/incubators/incubation programs, the research criteria included a few restrictions on the advanced search tool:

1. Search by "design thinking" and "entrepreneurship", "design thinking" and "startup or start up or start-up or startups or start ups or start-ups", "design thinking" and "incubation", "design thinking" and "incubator", in "TI Title" and "SU Subject Terms" fields.
2. Peer-reviewed.
3. English language only.
4. Published between January 2018 and December 2022.

3.2.4. Online Survey

According to Muratovski (2016), a survey is a quantitative research tool defined by "acquiring information about a particular group of people by asking them questions and then arranging these answers in a structured and systemic order." (p. 110).

Getting first contact with Portuguese startup incubators was vital to understand better the actual condition, role, and performance of design thinking in startup incubation programs. This primary approach's main goal is to perceive better their perspectives and ways of working when dealing with startups.

As such, an online survey was developed to promote the first approach to the national entrepreneurial ecosystem. There were mainly contacted Certified Incubators by IAPMEI (2023), the national agency for entrepreneurship in SMEs, powered by the Portuguese Ministry for the Economy. There were considered 103 startup incubators from IAPMEI's official catalog for 2023 (IAPMEI, 2023).

Lisbon is the most relevant Portuguese city in number and investment in the national startup ecosystem, according to the report of IDC & Startup Portugal (2022). Considering the relevance of local dynamics in a thriving city for new ventures, the online survey also considered the specific characteristics of this local ecosystem. Notably, the city council was pivotal in fostering an organized community of entrepreneurs - Made of Lisboa. Due to its relevance, this survey also considered Made of Lisboa stakeholders that provide incubation programs. There were considered 17 startup incubators from this community (Made of Lisboa, 2023).

Altogether, this online survey was emailed to 120 incubators. The list of the approached startup incubators for this online survey is integrally exposed in Appendix A.

This survey was meant to be spread online since it is the most agile and practical way to get in touch with startup incubators, recall answers and analyze results. Google Forms was the elected tool to conduct this process. Since this study is being developed in Portugal, it was essential to consider the local dynamics and ways of working of the approached incubators. In order to achieve a higher answer rate, two versions of the same survey were developed - the English and the Portuguese versions. Both versions were emailed to all the respondents, allowing them to answer in the language they felt most comfortable with. The result analysis will be combined, with no distinction or singular treatment since the English and Portuguese versions have the same questions.

The online survey structure is integrally exposed in Appendix B (English Version) and Appendix C (Portuguese Version).

The survey was opened for replies from February 1st 2023, to February 28th 2023. It was answered by 38 of the 120 approached incubators, representing an answer rate of 31.6%. 37 of 38 submissions were considered valid since all branches were filled coherently, and the respondents confirmed that their companies provided incubation or/and mentoring programs for startups, assuring a correct treatment of the results. One submission (numbered 6P. in Appendix E) was considered invalid as there was a conflict in accurately identifying the answering company (Question 1).

3.2.5. Structured Interviews

After the first approach to Portuguese startup incubators through the online survey, gaining a deeper understanding of their practices became crucial. This process requires embracing a more empathic approach to delve deeper into the subject matter, as interviews were considered the most appropriate approach to fulfill this need. As defined by Muratovski (2016), interviews are a valuable method for gathering insights into people's ideas, opinions, and attitudes as a primary research method or in combination with other research methods to obtain supplementary information about individuals or specific topics.

The developed interviews were integrally structured. According to Walliman (2010), in structured interviews, the interviewer follows a predetermined schedule and asks standardized questions. The answers given by the interviewee may be in a closed format, allowing them to select from a set of predetermined response options. This approach allows data to be collected consistently (Muratovski, 2016).

The interviews were conducted with the intention of gaining a more comprehensive understanding of how startup incubators operate daily, elucidating the factors that influenced the previously provided answers in the online survey. The questions asked should allow reflection about the possibility of increasing investment or strengthening performance when approaching design thinking with startups. They should also analyze the accuracy of self-consciousness in design thinking practices.

The approached startup incubators for these online interviews were the same 37 incubators with valid online survey submissions. The decision to exclusively contact these incubators is justified by the need to compare different perspectives and relate the answers to those given in the online survey. The list of the approached startup incubators for interviews is integrally exposed in Appendix F.

They were contacted once again via email to participate in the interviews. The booking process was conducted through the Koalendar online tool, making the process easier by avoiding an unappealing change of emails to achieve a suitable schedule for both parties. By accessing a link where was displayed a real-time calendar, the interviewees could choose a schedule that fits them best and automatically receive an email with the link for the online meeting. Reminder emails were also sent over time to ensure their presence. This investment would ideally make the process more appealing and efficient and should ultimately increase the answer rate.

It was defined that the interviewing period should occur from 9 AM to 6 PM on working days between March 16th, 2023, and April 6th, 2023. The interviews must not exceed 30 minutes. A total of 13 interviews were booked. 12 of the 13 interviewees showed up. All the interviews were conducted in Portuguese since it was the native language of all the interviewees. 1 of the 12 conducted interviews was considered invalid due to the lack of objectivity of the given answers by the interviewee, which ultimately conducted a different discussion, not compatible with the principles of a structured interview (Walliman, 2010).

By approaching startup incubators with different genesis, two different interview formats were developed: one for startup incubators that approach design thinking with startups and one for startup incubators that do not approach design thinking with startups. Both of these groups have their own common foundation, consisting of a set of questions to be asked of every incubator. Additionally, a specific question related to identified characteristics will be asked based on the answers from the online survey.

The interview material, transcribed and traduced to English, can be integrally consulted in Appendix G | Structured Interviews - Organized By Startup Incubators, Appendix H | Structured Interviews - Organized By Questions - Startup Incubators That Approach Design Thinking With Startups, and Appendix I | Structured Interviews - Organized By Questions - Startup Incubators That Do Not Approach Design Thinking With Startups.

Chapter 4 - Findings and Results

4.1. Online Survey

4.1.1. Data Analysis

This section promotes an in-depth analysis of the results retrieved from the online survey. In the first stage, a quantitative data analysis will be conducted. In the second stage, searching for relationships between answers is expected to define patterns. These patterns, in turn, will allow the development of a framework to help clarify the main findings. This analysis will reflect on the answers to the 37 valid submissions. The respondents were demanded to reply to 11 to 18 questions, according to their answering paths along the survey that determine the answers that show up for each case.

The online survey responses are integrally exposed in Appendix D (English Version) and Appendix E (Portuguese Version).

The survey begins with merely diagnostic questions about the startup incubator the respondents work for (Question 1) and their role in it (Question 2). These questions allow tracking of the answer rate and more efficient treatment of results. The respondents' anonymity was ensured in this survey as neither their names nor personal data were demanded.

Inquired about the type of organization they work for (Question 3):

- 16 (43.2%) said they work for a private non-profit organization;
- 5 (13.5%) said they work for a private for-profit organization;
- 12 (32.4%) said they work for a public organization;
- 4 (10.8%) said they work for an academic organization.

Inquired about their companies' experience when working with startups (Question 4):

- 2 (5.4%) said their companies have worked with 0-5 startups over time;
- 2 (5.4%) said their companies have worked with 5-10 startups over time;
- 2 (5.4%) said their companies have worked with 10-20 startups over time;
- 8 (21.6%) said their companies have worked with 20-50 startups over time;
- 7 (18.9%) said their companies have worked with 50-100 startups over time;
- 16 (43.2%) said their companies have worked with 100> startups over time.

Inquired about the range of startup business areas their companies work with (Question 5):

- 25 (67.6%) said their companies work with startups from every business areas;
- 12 (32.4%) said their companies work with startups from specific business areas.

Those who answered that their companies work with startups from specific business areas were inquired about which startup business areas they work with (Question 6). The answers to this question were only considered for context, not quantitative analysis.

Inquired about the location of the startups their companies work with (Question 7):

- 24 (64.9%) said their companies work with startups from all over the world;
- 8 (21.6%) said their companies work with startups from all over Portugal.
- 5 (13.5%) said their companies only work with startups from a specific environment/place/city.

Those who answered that their companies only work with startups from a specific environment/place/city were inquired about from which specific environment/place/city the startups they work with are located (Question 8). The answers to this question were only considered for context, not quantitative analysis.

Inquired about the ONLINE services their companies provide to startups (Question 9):

- 22 (59.5%) said their companies provide online Incubation Programs;
- 12 (32.4%) said their companies provide online Acceleration Programs;
- 25 (67.6%) said their companies provide online Mentoring Programs;
- 13 (35.1%) said their companies provide online Training Programs;
- 8 (21.6%) said their companies provide online Financing;
- 27 (73%) said their companies provide online Workshops;
- 23 (62.1%) said their companies provide online Meetings & Events;
- 3 (8.1%) said their companies don't provide any online services;
- 1 (2.7%) said its company provides other online services (Indico Founders Program powered by Google for Startups).

Inquired about the ON-SITE services their companies provide to startups (Question 10):

- 33 (89.2%) said their companies provide on-site Incubation Programs;
- 20 (54%) said their companies provide on-site Acceleration Programs;
- 31 (83.8%) said their companies provide on-site Mentoring Programs;
- 19 (51.4%) said their companies provide on-site Training Programs;
- 14 (37.8%) said their companies provide on-site Financing;
- 32 (86.5%) said their companies provide on-site Workshops;
- 35 (94.6%) said their companies provide on-site Meetings & Events.

Inquired about if design thinking was ever approached with startups (Question 11):

- 28 (75.7%) said it was approached;
- 9 (24.3%) said it was never approached.

Those who answered that design thinking was approached were inquired about how often their companies approach design thinking with startups (Question 12):

- 18 (64.3% - 48.6%) said it is often approached in Meetings & Events;
- 12 (42.9% - 32.4%) said some of their programs approach design thinking;
- 4 (14.3% - 10.8%) said every program they offer approaches design thinking.

Those who answered that design thinking was approached were inquired about in which circumstances their companies approach design thinking with startups (Question 13):

- 15 (53.6% - 40.5%) said it is occasionally approached in some activities/workshops (e.g., to define a problem or generate ideas);
- 15 (53.6% - 40.5%) said it is approached as an integral process to business development, including the empathize, define, ideate, prototype, test and implement phases and its tools.

Those who answered that design thinking was approached were inquired about if design thinking was approached by designers or not (Question 14):

- 15 (53.6% - 40.5%) said it is approached by designers;
- 13 (46.4% - 35.1%) said it is not approached by designers.

Those who answered that design thinking was approached were inquired about if design thinking was approached by interns or outsourcers (Question 15):

- 17 (60.7% - 45.9%) said it is approached by interns;
- 11 (39.3% - 29.7%) said it is approached by outsourcers.

Those who answered that design thinking was never approached with startups were inquired about the reason why (Question 16):

- 2 (22.2% - 5.4%) said it is inadequate for their programs;
- 4 (44.4% - 10.8%) said their companies don't have specialized team members to promote it;
- 3 (33.3% - 8.1%) said their companies never thought about implementing it;
- 1 (11.1% - 2.7%) said it takes too much time;
- 3 (33.3% - 8.1%) argued other reasons (Using other methodologies).

Inquired about the use of Lean, Agile, Six Sigma, or any other methodology with startups (Question 17):

- 18 (48.6%) said they approach these or other methodologies with startups;
- 19 (51.4%) said they don't approach these or other methodologies with startups.

Those who answered that they use other methodologies were inquired about which ones they approach with startups (Question 18):

- 10 (55.5% - 27%) said their companies approach Lean;
- 7 (38.8% - 18.9%) said their companies approach Business Model Canvas;
- 3 (16.6% - 8.1%) said their companies approach Agile;
- 1 (5.5% - 2.7%) said their company approaches Six Sigma;
- 1 (5.5% - 2.7%) said their company approaches Customer Development Model;
- 1 (5.5% - 2.7%) said their company approaches Customer Journey Map;
- 1 (5.5% - 2.7%) said their company approaches Sprint;
- 1 (5.5% - 2.7%) said their company approaches OST;
- 2 (11.1% - 5.4%) said their company approaches other methodologies (Not specified).

4.1.2. Main Findings

In order to gain a deeper understanding of how startups embrace design thinking and how it occurs, systematic data analysis was conducted, combining the findings from each research question. This approach aims to uncover valuable insights expected to bring us closer to answering the defined research questions. That said, it was perceived that:

- 28 in 37 startup incubators approach design thinking with startups (75.7%);
- 16 in 37 startup incubators approach design thinking with startups consistently over time (43.2%);
- 15 in 37 startup incubators approach design thinking with startups as a structured methodology for business development (40.5%);
- 10 in 37 incubators approach design thinking with startups consistently over time and as a structured methodology for business development (27%).
- 7 in 37 startup incubators approach design thinking with startups consistently over time and as a structured methodology for business development through non-designer interns (18.9%).
- 6 in 37 startup incubators approach design thinking with startups consistently over time and as a structured methodology for business development through outsourced designers (16.2%).
- 3 in 37 startup incubators approach design thinking with startups consistently over time and as a structured methodology for business development through intern designers (8.1%).

The analysis reveals that while most startup incubators (75.7%) approach design thinking, only 43.2% consistently approach this methodology over time. Instead, the rule is to approach design thinking in occasional meetings & events, not allowing a coherent involvement in their strategic planning across time. (Best, 2010; Val et al., 2019).

It was perceived that even fewer startup incubators approach design thinking as a structured methodology for business development (40.5%), only approaching it in specific stages of the process (e.g., to define a problem or generate ideas). This approach does not truly take advantage of the potential of design thinking since its action is fragmented in specific needs or steps, not being recognized as a coherent, transversal methodology for business development that promotes discovery, interpretation, ideation, experimentation, and evolution throughout the process (IDEO, 2012) or other equivalent methods/models.

The number of startup incubators that properly recognize design thinking as a consistently approached structured methodology for business development is low, only representing 27% of

the overall ecosystem. These findings suggest that barely 1 in 4 startup incubators in Portugal genuinely embrace design thinking in their programs. Since this methodology has proven to be a competitive advantage in developing new businesses, there is a specific need to promote design thinking more engagingly since many opportunities can wistfully become lost through misapplied processes (Knošková, 2011; Carella et al., 2022).

The benefits of having interns promoting design thinking are indubitable. Having the opportunity to work with a team that is permanently in touch with startups dynamics is a significant investment that can result in more conscious and adequate strategies along with cultural change (Jenkins, 2010). Besides this, only 18.9% of Portuguese startup incubators take advantage of their staff, even though not design specialized, to promote design thinking as a consistently approached structured methodology for business development.

Recognizing the significant impact of highly trained designers in promoting this methodology, it was perceived that only 16.2% of the national startup incubators properly approach design thinking (consistently over time and as a structured methodology for business development) through designers. Even though other professionals could be highly trained in this methodology, designers are naturally more likely to be incrementally efficient when promoting design thinking given their specific abilities (Brown, 2008; Björklund et al., 2020).

When it comes to considerable investment in these practices, by promoting design thinking through intern designers, the number of startup incubators doing such is almost residual. Only 8.1% of national startup incubators have made deliberate efforts to hire and integrate designers in their teams to adequately promote design thinking (consistently over time and as a structured methodology for business development) with startups.

4.1.3. Design Thinking Investment Scale

The recognized lack of investment in design thinking by Portuguese startup incubators, which was exposed through the main findings of the online survey (Section 4.1.2), has led to the development of this section which aims to organize the gathered data and quantify the investment each startup incubator applies to design thinking. This approach will allow a clearer perspective on the investment level that each startup incubator applies and allows a workable comparison which ultimately will help us to find patterns. As such, the best way to quantify the level of investment was considered a scale, which allows an evaluation of several characteristics related to design thinking practices. This evaluation is crucial for the conscious evolvement of design thinking practices in startup incubators because it allows a clearer perspective of the various aspects that have the potential to be improved.

The developed Design Thinking Investment Scale goes from level 0 - the lowest - to level 7 - the highest. The sequence between levels can be perceived through the following listing:

- Level 0 - Startup incubators that do not approach design thinking with startups;
- Level 1 - Startup incubators that approach design thinking with startups;
- Level 2 - Startup incubators that approach design thinking with startups consistently over time;
- Level 3 - Startup incubators that approach design thinking with startups as a structured methodology for business development;
- Level 4 - Startup incubators that approach design thinking with startups consistently over time and as a structured methodology for business development;
- Level 5 - Startup incubators that approach design thinking with startups consistently over time and as a structured methodology for business development through non-designer interns;
- Level 6 - Startup incubators that approach design thinking with startups consistently over time and as a structured methodology for business development through outsourced designers;
- Level 7 - Startup incubators that approach design thinking with startups consistently over time and as a structured methodology for business development through intern designers.

The level's sequence was defined according to the given relevance to each characteristic. The characteristics under evaluation for level positioning were segmented into two sections with different priorities:

- Essential Criteria - considered vital investments for design thinking adequate practicing with aspects such as 'Approaches Design Thinking', 'Consistently Over Time', and 'As A Structured Methodology For Business Development'.
- Extraordinary Criteria - considered additional investments that enrichen the design thinking experience with aspects such as 'Approached by Interns' and 'Approached By Designers'.

Among the essential criteria, the most basic stage requires somehow approaching design thinking (Level 1). It was considered that using design thinking as a structured methodology for business development (Level 3) is more important than approaching it consistently over time (Level 2). Using design thinking only in specific phases of the process (e.g., to define a problem or generate ideas) lacks the recognition of design thinking as an integral and cohesive methodology, and its potential ends up being compromised by being partially used, only taking advantage of a few specific tools. Promoting design thinking as a structured methodology, a whole process for business development, even in meetings & events, is much more efficient than regularly using specific tools disconnected from the whole business context (Ousghir & Daoud, 2022).

Level 4 is considered to be transitioning level. Startup incubators that invest in design thinking as a consistently approached structured methodology for business development are considered to have an adequate approach to this methodology. Any startup incubator whose investment is settled below Level 4 is considered unsatisfactory since the methodology is somehow being misapplied. As such, evaluating extraordinary criteria like 'Approached By Interns' or 'Approached By Designers' in Levels 0, 1, 2, 3, or 4 is considered irrelevant since the essential criteria are not fulfilled.

Among the extraordinary criteria, even conscious about the benefit of having interns promoting this methodology, it was considered that approaching design thinking through outsourced designers (Level 6) is likely more efficient than having non-design interns approaching it (Level 5). By approaching this methodology from expert professionals, the chance of having more expressive results more quickly is significantly bigger (Brown, 2008; Björklund et al., 2020). Level 7 is the top level which reunites all the essential and extraordinary criteria.

Table 6, which represents the Design Thinking Investment Scale, is exposed below:

Table 6 | Design Thinking Investment Scale

	ESSENTIAL CRITERIA			EXTRAORDINARY CRITERIA	
	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Level 0	✗	✗	✗	—	—
Level 1	✓	✗	✗	—	—
Level 2	✓	✓	✗	—	—
Level 3	✓	✗	✓	—	—
Level 4	✓	✓	✓	—	—
Level 5	✓	✓	✓	✓	✗
Level 6	✓	✓	✓	✗	✓
Level 7	✓	✓	✓	✓	✓

KEY: ✓ Applies ✗ Does Not Apply — Irrelevant (Since Essential Criteria Are Not Fulfilled)

Since this framework allows a more accurate visual comparison between levels of investment, an applied version of this table was developed to compare each consulted startup incubator's investments in design thinking. The displayed data was derived from the analysis of the 37 valid responses provided by Portuguese startup incubators on the online survey, which questions were ultimately developed to quantify data. The data order is determined by the sequential submissions of each startup incubator, starting with the English version followed by the Portuguese version, and can be analyzed through Table 7:

Table 7 | Design Thinking Investment Scale - Applied

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Build Up Labs	5	✓	✓	✓	✓	✗
LISPOLIS	0	✗	✗	✗	✗	✗
Audax-ISCTE / Labs Lisboa	2	✓	✓	✗	✓	✗
Associação Nonagon	2	✓	✓	✗	✓	✗
ADRAL - Agência de Desenvolvimento Regional do Alentejo	0	✗	✗	✗	✗	✗
Inovagaia	3	✓	✗	✓	✓	✗
Set.Up Guimarães	1	✓	✗	✗	✗	✓
VilaWork	1	✓	✗	✗	✓	✗
Startup Leiria	3	✓	✗	✓	✓	✓
Startup Portimão	7	✓	✓	✓	✓	✓
Óbidos Parque	2	✓	✓	✗	✗	✓
ANPME - Associação Nacional Pequenas Médias Empresas	0	✗	✗	✗	✗	✗
Startup Porto	0	✗	✗	✗	✗	✗
UA Incubator	5	✓	✓	✓	✓	✗
Productized	6	✓	✓	✓	✗	✓
Acredita Portugal	0	✗	✗	✗	✗	✗
Startup Madeira	2	✓	✓	✗	✗	✓
IPN Incubadora	3	✓	✗	✓	✓	✓
Startup Montemor-o- Novo	0	✗	✗	✗	✗	✗
Madan Parque	7	✓	✓	✓	✓	✓
Amadora Tech	3	✓	✗	✓	✗	✗
Startup Lab by SRS	1	✓	✗	✗	✗	✓
Indico	0	✗	✗	✗	✗	✗
Brigantia Ecopark	5	✓	✓	✓	✓	✗
Investir Torres Vedras	0	✗	✗	✗	✗	✗
NERSANT - Associação Empresarial da Região de Santarém	3	✓	✗	✓	✓	✗

DNA Cascais	0	✗	✗	✗	✗	✗
StartUp Barreiro	6	✓	✓	✓	✗	✓
IPStartUp	5	✓	✓	✓	✓	✗
IET - Instituto Empresarial do Tâmega	7	✓	✓	✓	✓	✓
Câmara Municipal de Celorico de Basto	1	✓	✗	✗	✓	✗
Município do Fundão	6	✓	✓	✓	✗	✓
Município de Vila Nova de Famalicão	2	✓	✓	✗	✓	✓
NERE - Núcleo Empresarial da Região de Évora	2	✓	✓	✗	✗	✓
Instituto Superior de Agronomia - ULisboa	1	✓	✗	✗	✓	✗
Incubadora de Empresas de Albergaria-a-Velha	1	✓	✗	✗	✗	✓
AIRV - Associação de Incubadoras da Região de Viseu	1	✓	✗	✗	✗	✗

To comprehensively understand the approached startup incubators, a detailed examination was conducted to determine their overall ranking. Sorting the data proved crucial in identifying patterns that would lead to insightful observations about the relative significance of each level. As part of this analysis, a comparative chart was developed, organizing the evaluation of startup incubators based on their respective levels and assessing the impact of each one in Figure 16:

24,3% Level 0	LISPOLIS ADRAL - Agência de Desenvolvimento Regional do Alentejo ANPME - Associação Nacional de Pequenas Médias Empresas Startup Porto Acredita Portugal Startup Montemor-o-Novo Indico Investir Torres Vedras DNA Cascais
18,9% Level 1	Set.Up Guimarães VilaWork Startup Lab by SRS Câmara Municipal de Celorico de Basto Instituto Superior de Agronomia - ULisboa Incubadora de Empresas de Albergaria-a-Velha AIRV - Associação de Incubadoras da Região de Viseu
16,2% Level 2	Audax-ISCTE / Labs Lisboa Associação Nonagon Óbidos Parque Startup Madeira Município de Vila Nova de Famalicão NERE - Núcleo Empresarial da Região de Évora
13,5% Level 3	Inovagaia Startup Leiria IPN Incubadora Amadora Tech NERSANT - Associação Empresarial da Região de Santarém
10,8% Level 5	Build Up Labs UA Incubator Brigantia Ecopark IPStartUp
8,1% Level 6	Productized Município do Fundão Startup Barreiro
8,1% Level 7	Instituto Empresarial do Tâmega Madan Parque Startup Portimão

Figure 16 | Design Thinking Investment Scale - Ranking Of Portuguese Startup Incubators

It can be perceived through the analysis of the previous chart that the highest the level, the fewer startup incubators that hold it, manifesting a progressive expression between sequential levels. Since Level 4 was considered the transitional reference between an adequate approach to design thinking (consistently over time and as a structured methodology for business development), which curiously none of the consulted startup incubators hold, it is possible to evaluate that most of them do not reach a satisfactory investment level on design thinking since 73% are ranked in Level 0, 1, 2, or 3. Only 8.1% of the consulted startup incubators are at the top level, reuniting all the considered investment efforts to promote the most efficient design thinking practices with startups. As such, the average ranking of the consulted startup incubators is 2,51 on the 0 to 7 scale, which reveals a worrisome lack of investment effort in this methodology by the Portuguese ecosystem.

This evaluation does not directly compromise the effectiveness of incubators' practices in design thinking, the reliability of their processes, or the competence of their facilitators, given that this scale only evaluates specific premises likely to allow increased performance in design thinking practices.

4.1.4. Evolution Perspectives

This section promotes reflection on how startup incubators' current design thinking investments could evolve over time. The ultimate goal of these investments is to improve their practices' performance.

These are indicative guidelines whose viability needs to be evaluated alongside a profound interchange with startup incubators dynamics to better adjust its potential to their realities, perspectives, and needs. As such, this interchange will occur through interviews, based on this section, to better understand if these startup incubators are conscious of their current investment level in design thinking, to dissect why they promote this methodology the way they do, and to perceive their will to grow investment in this methodology ultimately.

The analysis of this section is based on the assumption of evolution towards higher levels based on the minimum possible effort. As some startup incubators could drastically increase their evaluation only by investing in a single aspect, others reveal a more subtle and gradual evolution pattern. The alignment of the evolution perspectives was organized from the most significant potential (5 Levels Upgrade) to the least (1 Level Upgrade) with minimum effort, grouping startup incubators that share the same characteristics and that can be analyzed next. Evolutions for startup incubators holding Level 7 were not considered since they fulfill the existing criteria.

5 Levels Upgrade

Current Level

Table 8 | Design Thinking Investment Scale - Applied - 5 Levels Upgrade - Current Level (Level 2)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Município de Vila Nova de Famalicão	2	✓	✓	✗	✓	✓

Next Level

Table 9 | Design Thinking Investment Scale - Applied - 5 Levels Upgrade - Next Level (Level 7)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Município de Vila Nova de Famalicão	7	✓	✓	✓	✓	✓

Município de Vila Nova de Famalicão could benefit from its regular design thinking practices promoted by intern designers to boost their performance. This achievement could be accomplished by promoting design thinking as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas) as they currently do. This change would set this startup

incubator to the top level, being the most expressive improvement with minimum effort, propelling from level 2 to level 7.

4 Levels Upgrade

Current Level

Table 10 | Design Thinking Investment Scale - Applied - 4 Levels Upgrade - Current Level (Level 3)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Startup Leiria	3	✓	✗	✓	✓	✓
IPN Incubadora	3	✓	✗	✓	✓	✓

Next Level

Table 11 | Design Thinking Investment Scale - Applied - 4 Levels Upgrade - Next Level (Level 7)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Startup Leiria	7	✓	✓	✓	✓	✓
IPN Incubadora	7	✓	✓	✓	✓	✓

Startup Leiria and IPN Incubadora lack the frequency that their intern designers approach design thinking with startups. Even though the approach is adequate as a structured methodology for business development, the startups working with these incubators would benefit if these practices would occur continuously, in an evolving and systematic way, rather than being only approached in occasional meetings and events.

Current Level

Table 12 | Design Thinking Investment Scale - Applied - 4 Levels Upgrade - Current Level (Level 2)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Óbidos Parque	2	✓	✓	✗	✗	✓
Startup Madeira	2	✓	✓	✗	✗	✓
NERE - Núcleo Empresarial da Região de Évora	2	✓	✓	✗	✗	✓

Next Level

Table 13 | Design Thinking Investment Scale - Applied - 4 Levels Upgrade - Next Level (Level 6)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Óbidos Parque	6	✓	✓	✓	✗	✓
Startup Madeira	6	✓	✓	✓	✗	✓
NERE - Núcleo Empresarial da Região de Évora	6	✓	✓	✓	✗	✓

Óbidos Parque, Startup Madeira, and NERE - Núcleo Empresarial da Região de Évora outsource designers to promote design thinking with startups. Besides this, design thinking is inadequately addressed as its potential isn't recognized as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas) as they currently do. These startup incubators should benefit from the expertise of the outsourced designers to enroll design thinking as a whole coherent and continuous process for business development.

3 Levels Upgrade

Current Level

Table 14 | Design Thinking Investment Scale - Applied - 3 Levels Upgrade - Current Level (Level 2)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Audax-ISCTE / Labs Lisboa	2	✓	✓	✗	✓	✗
Associação Nonagon	2	✓	✓	✗	✓	✗

Next Level

Table 15 | Design Thinking Investment Scale - Applied - 3 Levels Upgrade - Next Level (Level 5)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Audax-ISCTE / Labs Lisboa	5	✓	✓	✓	✓	✗
Associação Nonagon	5	✓	✓	✓	✓	✗

Audax-ISCTE / Labs Lisboa and Associação Nonagon could benefit from training their interns to promote design thinking as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas) as they currently do. If this procedure seems too ambitious due to a lack of intern resources, these startup incubators could consider outsourcing designers to adequately address design thinking as a structured methodology for business development.

2 Levels Upgrade

Current Level

Table 16 | Design Thinking Investment Scale - Applied - 2 Levels Upgrade - Current Level (Level 3)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Inovagaia	3	✓	✗	✓	✓	✗
NERSANT - Associação Empresarial da Região de Santarém	3	✓	✗	✓	✓	✗

Next Level

Table 17 | Design Thinking Investment Scale - Applied - 2 Levels Upgrade - Next Level (Level 5)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Inovagaia	5	✓	✓	✓	✓	✗
NERSANT - Associação Empresarial da Região de Santarém	5	✓	✓	✓	✓	✗

Inovagaia and NERSANT - Associação Empresarial da Região de Santarém lack the frequency that their interns' approach design thinking with startups. Even though the approach is adequate as a structured methodology for business development, the startups working with these incubators would benefit if these practices would occur continuously, in an evolving and systematic way, rather than being only approached in occasional meetings and events.

1 Level Upgrade

Current Level

Table 18 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Current Level (Level 6)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Productized	6	✓	✓	✓	✗	✓
StartUp Barreiro	6	✓	✓	✓	✗	✓
Município do Fundão	6	✓	✓	✓	✗	✓

Next Level

Table 19 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Next Level (Level 7)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Productized	7	✓	✓	✓	✓	✓
StartUp Barreiro	7	✓	✓	✓	✓	✓
Município do Fundão	7	✓	✓	✓	✓	✓

Productized, StartUp Barreiro and Município do Fundão would highly benefit from hiring designers as interns rather than outsourcing them to promote design thinking with startups. By hiring them, these companies would benefit from dedicated team members that could deepen relationships with in-house startups, playing a more organic and coherent work by getting in touch with their projects more often. This change would set these companies at the top ranking, reaching level 7.

Current Level

Table 20 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Current Level (Level 5)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Build Up Labs	5	✓	✓	✓	✓	✗
UA Incubator	5	✓	✓	✓	✓	✗
Brigantia Ecopark	5	✓	✓	✓	✓	✗
IPStartUp	5	✓	✓	✓	✓	✗

Next Level

Table 21 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Next Level (Level 6)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Build Up Labs	6	✓	✓	✓	✗	✓
UA Incubator	6	✓	✓	✓	✗	✓
Brigantia Ecopark	6	✓	✓	✓	✗	✓
IPStartUp	6	✓	✓	✓	✗	✓

Build Up Labs, UA Incubator, Brigantia Ecopark, and IPStartUp would take a highly competitive advantage by outsourcing specialized designers instead of approaching design thinking by non-designer interns. Since designers are trained for specific design thinking challenges, they will likely be more dynamic in promoting and enhancing this methodology than professionals from other entrepreneurship areas. This investment would benefit these companies by taking a more precise and efficient approach.

Current Level

Table 22 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Current Level (Level 3)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Amadora Tech	3	✓	✗	✓	✗	✗

Next Level

Table 23 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Next Level (Level 4)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Amadora Tech	4	✓	✓	✓	✗	✗

Amadora Tech lacks the frequency that their interns' approach design thinking with startups. Even though the approach is adequate as a structured methodology for business development, the startups working with this incubator would benefit if these practices would occur continuously, in an evolving and systematic way, rather than being only approached in occasional meetings and events.

Current Level

Table 24 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Current Level (Level 1)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Set.Up Guimarães	1	✓	✗	✗	✗	✓
VilaWork	1	✓	✗	✗	✓	✗
Startup Lab by SRS	1	✓	✗	✗	✗	✓
Câmara Municipal de Celorico de Basto	1	✓	✗	✗	✓	✗
Instituto Superior de Agronomia - ULisboa	1	✓	✗	✗	✓	✗
Incubadora de Empresas de Albergaria-a-Velha	1	✓	✗	✗	✗	✓
AIRV - Associação de Incubadoras da Região de Viseu	1	✓	✗	✗	✗	✗

Next Level

Table 25 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Next Level (Level 2)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
Set.Up Guimarães	2	✓	✗	✓	✗	✓
VilaWork	2	✓	✗	✓	✓	✗
Startup Lab by SRS	2	✓	✗	✓	✗	✓
Câmara Municipal de Celorico de Basto	2	✓	✗	✓	✓	✗

Instituto Superior de Agronomia - ULisboa	2	✓	✗	✓	✓	✗
Incubadora de Empresas de Albergaria-a-Velha	2	✓	✗	✓	✗	✓
AIRV - Associação de Incubadoras da Região de Viseu	2	✓	✗	✓	✗	✗

Set.Up Guimarães, VilaWork, Startup Lab by SRS, Câmara Municipal de Celorico de Basto, Instituto Superior de Agronomia - ULisboa, Incubadora de Empresas de Albergaria-a-Velha, and AIRV - Associação de Incubadoras da Região de Viseu could improve their performance by promoting design thinking as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas) as they currently do. Even though this methodology would continue to be used occasionally, mainly in meetings in meetings & events, it is essential to ensure that these moments are highly efficient for the given challenges and clearly expose the relevance of design thinking for business development, opening space for future more consistent approaches.

Current Level

Table 26 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Current Level (Level 0)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
LISPOLIS	0	✗	✗	✗	✗	✗
ADRAL - Agência de Desenvolvimento Regional do Alentejo	0	✗	✗	✗	✗	✗
ANPME - Associação Nacional Pequenas Médias Empresas	0	✗	✗	✗	✗	✗
Startup Porto	0	✗	✗	✗	✗	✗
Startup Montemor-o-Novo	0	✗	✗	✗	✗	✗
Acredita Portugal	0	✗	✗	✗	✗	✗
Indico	0	✗	✗	✗	✗	✗
DNA Cascais	0	✗	✗	✗	✗	✗

Next Level

Table 27 | Design Thinking Investment Scale - Applied - 1 Level Upgrade - Next Level (Level 1)

	Level	Approaches Design Thinking	Consistently Over Time	As A Structured Methodology	Through Interns	Through Designers
LISPOLIS	1	✓	✗	✗	✗	✗
ADRAL - Agência de Desenvolvimento Regional do Alentejo	1	✓	✗	✗	✗	✗
ANPME - Associação Nacional Pequenas Médias Empresas	1	✓	✗	✗	✗	✗
Startup Porto	1	✓	✗	✗	✗	✗
Startup Montemor-o-Novo	1	✓	✗	✗	✗	✗
Acredita Portugal	1	✓	✗	✗	✗	✗
Indico	1	✓	✗	✗	✗	✗
DNA Cascais	1	✓	✗	✗	✗	✗

LISPOLIS, ADRAL - Agência de Desenvolvimento Regional do Alentejo, ANPME - Associação Nacional Pequenas Médias Empresas, Startup Porto, Startup Montemor-o-Novo, Acredita Portugal, Indico, and DNA Cascais do not approach design thinking with startups in any way. The first stage is to approach it somehow. The first steps might include approaching design thinking tools in specific process phases (e.g., to define a problem or generate ideas) or approaching it in meetings or events. The use of interns or designers might depend on each company's resources or investments, but the actors of this approach do not take a crucial position until design thinking isn't consistently approached over time as a structured methodology for business development.

4.2. Structured Interviews

The analysis of this section will be divided into two parts. The nature of the interview structures justifies the differentiation of data treatment: the questions asked to startup incubators that approach design thinking with startups significantly differed from those asked to startup incubators that do not approach design thinking with startups. As the structured interviews were developed to compare different answers to the same questions, the treatment will occur separately to allow more incisive scrutiny. The interviews' numeration was defined through the chronological order in which they occurred.

The first part, Section 4.2.1, will explore and reflect on the answers from the interviews conducted with startup incubators that approach design thinking with startups (those ranked from Level 1 to Level 7 in the Design Thinking Investment Scale):

- 1. Brigantia Ecopark (Level 5);
- 2. IET - Instituto Empresarial do Tâmega (Level 7);
- 3. Startup Madeira (Level 3);
- 4. Startup Leiria (Level 3);
- 5. Startup Portimão (Level 7);
- 6. Build Up Labs (Level 5);
- 8. Madan Parque (Level 7);
- 11. Set.Up Guimarães (Level 1).

The second part, Section 4.2.2., will explore and reflect on the answers from the interviews conducted with startup incubators that do not approach design thinking with startups (those ranked Level 0 in the Design Thinking Investment Scale):

- 7. Startup Montemor-o-Novo (Level 0);
- 9. Startup Porto (Level 0);
- 10. LISPOLIS (Level 0).

The interview material, transcribed and translated to English, can be integrally consulted in Appendix G | Structured Interviews - Organized By Startup Incubators, Appendix H | Structured Interviews - Organized By Questions - Startup Incubators That Approach Design Thinking With Startups, and Appendix I | Structured Interviews - Organized By Questions - Startup Incubators That Do Not Approach Design Thinking With Startups.

4.2.1. Data Analysis - Startup Incubators That Approach Design

Thinking With Startups

This section will approach the first part of the analysis of structured interviews, gathering the answers from startup incubators that approach design thinking with startups. The analysis will be made question by question with the ultimate goal of comparing and evaluating the interviewees' answers relating to their current performance levels. The integral transcription of the given answers can be consulted in Appendix H | Structured Interviews - Organized By Questions - Startup Incubators That Approach Design Thinking With Startups.

Question 1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

From the perspective of the incubators that approach design thinking with startups, this methodology is overall seen as a way to support the idea construction, mapping, and processes, to optimize business ideas, to rethink and ask "why?", to discover what they lack and what they need, and to ensure the effectiveness of the business plan, to fine-tune and improve it.

The comparative analysis shows a close relationship between the value given to design thinking when designers approach it. Incubators that do not approach this methodology through designers are more likely to use it only in the early stages, with a few tools, and not as a whole structured methodology for business development. The top-level incubators said they promote design thinking in specialized boot camps, as the incubators that do not approach it through designers are more likely not to tell the entrepreneurs that they use design thinking or to call it by another name. The design thinking value recognition is higher as higher is the level of mentors' expertise.

- Brigantia Ecopark (Level 5) states that design thinking is approached with startups to support idea construction, mapping, and processes and to optimize business ideas. As they use other tools like Lean and Kaizen, it is reinforced that they are constantly trying to adapt to the reality of each entrepreneur. About the need to give effective support, it is also mentioned that "If we don't know, let's look for someone who knows, matching supply and demand here."
- In IET - Instituto Empresarial do Tâmega (Level 7), they do several boot camps. The most influential is 'Jump Box' - an initiative where they approach entrepreneurship fundamentals, future perspectives, tools needed, market analysis, and pitch during an intensive week. The incubator also mentioned that many entrepreneurs are not sensitive enough to know what some tools are helpful for.

- In Startup Madeira (Level 2), they approach design thinking in their programs through consultants or mentors as they consider it crucial to "rethink" and ask "why?". The ultimate goal is to match the business needs. Even though they value the expertise of their outsourced specialists, sometimes design thinking is approached indirectly in their internal daily operations.
- Startup Leiria (Level 3) approaches design thinking with startups in internal consulting processes. The interviewee said, "In the initial phase when trying to define the product, the proposal for the market, we try to get entrepreneurs to think (...) from the user's point of view". Apart from this, they don't use traditional design thinking methods, doing it their way. They also don't tell entrepreneurs what techniques they use because they consider they don't need to know them.
- The Startup Portimão (Level 7) relationship with startups and design thinking is established through training in boot camps. Their main goal is to help entrepreneurs discover what they lack and need.
- The term 'design thinking' is not used within Build Up Labs (Level 5). They said to prefer the terms 'Lean Startup' or 'Ideation', that they find the same thing. They usually approach this methodology in the first stages of business development. This incubator also has developed its own framework for its in-house startups.
- In Madan Parque (Level 7), the design thinking practices are closely linked to Business Model Canvas. This match ensures the business plan's effectiveness, fine-tuning, and improvement.
- The Set.Up Guimarães (Level 1) experience with design thinking and startups occurred back in time, once they promoted workshops through external facilitators. This experience made them realize that more than promoting design thinking, teaching and explaining its purpose for business development is vital.

Question 2. How has this experience been? How do startups accept this?

Asked about how the design thinking experience has been and how startups have accepted it, most interviewees considered that the experience has been positive. It is said that startups feel involved, and the entrepreneurs are very participative due to the dynamics of the methodology itself, with several advantages for their business development and refinement processes.

- Brigantia Ecopark (Level 5) states that design thinking helped startups to refine and optimize business plans and to be more conscious about the business ecosystem.
- The performance of IET - Instituto Empresarial do Tâmega (Level 7), through their 'Jump Box' boot camps, has led them to promote this initiative in many other municipalities, apart from their direct role as a startup incubator in Amarante.

- From the perspective of Startup Madeira (Level 2), it is advantageous to be conscious of the bugs, problems, and challenges the customer will face as soon as possible. The iterative process is also considered a good opportunity to rethink and refine business ideas and face loose details.
- Startup Leiria (Level 3) set a different perspective. They consider it depends a lot on the entrepreneur's spirit as those with open minds take the best advantage, and those who think they know it all do not recognize its value.
- Startup Portimão (Level 7) (Question not asked, the interviewee did not feel comfortable answering).
- From the point of view of Build Up Labs (Level 5), It is vital to “ensure that the team is aligned” as this experience has led to gathering team members on the same page. These practices have made decision-making faster and more efficient.
- Madan Parque (Level 7) asserts that sharing essential business tools with entrepreneurs is essential. This experience has led to a stage where startups “can think about their business in a structured way using this methodological framework.”
- Set.Up Guimarães (Level 1) argues that “It served, essentially, to discuss and debate some of the challenges they had and effectively try to solve here some solutions to the same challenges.”

Question 3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

When implementing design thinking with startups, there are always challenges to navigate. When asked about this conflict, we found that startup incubators rely on their major challenges and employ various strategies to overcome them. The responses received were diverse, highlighting the different approaches these incubators take.

- Brigantia Ecopark (Level 5) (No answer due to the interviewee's lack of time.)
- IET - Instituto Empresarial do Tâmega (Level 7) said many people still struggle to gather with the entrepreneurship spirit. Some entrepreneurs have reached this startup incubator only knowing they want to be “bosses.” They have an idea, and that is it.
- The biggest challenge for Startup Madeira (Level 2) is the inherent iterative process itself. The act of rethinking as an iterative process for business improvement is sometimes hard to get by established businesses. Some entrepreneurs have realized, through design thinking, that their activity was not as clear for their customers as they thought.

- Once again, Startup Leiria (Level 3) reinforced that it depends greatly on the entrepreneur's spirit as those with open minds take the best advantage, and those who think they know it all do not recognize its value.
- Startup Portimão (Level 7) claims that many entrepreneurs do not know what they really want. Others do know the goal but struggle with the path. Surprisingly, it was also discovered that many people are doing business well and just want to be heard by someone beside them.
- From the perspective of Build Up Labs (Level 5), startups get overwhelmed after workshops because they feel that they do not know what to do with the conclusions they got and struggle with the actual implementation of the projects.
- For Madan Parque (Level 7), there are not as big challenges as they consider that all their mentors are experienced in the field.
- Set.Up Guimarães (Level 1) reflects that the first big challenge is usually the problem identification, saying, "Entrepreneurs often think that they have a certain challenge but that in practice, after being decomposed, after being well analyzed, the challenge is completely different."

Question 4. Do you consider that design thinking is a competitive advantage to startups' business development?

Is design thinking a competitive advantage for startups' business development? All the interviewees asserted it does. Besides how this advantage is apprehended, its expression and given relevance diverge between opinions. Clearly, incubators that don't approach design thinking through specialized designers struggle to recognize design thinking as a unique and indubitable competitive advantage. These incubators that use other professionals to promote it are more likely to say that design thinking is competitive as any other methodology or that it is only adequate for specific project stages, not recognizing its full potential.

- Brigantia Ecopark (Level 5) (No answer due to the interviewee's lack of time.)
- In the opinion of IET - Instituto Empresarial do Tâmega (Level 7), it is a way to look, see and think, and its potential is recognized as they argued that "I really believe that this strategy is very important, which many still don't know."
- Startup Madeira (Level 2) claims that design thinking is as important as any other methodology, as the most important thing is to "understand what the startup is, what the company needs, what the big challenge is." Design thinking is seen as relevant "to

always improve and adapt your product and service (...) regardless of the stage it is in (the startup/company)."

- From the perspective of Startup Leiria (Level 3), even though design thinking is a competitive advantage, it is not necessary to use it all, "just the part of empathizing, diverging and converging." It was also said, "People often don't know that we are using design thinking, nor do they have to. It is what it is."
- Startup Portimão (Level 7) is sure that it is a competitive advantage as the entrepreneurs acquire more experience, different perspectives, and opinions.
- The effectiveness of design thinking is a challenge for Build Up Labs (Level 5) said that one of the problems is frequently being stuck in ideation. Design thinking is not seen as a great methodology to execute projects integrally, even though they recognize it as a competitive advantage.
- Madan Parque (Level 7) states, "It helps simplify the business and get a better and more conscious value proposition."
- For Set.Up Guimarães (Level 1), it sure is, as "The goal of reaching solutions to solve problems through creativity turns out to be very important." They claim many entrepreneurs do not recognize its value until they get in touch with design thinking practices, and It can be particularly interesting to more technological startups unfamiliar with these methodologies as "It makes them come out of the box."

Question 5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

Asked about if a coordinated approach to design thinking could outcome in a higher chance of success for startups, the opinions were not as consensual as when asked about it being a competitive advantage.

- Brigantia Ecopark (Level 5) (No answer due to the interviewee's lack of time.)
- The impact of design thinking in IET - Instituto Empresarial do Tâmega (Level 7) has led them not only to recognize and promote it as a success factor as these practices have also influenced the incubators' culture since they do it themselves in their internal operations.
- In Startup Madeira (Level 2), they are sure of design thinking potential as a success factor claiming that "I think design thinking can be and should be one of those (methodologies) that helps to create greater success here."

- From the perspective of Startup Leiria (Level 3), the chance of succeeding alongside design thinking is guaranteed and exponentially bigger because “then you are already talking to the market.”
- Startup Portimão (Level 7) thinks it really depends. Apart from this, they consider having mentors with specific expertise that can be an added value.
- In Build Up Labs (Level 5), they do not know if it does, as many of their startups have not even approached it.
- For Madan Parque (Level 7), it is incontestable that if entrepreneurs are “well advised and understand the advantages of this type of methodology and specific tools, then they can be more agile in the market.”
- It is undoubtedly for Set.Up Guimarães (Level 1), “Mainly because they better understand the problems and needs of the customers and in my view products or services to be successful have to solve problems for people, potential customers.” They add that “First there is a problem and then the product must solve the problem. Design thinking can actually help to invalidate the product or service at an early stage, and that's also important, rather than spending money and time on something no one will want.”

Question 6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

Measuring performance seems to be the biggest struggle startup incubators face when dealing with design thinking in incubation programs. Most of the interviewees claimed they do not have an effective way to evaluate how agile they have been along their processes. The most effective tools and impactful actions are predominantly observed in top-rated incubators. These incubators, which invest significantly in design thinking, demonstrate a heightened awareness of measuring the value and impact of their initiatives.

- Brigantia Ecopark (Level 5) (No answer due to the interviewee's lack of time.)
- In IET - Instituto Empresarial do Tâmega (Level 7), they do questionnaires through an outsource company, ISCTE, “which is carrying out the impact assessment. We pay to do this assessment so that we know at the end of this year how much of an impact it has been.” Even though this is a relatively new conduct for this startup incubator, which started about a year ago, they recognized the needed impartiality in the evaluation process as they state that “One thing we realized was that I can't be the one to ask these questions because then I'm already so in (...) that I could be influencing”.
- For Startup Madeira (Level 2), the evaluation is made case by case, and the only milestone is to understand whether the workshop improved startup projects or not

through a “yes or no” pole. From their perspective, it takes time to understand if these practices will effectively outcome in more sales, clicks, or overall communication.

- Startup Leiria (Level 3) does not have a way to measure their performance impact, as “We have no way of measuring, nor is it an indicator that we are very interested in understanding.” The interviewee adds, “I often don't even know what techniques were used.”
- In Startup Portimão (Level 7), they evaluate their practices through a questionnaire to understand improvement opportunities. The entrepreneurs are also asked for suggestions for future meetings in a way that suits their real needs the best.
- In Build Up Labs (Level 5), it is a more organic process, but they are conscious of this need as they asserted, “One thing that we have been reflecting on in recent months is our lack of evaluation or metrics to assess the impact of what we do with startups. It's a topic we'd like to explore further.”
- The high demand that Madan Parque (Level 7) faces latterly has turned all their efforts to deliver their services. They consider measuring is really important, but “we haven't reached the stage where we can start measuring” besides the growing number of customers, raised capital, and funding. Overall, they consider this issue bigger than themselves: “There is a long-standing need for the national entrepreneurial ecosystem to have better-developed metrics that allow us to extract specific information from the startups we support.”
- For Set.Up Guimarães (Level 1), as they do not promote design thinking quite often, is more about understanding if something has changed and how. The interviewee argued, “We have no way of quantitatively measuring the impact, unfortunately.”

Question 7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

Asked about the opportunities for improvement they would like to invest in when approaching design thinking with startups, most interviewees recognized that there are always things to be improved and that change must be constant to adapt to ever-new realities. The biggest concerns were related to the lack of human resources, financing, and capacity building.

- Brigantia Ecopark (Level 5) reinforces that evolution has to be constant as the market is. Concretely, “What we now want to do even in terms of financing (based on the program Portugal) 2030 is to continue to form teams, we also feel that we need to grow.”
- IET - Instituto Empresarial do Tâmega (Level 7) states that “We need more human resources (...) we only have three permanent people here.”

- Startup Madeira (Level 2) programs must continuously evolve as technology, people, and the market do. As such, they are also trying to keep up and adapt to new trends to improve their performance.
- According to the related constant improvement need, Startup Leiria (Level 3) is conscious that it would make sense for them to have a tool that would integrate most of their practices coherently.
- Startup Portimão (Level 7) is confident about their team's consistency, which can answer most challenges. As they are an external company hired by the Portimão municipality, their company is self-considered highly trained.
- From the Build Up Labs (Level 5) perspective, they would like “to help startups to execute more” and “what's missing is the follow-up.”
- Madan Parque (Level 7) asserted three main fundamentals they would like to be improved, “The issue of capacity build, retaining talent in the team and eventually recruiting new human resources (...) to become even more competent.”
- In Set.Up Guimarães (Level 1), they have the “intention and interest to increasingly use design thinking in other workshops. I think it makes perfect sense.” This investment is justified as “Everything that is pedagogical for us is important and almost a priority.”

Question 8. Specific Question (Level Related)

The last question was specifically related to the evolution perspectives the startup incubators could achieve based on perceived potential through the analysis in the previous section - 4.1.4. Evolution Perspectives. This reflection would ultimately be able to analyze startup incubators' self-consciousness about their performance on design thinking practices with startups and understand their will to promote or invest in them, aligning their potential to their realities.

- Brigantia Ecopark (Level 5) was asked, “Since this methodology is approached by interns that are not designers, have you ever thought of hiring designers to approach this methodology? Do you feel like it would be an advantage?”. The incubator argued that they have thought about hiring designers to promote this methodology (interns or outsourced) as well as for communication and marketing matters.
- IET - Instituto Empresarial do Tâmega (Level 7) was asked, “Do you feel it is crucial to have intern designers approach this methodology? Why?”. The incubator asserted that it is, “We need to go get people who are comfortable working in that area so that they own the passion they already have, it's easier to get the message across (...) It is an investment that makes perfect sense.”
- Startup Madeira (Level 2) was asked, “Since this methodology is approached by outsourced designers, have you ever considered promoting design thinking as a

structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas)?". The incubator asserted that they have thought about it, "I believe that the methodology is so interesting that this ends up being done in a dynamic and authentic way during the programs even if it is not the name (...) What can happen is still forcing or reinforcing this in our programs."

- Startup Leiria (Level 3) was asked, "Since this methodology is approached by intern designers, have you ever thought about approaching this methodology consistently over time and not only in meetings & events? Do you feel like it would be an advantage?". The incubator said they have never considered it due to financial issues and because they look forward to specialists that have a broader knowledge range and are not too specialized in a specific subject.
- Startup Portimão (Level 7) (Question not asked, the interviewee did not feel comfortable answering).
- Build Up Labs (Level 5) was asked, "Since this methodology is approached by interns that are not designers, have you ever thought of hiring designers to approach this methodology? Do you feel like it would be an advantage?". The incubator said no because they are a small team due to a lack of resources. Apart from this, thinking about their external mentors, "Having someone from design thinking in our network I think it would make sense because it's something that I don't think we have."
- Madan Parque (Level 7) was asked, "Do you feel it is crucial to have intern designers approach this methodology? Why?". The incubator stated, "I learned from a group of researchers who introduced design thinking in Portugal, almost 30 years ago, and I learned from the source (...) we learned from whom we should have learned. It's a satisfaction."
- Set.Up Guimarães (Level 1) was asked, "Have you ever considered approaching this methodology consistently over time and not only in meetings & events and as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas)? Do you feel like it would be an advantage?". The startup incubator realized they never thought about design thinking from this perspective: "Effectively, our team does not have the capacity or availability, unfortunately, to promote this type of sessions" and "We can, effectively, go get some external entity as we did."

4.2.2. Data Analysis - Startup Incubators That Do Not Approach Design Thinking With Startups

This section will approach the second part of the analysis of structured interviews, gathering the answers from startup incubators that do not approach design thinking with startups. The analysis will be made question by question with the ultimate goal of comparing and evaluating the interviewees' answers relating to their current performance levels. The integral transcription of the given answers can be consulted in Appendix I | Structured Interviews - Organized By Questions - Startup Incubators That Do Not Approach Design Thinking With Startups.

Question 1. Which business development methodologies do you approach with startups? What could I expect if I was a startup?

Asked about the business development methodologies these incubators approach with startups, the answers swung a lot among the interviewees.

- Startup Montemor-o-Novo (Level 0) hasn't referred to any specific methodology, only stating that they promote bimonthly meetings to "have things settled and a guiding line for that project."
- The case of Startup Porto (Level 0) reveals that the incubator's early stage of maturity has not led them to promote a defined methodology yet. Their current action is based on their partners' programs and initiatives since they are currently developing their two own internal programs.
- LISPOLIS (Level 0) said they mix the business development model and lean startup. The goal is always validation.

Question 2. Have you ever considered approaching design thinking with startups?

All these incubators have never approached design thinking with startups. Asked if they had ever considered approaching it, two showed interest, and the other discarded the hypothesis.

- Even though Startup Montemor-o-Novo (Level 0) would like to promote it, they recognize they do not have the competence in their internal resources to do so.
- As Startup Porto (Level 0) is currently developing their own programs, design thinking is expected to be included since they have experienced these methodologies through its partners' initiatives.
- LISPOLIS (Level 0) said they have never considered it.

Question 3A. What is keeping you away from approaching it? What do you find more challenging about doing it?

Among the two incubators that are willing to promote it, the major challenges vary between them.

- Even though Startup Montemor-o-Novo (Level 0) recognizes that design thinking would have to be dynamized through third parties, they realize this methodology needs more effort than just happening in one or two sessions throughout the year.
- In Startup Porto (Level 0), they are open to suggestions and are analyzing the best methodologies to support their startups with internal programs. At this time, design thinking is considered part of the plans.

Question 3B. Why not?

- LISPOLIS (Level 0) do not see any advantage in using this specific methodology since they do not tell startups which methodologies they use. They consider that a bunch of methodologies are doing the same thing. The drive is more important than the tool.

Question 4A. Do you consider that you have enough internal resources to promote it? Would you find outsourcing designers to promote it in the first stages easier?

The confidence levels diverged between these two startup incubators.

- Startup Montemor-o-Novo (Level 0) considers that they do not have the appropriate resources to promote it. They would consider outsourcing since "It has to be through someone much better than I can do it."
- Otherwise, in Startup Porto (Level 0), They consider having capable people within their team to promote design thinking at a great level. They do not doubt that they have more than enough skills to get along with this methodology.

Question 4B. Would you be willing to approach it somehow? What do you find more challenging about doing it?

- LISPOLIS (Level 0) (Question not asked, the interviewee implied this is not a hypothesis to be considered).

Question 5. Do you consider that design thinking is a competitive advantage to startups' business development?

All the interviewees recognized design thinking as a competitive advantage to startups' business development. The perspectives about this advantage impact and outcome deviate.

- Startup Montemor-o-Novo (Level 0) stated, "Anything that complements the basics of business is a competitive advantage." From their perspective, it is essential to consider

all the synergies involving the business besides the product or the service itself, offering a broader view.

- Startup Porto (Level 0) agrees, especially about consumer needs. They add that it would be positive in a way that "I would say that it will respond to most of the business initiatives we can work with here."
- LISPOLIS (Level 0) recognized its value as any other tool, saying that design thinking "being used alone it will not lead to anything." From their perspective, it is just one more tool that can be used.

Question 6. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

The potential of a higher chance of success for startups using design thinking was considered indubitable.

- Startup Montemor-o-Novo (Level 0) said that, besides agreeing, entrepreneurs anticipate problems that those inside the business core usually find hard to perceive. They consider design thinking might help with this process as "I feel that a little bit at these meetings is me confronting them with issues that did not arise."
- Startup Porto (Level 0) considered that one of this experience's best advantages is "having people capable of being aware of the offer that exists in terms of models, having knowledge of the ecosystem and the partners that make it up."
- LISPOLIS (Level 0) (Question not asked, the interviewee implied that it is not a distinctive methodology).

Question 7. Do you think design thinking would effectively make your company more appealing to startups?

Asked if they think design thinking would eventually make their incubators more appealing for startups, the overall opinion is that it would.

- In Startup Montemor-o-Novo (Level 0), they would consider it a differentiating factor as "there are not many of us either (in the region) (...) and I think this is important from a perspective of continuous improvement. (...) Everything you add to the services is an added value."
- For Startup Porto (Level 0), it depends a lot on the incubator's evolution stage. "If the incubator is operating in a more general way and if the target public is different types of promoters, let's say, with their projects with different types of needs (...) it will be interesting for us to have as many methodologies as possible so that we can understand which one can be better accepted by entrepreneurs."

- In the opinion of LISPOLIS (Level 0), "The best people I know to do this don't use just one tool. (...) The more tools people have (...) the more likely they are to solve their problems."

4.2.3. Main Findings

Brigantia Ecopark (Level 5) overall shows an appropriate attitude to promote design thinking best practices to support the idea construction, mapping, and processes and optimize business ideas. They consider that this methodology helps startups to refine and optimize business plans and to be more conscious about the business ecosystem. They also complement it with other methodologies like Lean and Kaizen to better respond to diverse business challenges. From the investment perspective, the incubator is willing to hire designers (interns or outsourced) to promote this methodology and other design tasks.

If Brigantia Ecopark hired outsourced expert designers to invest in design thinking as a structured methodology for business development, the incubator would upgrade to Level 6. The incubator states that their lack of available human resources and the needed investment for hiring in-house expertise staff is unsustainable in the short term. This achievement would push Brigantia Ecopark to the top level of the Design Thinking Investment Scale, Level 7.

In **IET - Instituto Empresarial do Tâmega (Level 7)**, the investment in design thinking-related programs has led to the creation of a boot camp called 'Jump Box' - where entrepreneurship fundamentals, future perspectives, tools needed, market analysis, and pitch are approached during an intensive week. The success of this program has led them to promote these practices outside their incubation activity in Amarante. They highly perceive this methodology's benefits by recognizing their in-house specialists' value. This investment has also influenced the incubator culture since they promote it themselves in internal operations. This design-oriented ecosystem has ultimately led them to recognize the need to evaluate their practices. This evaluation is promoted through an outsourced company conducting extensive performance analysis to better perceive the entrepreneurs' needs and expectations.

Startup Madeira (Level 2) valorizes the experience they have been having with external designers to promote design thinking practices with startups. Even though the iterative process was described as the most challenging factor in this methodology, it is described as crucial for rethinking and refining business ideas and facing loose details. Design thinking is seen as any other methodology, yet they recognize its potential to improve products and services regardless of the startup development stage, considering it a potential value creator that promotes higher chances of succeeding.

The incubator still lacks in promoting design thinking as a structured methodology for business development, only taking advantage of it in specific phases or business challenges. This investment in how Startup Madeira approaches design thinking with startups would set their ranking to Level 6.

Startup Leiria (Level 3) states they do not use traditional design thinking methods, approaching their own interpretations. They consider this methodology as a whole process unnecessary, just the empathizing phase, converging and diverging procedures. It was also perceived that the entrepreneurs do not know they are using design thinking and would not have any advantage in knowing it from this incubators perspective. The potential of design thinking to increase startups' success chances was considered significant. Even though they do not use design thinking as a structured methodology or in a consistent way, they refer that they lack a tool that would integrate most of their practices.

Investing in a more consistent approach to this methodology through their design expertise could reveal its benefits as an answer to their need for a tool that integrates it all. This change could help them increase their business mentoring performance to help entrepreneurs sustainably develop their businesses. This investment would set Startup Leiria to Level 7.

In **Startup Portimão (Level 7)**, the relationship between startups and design thinking is mainly established through boot camps in which the main goal is to seek what entrepreneurs lack and need. Design thinking is recognized as a competitive advantage for entrepreneurs by acquiring more experience and different perspectives and opinions, being also recognized as an added value for business performance. They valorize the evaluation of their practices by reaching the entrepreneurs through questionnaires to improve their internal practices and to get in touch with their needs and expectations for future initiatives. They consider their robust and consistent team critical in providing this joyful experience.

In **Build Up Labs (Level 5)**, they do not use the term 'design thinking', preferring the terms 'Lean Startup' or 'Ideation' that they find the same thing. They usually approach this kind of methodology in the first stages of business development, and they find it crucial to align the team and increase the effectiveness and speed of decision-making. They mainly promote this methodology through workshops, but they realize startups struggle to test and implement their business ideas, being commonly stuck in ideation. They do not recognize its value as a structured methodology for business development, but they still recognize its potential. They recognize tho they rely on evaluating their practices to improve their action with startups. The lack of valorization from Build Up Labs about the true potential of design thinking could be changed through the approach of expert designers. This investment could make them overpast their problems of being stuck in specific process stages.

By hiring outsourced expert designers as a way of investment in design thinking as a structured methodology for business development, Build Up Labs would upgrade to Level 6. By investing in hiring in-house designers at a later stage, the incubator would reach Level 7.

Even though **Startup Montemor-o-Novo (Level 0)** have never approached design thinking with startups, they would like to do so but recognize their lack of internal resources. They would consider outsourcing specialists as they recognize this methodology as a competitive advantage to complement basic business principles. They recognize its advantages by allowing a wiser consciousness about the business ecosystems and anticipating problems through its iterative process. They would consider it a differentiation factor as there are not too many competitors in the region, and they consider it essential to promote continuous improvement and ways to reach added value.

By simply investing in design thinking practices in its incubation programs, Startup Montemor-o-Novo would reach Level 1. Extra efforts in this implementation process, according to the Design Thinking Investment Scale, could directly set them to higher levels.

Madan Parque (Level 7) approaches design thinking to ensure the business plan's effectiveness, fine-tuning, and improvement. They recognized it as a way to simplify business ideas and be more conscious about the value proposition. It is said that entrepreneurs clearly aware of this methodology and its specific tools are more likely to be agile in the market. The incubator is looking to become even more competent in capacity building and retaining talent in its team. They ultimately valorize their design thinking expertise by learning from a group of researchers that introduced design thinking in Portugal 30 years ago.

As **Startup Porto (Level 0)** is in its early stages of development as an incubator, they are considering including design thinking in their internal programs. This intention is provided by the positive experience they have been having with their partners that promote design thinking initiatives in their cores. They also consider having capable internal resources to adequately promote this methodology that could answer most of the business challenges their startups might face. From their perspective, the entrepreneurs must be aware of a wide range of models they could benefit from, adapting the best fit to each case.

By simply promoting design thinking in their operations, Startup Porto would reach Level 1. Extra efforts in this implementation process, according to the Design Thinking Investment Scale, could directly set them to higher levels.

In **LISPOLIS (Level 0)**, they have never considered approaching design thinking with startups because they do not see any advantage in using this specific methodology, arguing that many methodologies do the same thing. The incubator does not tell its entrepreneurs which methodologies or tools they use to mentor them because they do not find it relevant. They consider that a methodology alone will not lead anywhere, having to be coordinated with other processes.

There are no expected evolution perspectives in this case.

For **Set.Up Guimarães (Level 1)**, it is essential not only to promote but to teach and explain the purpose of design thinking for business development when approaching this methodology with startups. Even though it only took place in occasional workshops in the past through outsourced specialists, design thinking is seen as a way to face business challenges and better understand customers' problems and needs more effectively. They also claimed it could be particularly interesting to explore this methodology alongside technological startups that are not used to this kind of technique, being an opportunity to "come out of the box."

Set.Up Guimarães would like to promote design thinking more often even though they claim a lack of internal resources. By investing in a more consistent attendance of their outsource specialists to promote design thinking, the incubator would reach Level 2. Asked about the idea of promoting design thinking more coherently as a process for business development, they said they had never thought about this opportunity. By considering this investment, the incubator would reach level 3.

Chapter 5 - Conclusions

5.1. Discussion Of Findings Against Research Questions

In this section, we will discuss if and how the defined main research questions were answered through the resulting findings from the triangulation of methods between qualitative approaches (literature review and structured interviews) and quantitative approaches (online survey). This reflection will precisely analyze this investigation's success by evaluating each method's pertinence to get the most robust findings to achieve the desired outcomes.

A. Can growing investment in design thinking practices promote a higher chance of success for startups?

Design is increasingly recognized as a crucial competitive advantage for companies seeking growth (Frog, 2018), playing a decisive catalytic role (Best, 2010). The performance of design-driven companies surpasses their competitors in various key aspects, such as "time-to-market, adoption rate, share of wallet, market share, revenue growth, profitability, and brand value" (Björklund et al., 2020, p. 101). This impact is measured by studies like the *Design Value Index*, which reveals that design-driven companies achieved a remarkable 211% return compared to the S&P500 by adopting designers' distinctive problem-solving approach (Rae, 2016).

Val et al. (2019) emphasize that creativity, problem-solving, self-confidence, and collaboration - the core principles of design thinking - are fundamental entrepreneurial skills. Vnukova et al. (2022) argue that combining innovation, design thinking, and adequate funding creates ideal conditions for thriving startups, as design thinking has proven highly effective in startup business planning, problem resolution, stakeholder engagement, target audience identification, risk reduction, and management decision-making.

According to research by Ravasi & Stigliani (2011), the primary challenges that dictate the failure of startup projects include the absence of design cultures. This acknowledgment may reveal why design thinking still struggles to achieve a solid position among these entrepreneurs, even though the investment in this methodology could help to evolve through the other struggles they commonly face, like "ambiguous brief," "lack of clear boundaries," and "lack of feedback at the end." (p. 236) when developing a project. Conversely, startups were recognized by excelling in terms of "successful championing," "internal politics," "minimal risk aversion," "strong involvement/relevant functions," and enjoying "full support of top managers" compared to "SMEs, multinationals, and design-oriented companies" (p. 236), which contradictorily reveals a

set of characteristics that promote a design-friendly environment (Jenkins, 2010) that could be highlighted by a coherent approach of design practices and its value proposition.

The developed online survey and structured interviews reveal that incubators lacking specialized designers in their approach to design thinking struggle to recognize this methodology as a distinctive and undeniable competitive advantage for business success. Conversely, incubators investing heavily in design thinking are more likely to acknowledge its value, indicating a positive correlation between investment and perceived value. Besides this, the general positioning of the interviewed startup incubators reveals that the majority recognizes this methodology as a successful enabler for startups, among other distinctive advantages for business development.

In conclusion, strategically implementing design thinking in the context of startups has been proven to increase the viability of success, accelerate market entry, and reduce investment risks in innovation (Vnukova et al., 2022). The author argues that the combination of design thinking principles, adequate funding, and a supportive culture create an ideal environment for the development and growth of startups. By embracing design as a competitive advantage, startups can overcome challenges and enhance their chances of success in today's dynamic business landscape.

B. How relevant is design thinking in the Portuguese startup ecosystem?

Based on an online survey of 37 Portuguese startup incubators, representing a significant sample of the national panorama, this research shows that most Portuguese startup incubators approach design thinking with startups (75.7%). Besides this, only a few (27%) approach design thinking consistently over time and as a structured methodology for business development. This reality reveals a generalized underutilization of design thinking, as most startup incubators do not recognize its essential competencies to promote significant changes in their strategic core. Design thinking is generally used in specific stages of the process or through occasional meetings and events in the Portuguese startup ecosystem rather than being consistently integrated into a strategic framework over time. As such, roughly less than 1 in 4 startup incubators properly approach design thinking in Portugal as a consistent and innovation-driven methodology. As design thinking has demonstrated its potential as a competitive advantage in developing new businesses, it becomes crucial to actively promote this methodology in a more appealing and involving way. Neglecting to do so could result in the unfortunate loss of valuable opportunities that may arise from the misuse of this process. Only a tiny fraction (8.1%) of national startup incubators have invested in hiring and integrating designers into their teams

to promote design thinking consistently over time and as a structured methodology for business development with startups.

The Design Thinking Investment Scale offers a fresh perspective on the relevance of design thinking within the national entrepreneurial ecosystem, ranging from Level 0, where startup incubators do not approach design thinking with startups, to Level 7, where startup incubators approach design thinking with startups consistently over time and as a structured methodology for business development through intern designers. The findings from the data collection stage demonstrate that Portuguese startup incubators have an average evaluation of 2,51 on the 0 to 7 scale, highlighting a perceived lack of investment. Once again, this evaluation does not directly compromise the effectiveness of incubators' practices in design thinking, the reliability of their processes, or the competence of their facilitators, given that this scale only evaluates specific premises likely to allow increased performance in design thinking practices.

This paradigm shift plays a crucial role in driving increased investment in design thinking practices. The investigation process revealed specific drivers, called Evolution Perspectives, that each approached startup incubator could embrace, with minimum effort, to improve their performance in design thinking. The recognized potential, among other aspects, was discussed with the same startup incubators through structured interviews to perceive their perception of positioning and ambitions related to design thinking practices. This approach revealed that most entrepreneurs are conscious of the need for constant evolution and adaptation to the reality of an ever-changing market. They also recognize the potential to improve their design thinking performance. Still, even though most of them would like to invest more, the biggest limitations relate to a lack of human resources, short financing, and the need for growing capacity building.

The pertinence of evolving The Design Thinking Investment Scale considered the ultimate outcome of this research process, is supported by an emerging need for startups to perceive and evaluate the value design thinking might have in their performance. By conducting structured interviews with startup incubators, it was perceived that performance evaluation is the biggest struggle startup incubators face when approaching design thinking. Most interviewees expressed their inability to evaluate the efficiency of their design thinking processes, not fully recognizing how impactful, useful, or valuable this methodology has been with startups. This gap can play a major limitation in evolution perspectives in design thinking investment since its current value is not effectively perceived. Notably, it is interesting to state that the highest-rated incubators, those that prioritize investment in design thinking and place significant emphasis on measuring impact value, exhibit the most effective tools and take more

incisive actions in this regard. These findings ultimately reveal that higher investment in design thinking is directly related to better recognizing its value proposition.

In summary, the potential of design thinking in the Portuguese entrepreneurial ecosystem is far from being valued as a coherent and consistently approached methodology for business development. There is an evident gap between design thinking value proposition and consonant investment by Portuguese startup incubators. Despite recognizing its validity by most incubators, the ecosystem still faces low investment and suffers from inadequate approaches that fail to realize its true potential fully. Developing a specific strategy to promote and approach this methodology adequately is crucial, offering exclusive guidelines for each incubator's capacity building that ultimately answer the needs and expectations of their markets. This approach ultimately aims to empower the Portuguese entrepreneurial ecosystem by highlighting the pivotal role of design thinking in boosting their competitiveness and fostering systemic innovation.

5.2. Contribution To Knowledge

This research process is expected to significantly contribute to knowledge development for design thinking as a structured methodology for business development, especially for startup ecosystems. The overall contribution of this investigation is foreseen to impact different levels:

1. Gap Disclosure:

This study aims to offer a distinct perspective on the current investment and dynamics of design thinking in the Portuguese startup ecosystem. It addresses the identified gap concerning the value proposition of design thinking and the lack of investment efforts made by national startup incubators. Through the data analysis from the online survey and structured interviews, it is now possible to get an overview of this methodology's relevance for startups' business development.

2. Synergies Breakthrough:

The investigation into the relevance of design thinking in startup ecosystems, both in Portugal and globally, has uncovered a widespread lack of research in this area, primarily through an extensive literature review. These synergies are not being explored to their full potential, leaving room for further investigation. This acknowledgment and the main findings of the conducted research process aim to initiate a deliberate and comprehensive approach to unlock the potential of design thinking within startup ecosystems in Portugal, reinforcing its competitive advantage for business development and fostering systemic innovation.

3. Design Thinking Investment Scale:

A critical outcome of this research is the development of this scale, an effective measurement tool for evaluating the extent to which startup incubators embrace design thinking. It ranges from no approach to design thinking (Level 0) to promoting design thinking as a consistently approached structured methodology for business development by intern designers (Level 7). This assessment will ultimately contribute to a wiser and more precise comprehension of investment levels made by different players in the Portuguese startup ecosystem, allowing critical comparisons and developing more adequate evolution perspectives based on their performance, constraints, needs, and expectations.

4. Innovation Catalyst:

The reflection on the Design Thinking Investment Scale has instigated a dynamic opportunity search for national startup incubators. The conceptual framework derived from this reflection includes a set of suggestions that can significantly benefit these startup incubator practices. Some can enhance their performance by progressively investing in various competencies. On the other hand, others can directly benefit from employing design thinking to overcome existing constraints.

5.3. Limitations

Throughout the investigation course, some limitations have modified the way this process was conducted. It was considered essential to reflect on them to develop a more conscious self-evaluation of the overall process. The main limitations of this research are detailed below:

1. Lack Of Case Studies Relating To The Portuguese Startup Ecosystem:

There was a widespread lack of information regarding the Portuguese startup ecosystem's dynamics, performance, and working methods. The available information on this topic mainly consisted of national and international reports that focus primarily on providing quantitative data about the overall characteristics of startup incubators. The perceived lack of research on the relevance of design thinking for this ecosystem innovation strategy further reinforces the knowledge gap.

2. Data Collection Restricted To Accredited Startup Incubators:

The need to define specific criteria for whose incubators to be approached has led to the choice of including only incubators from: 1) IAPMEI, the national agency for entrepreneurship in SMEs, powered by the Portuguese Ministry for the Economy, and 2) Made of Lisboa, the most significant local entrepreneur community, highly considered since Lisbon is the most expressive city in number and investment in the national startup ecosystem, according to the report of IDC & Startup Portugal (2022). This decision was made to ensure research data quality. The sample was restricted to 120 incubators nationwide, neglecting many other incubators not considered by the most influential players.

3. Online Survey And Structured Interviews Answer Rate:

In the first approach, startup incubators were asked to complete an online survey to evaluate their practices with startups. In an attempt to increase the answer rate, two versions of the same survey were developed - Portuguese and English - allowing them to answer in the language they felt most comfortable with. 38 of the 120 approached incubators submitted responses, representing an answer rate of 31.6%. Only 37 were considered valid. The same 37 incubators with valid submissions were later approached to give an online interview in which each structure was developed according to the answering pattern on the online survey. 13 of the 37 approached incubators booked interviews, representing an answer rate of 35.1%. Of the booked interviews, 12 were conducted, but only 11 were considered valid. Even though a more significant answer rate would more precisely represent the national panorama, the collected data allies

evidences from incubators from all over the country with different characteristics, representing a coherent satisfactory sample.

4. Time Constraints For In-Site Evaluation Processes:

Due to startup incubators' natural time constraints, the data collection process was integrally developed online in order to make it more agile and appealing. The assumptions were based on the answers given by the respondents through this channel. We expect that respondents responsibly considered the given answers by sticking to the closest of their practices' truth and that those answers were given by someone aware of these practices, as asked in every stage of this process. The given interviews are subjected to the respondents' perspectives about the inquired topics, unable to give a fair outcome of their startup incubator's practices. Even valid and legit, the given answers could be combined with actual in-site follow-up of these practices to ensure these assumptions' validity. The time limitation for this research development did not let these practices occur.

5.4. Future Work

Future works based on the collected data could overcome some of the stated limitations even though the potential of this investigation does not end there, as other further investments could enrich the understanding of the relationship between design thinking and startup incubators practices in the Portuguese entrepreneurial ecosystem. The main developments of this investigation could evolve into four strands - Action, Perception, Expansion, and Evaluation:

1. Action:

Implement a proactive strategy to address the identified gaps in the data collection process. This approach includes assisting incubators interested in approaching design thinking but lacking the knowledge to do so. Those looking forward to improving their design thinking practices would benefit from addressing a coordinated action plan that involves developing frameworks that fulfill their specific needs and expectations.

2. Perception:

Develop a coordinated approach to realize how startups in incubation programs perceive value in design thinking practices. The goal should be to evaluate in which way entrepreneurs recognize design thinking potential for business development and how they do or do not apply it in their daily activities.

3. Expansion:

Coordinate a wide-ranging application of this investigation process. Bringing together different stakeholders in the Portuguese entrepreneurial ecosystem would provide a more comprehensive understanding of the current investments in design thinking. This collective effort could facilitate more thoughtful strategic planning to increase investment in design thinking for business development and fostering innovation.

4. Evaluation:

Deepen understanding of how incubators promote this methodology. It is crucial to understand the dynamics between the facilitators and the entrepreneurs in order to perceive which model is performed, which tools are applied, and the overall coherency within the design thinking process. This approach, alongside the collected data in the current investigation process, could contribute to specific metrics that relate the investment in design thinking (the Design Thinking Investment Scale) and the actual performance increase this investment represents for business development processes.

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Appendices

Appendix A | Online Survey - List Of Approached Startup Incubators

Table 28 | Online Survey - List Of Approached Startup Incubators

Order	Name	County	Address	Telephone / Email / Website	Source	Replied	Language	Answer No.
1.	DNA Cascais	Cascais	Ninho de Empresas DNA Cascais, Cruz de Popa 2645-449 Alcabideche	214680185 geral@dnacascais.pt https://www.dnacascais.pt/	IAPMEI (2023)	Yes	Portuguese	8P
2.	Startup Lisboa	Lisboa	Rua da Prata N°s 78 / 80 1100-413 Lisboa	geral@startu plisboa.com <a href="https://www.startu
plisboa.com/">https://www.startu plisboa.com/	IAPMEI (2023)			
3.	Amadora Tech	Amadora	Rua Henrique Paiva Couceiro, N° 10 2700-453 Amadora	214997800 correio@amadorai nova.pt http://amadorainova.pt/amadora-tech/	IAPMEI (2023)	Yes	Portuguese	1P
4.	Centro de Incubação Empresarial - AIP	Lisboa	Praça das Indústrias Apartado 3200 EC Junqueira 1301-918 Lisboa	empreender@aip.pt http://www.aip.pt/pt/empreendedorismo/incubadora-aip	IAPMEI (2023)			
5.	Madan Parque	Almada	Rua dos Inventores 2825-182 Caparica	210438600 info@madanparque.pt https://madanparque.pt/	IAPMEI (2023)	Yes	English	20E
6.	Build Up Labs	Lisboa	Edifício Altejo, Rua 3 da Matinha, N° 101 1950-326 Lisboa	218988160 hello@builduplabs.com https://builduplabs.com/	IAPMEI (2023)	Yes	English	1E
7.	Loures Innovation Hub	Loures	Av° Santa Maria (M.A.R.L.) B05 - 701 2660-421 São Julião do Tojal	218000082 info@louresinova.pt https://www.louresinnovationhub.pt/	IAPMEI (2023)			
8.	Casa do Impacto	Lisboa	Travessa São Pedro, 8 1200-432 Misericórdia	213240870 casadoimpacto@scml.pt https://casadoimpacto.scml.pt/	IAPMEI (2023)			
9.	Demium	Lisboa	Av. Fontes Pereira de Melo 16 1050-121 Lisboa	hello@demium.com https://demium.com/	IAPMEI (2023)			
10.	Fábrica de Startups	Oeiras	Av. Marginal Ed. Parque Oceano, N° 3 G 2780-337 Oeiras	933500001 talk@fabstart.pt https://www.fabricadestartups.com/	IAPMEI (2023)			
11.	Tec Labs - Centro de Inovação	Lisboa	Edifício C2 Campo Grande 1749-016 Lisboa	217500006 mail@teclabs.pt https://teclabs.pt/	IAPMEI (2023)			
12.	NIDE Lisboa	Lisboa	Rua Conde Redondo N° 46 R/C 1150-218 Lisboa	210995560 geral@nide.pt nide.lisboa@fjuventude.pt http://startupjuventude.pt/	IAPMEI (2023)			
13.	HUBIP - Hub de Negócios de Impacto Português	Lisboa	Rua 1° de Maio, N 101 - 103 (Museu da Carris) 1300-471 Alcântara	No data	IAPMEI (2023)			
14.	Indico	Lisboa	Rua do Instituto Industrial, 1 1200-120 Misericórdia	geral@indicopital.com https://www.indicopital.com/	IAPMEI (2023)	Yes	Portuguese	3P
15.	IPStartUp	Setúbal	Campus do IPS, Estefaniha 2910-761 Setúbal	265 790 251 uid.ips@ips.pt https://www.ipstartup.ips.pt/	IAPMEI (2023)	Yes	Portuguese	10P
16.	Mercado da Inovação	Lisboa	Quinta da Alfarrobeira, Rua António Saúde, N.º 11 a 13 1500-048 Benfca	211515506 mercado.inovacao@jfsdomingosbenfica.pt https://jfsdomingosbenfica.pt/mercado-de-inovacao-incubadora/	IAPMEI (2023)			
17.	LISPOLIS - Centro de Incubação e	Lisboa	Estrada Paço do Lumiar, N° 44 1600-546 Lisboa	217101700 geral@lispolis.pt	IAPMEI (2023)	Yes	English	2E

	Desenvolvimento			http://www.lispolis.pt/				
18.	CIM - Centro de Inovação da Mouraria	Lisboa	Rua dos Lagares, N° 23 1100-022 Lisboa	218170202 cim@cm-lisboa.pt https://informacao.seservicos.lisboa.pt/contactos/diretorio-da-cidade/centro-de-inovacao-da-mouraria	IAPMEI (2023)			
19.	Mafra & Ericeira Business Factory	Mafra	Av. Primeiro de Maio, N° 1 2640-455 Mafra / R. Prudêncio Franco da Trindade 2655-344 Ericeira	261024870 (Mafra) 261101912 (Ericeira) businessfactory@cm-mafra.pt https://businessfactory.pt/	IAPMEI (2023)			
20.	Fintech House	Lisboa	Praça da Alegria, N° 2 1250-217 Lisboa	960274028 info@thefintechhouse.com https://www.portugalfintech.org/fintech-house	IAPMEI (2023)			
21.	StartUp Sintra	Sintra	Rua Retiro dos Pacatos, N° 50 Edifício Startup 2635-224 Rio de Mouro	219174062 joao.cabral@startupsintra.com https://startupsintra.com/	IAPMEI (2023)			
22.	Espaço Bazaar	Lisboa	Av° do Brasil N.º 35 C 1700-062 Lisboa	271961605 info@bazaar.com.pt https://bazaar.com.pt/	IAPMEI (2023)			
23.	Audax-ISCTE	Lisboa	Rua Adriano Correia de Oliveira, N° 4 A 1600-312 Lisboa	211932235 audax@iscte-iul.pt https://audax.iscte-iul.pt/	IAPMEI (2023)	Yes	English	3E
24.	Gabinete de Apoio ao Empreendedorismo, Universidade Nova de Lisboa	Lisboa	Campus de Campolide 1099-085 Lisboa	21 371 5600 novaimpact@unl.pt / novaempreendedorismo@unl.pt https://www.unl.pt/empreendedorismo/empreendedorismo-na-nova	Made of Lisboa (2023)			
25.	Atlantic Station	Lisboa	Av. Mar. Gomes da Costa 19, 1800-255 Lisboa, Portugal	atlanticstation.pt	Made of Lisboa (2023)			
26.	INOVISA	Lisboa	Edifício Inovisa - Pólo I, Tapada da Ajuda, 1349-017 Lisboa	geral@inovisa.pt / inovacao@isa.ulisboa.pt https://www.inovisa.pt	Made of Lisboa (2023)	Yes	Portuguese	16P
27.	Labs Lisboa	Lisboa	Rua Adriano Correia de Oliveira, N° 4 A 1600-312 Lisboa	211932235 geral@labslisboa.pt https://labslisboa.pt	Made of Lisboa (2023)	Yes	English	3E
28.	Enter	Lisboa	Rua de Campolide, n°28, 1070-036 Lisboa	enter@alticelabs.com https://www.alticelabs.com/enter/	Made of Lisboa (2023)			
29.	EDP Starter	Lisboa	Av. 24 de Julho 12, 1249-300 Lisboa	edpstarter@edp.pt https://www.edp.com/en/innovation/edp-starter#about	Made of Lisboa (2023)			
30.	Impact Hub	Lisboa	Tv. Pedras Negras 11.º Direito, 1100-404 Lisboa	924744415 lisbon@impacthub.net https://lisbon.impacthub.net/	Made of Lisboa (2023)			
31.	Vodafone Power Lab	Lisboa	Rua Adriano Correia de Oliveira, N° 4 A 1600-312 Lisboa	211932235 vodafonepowerlab@vodafone.com https://www.vodafone.pt/powerlab.html	Made of Lisboa (2023)			
32.	Draper Academy	Lisboa	Av. Fontes Pereira de Melo 16, 1050-121 Lisboa	215901900 lisbon@draperstartuphouse.com https://draperstartuphouse.com/academy/	Made of Lisboa (2023)			
33.	Startup Lab by SRS	Lisboa	Rua Dom Francisco Manuel de Melo, 21 1070-085 Lisboa	213132000 startup.lab@srsleгал.pt https://www.startuplab.pt/	Made of Lisboa (2023)	Yes	Portuguese	2P
34.	Beta-i	Lisboa	Avenida Duque de Loulé 12 6º, 1050-090 Lisboa	geral@beta-i.com https://beta-i.com/	Made of Lisboa (2023)			
35.	Building Global Innovators	Lisboa	Rua António Champalimaud, N° 1, Edifício CID 1600-514 Lisboa	geral@bgi.pt https://www.bgi.pt/	Made of Lisboa (2023)			

36.	Lisboa Empreende +	Lisboa	Campo Grande 25 7ºA 1600-036 Lisboa	913285179 lisboaempreende@cm-lisboa.pt https://lisboaempreendemaais.pt/	Made of Lisboa (2023)			
37.	KickUP Sports Accelerator	Lisboa	Beato Av. Eusébio da Silva Ferreira 1500-33 Lisboa	hello@kickupsports.eu https://kickupsports.eu/accelerator/	Made of Lisboa (2023)			
38.	Productized	Lisboa	R. Moeda 7, 1200-109 Lisboa, 1200-109 Lisboa	info@productized.co / katerina@productized.co http://www.productized.co/	Made of Lisboa (2023)	Yes	English	15E
39.	Bright Pixel	Lisboa	Rua da Emenda 191200-169 Lisboa	215005000 hello@brpx.com https://brpx.com/	Made of Lisboa (2023)			
40.	Made of Lisboa (2023)	Lisboa	Online	weare@madeoflisboa.com https://madeoflisboa.com/	Made of Lisboa (2023)			
41.	NIDE Porto	Porto	Palácio das Artes - Fábrica de Talentos. Largo de S.Domingos, 19, 4050-545 Porto	223393530 geral@nide.pt nide.porto@fjuventude.pt http://startupjuventude.pt/	IAPMEI (2023)			
42.	InCubo	Arcos de Valdevez	Passos - Guilhadeses 4970-786 Arcos de Valdevez	258510050 info@incubo.eu https://www.incubo.eu/	IAPMEI (2023)			
43.	Project Booster - Incubadora Alto Tâmega	Chaves	Beco do Trem (Pavilhão Expoflória) Apartado 113 5400-549 Chaves	276332115 geral@acisat.pt / comunicacao@projectbooster.at https://www.projectbooster.at/pt/	IAPMEI (2023)			
44.	Adilcan	Ansião	Parque Empresarial do Camporês, 3240-465 Ansião	236670205 silverio.domingues@cm-ansiao.pt	IAPMEI (2023)			
45.	ADRAL - Agência de Desenvolvimento Regional do Alentejo	Évora	Rua Circular Norte do PITE nº 35 Évoratech 7005 841 Évora	266769150 geral@adral.pt https://www.adral.pt/	IAPMEI (2023)	Yes	English	5E
46.	Incubadora da ADRAT	Chaves	Av. da Cooperação Parque Empresarial Edifício INDITRANS, Lote A1, nº 2 5400-673 Outeiro Seco - Chaves	276340920 geral@adral.pt https://adral.pt/	IAPMEI (2023)			
47.	IN EUROPARQUE	Oliveira de Azeméis	Rua Interior do Europarque, 4520-153 Santa Maria da Feira	926942635 hello@ineuroparque.pt https://ineuroparque.pt/	IAPMEI (2023)			
48.	Facility Business Center by AEBA	Trofa	Rua da Imaculada Conceição 86, 4785-684 Trofa	252403860 geral@aeba.pt https://www.aeba.pt/	IAPMEI (2023)			
49.	AEL-STARTUP - INCUBADORA DE EMPRESAS DE LAFÕES	Vouzela	Rua Dr. Gil Cabral 13, 3670-236 Vouzela	232748024 geral@ael.pt http://www.ael.pt/	IAPMEI (2023)			
50.	Incubadora do Tua	Mirandela	Edifício CATRua Fundação Calouste Gulbenkian, 5370-340 Mirandela	278201457 incubadora@valetua.pt https://parque.val-etua.pt/tua-incubadora/	IAPMEI (2023)			
51.	Caldas Empreende	Caldas da Rainha	Avenida Infante D. Henrique, 2 Edif. Expoeste 2500-918 Caldas da Rainha	262841505 geral@airo.pt http://www.airo.pt /caldas-empreende/	IAPMEI (2023)			
52.	AIRV - Associação Empresarial da Região de Viseu	Viseu	Edifício Expobeiras Parque Industrial de Coimbrões, 3500-618 Viseu	232470290 geral@airv.pt https://www.airv.pt/	IAPMEI (2023)	Yes	Portuguese	18P
53.	ANJE - Associação Nacional de Jovens Empresários	Porto	Associação Nacional de Jovens Empresários, Casa do Farol - Rua Paulo da Gama, 4169-006 Porto	220108000 incubacao@anje.pt / anje@anje.pt https://www.anje.pt/	IAPMEI (2023)			
54.	INCUBUP ANPME	Porto	Rua Júlio Dinis nº 210 4050 - 318 Porto	226052340 geral@anpme.pt https://www.anpme.pt/incubup/	IAPMEI (2023)	Yes	English	12E

55.	Unlimit (Associação Acredita Portugal)	Vila Nova de Gaia	R. Cândido dos Reis 137, 4430-999 Vila Nova de Gaia	hello@unlimit.ventures https://www.unlimit.ventures/	IAPMEI (2023)	Yes	English	16E
56.	Incubadora BLC3	Oliveira do Hospital	Rua Nossa Senhora da Conceição, n.º. 2 Lagares da Beira 3405-155 Oliveira do Hospital	238641059 info@blc3.pt / incubadora@blc3. pt http://blc3.pt/	IAPMEI (2023)			
57.	Sines Tecnopolo	Sines	Z.I.L. II, Lote 122-A 7520-309 Sines	269000300 info@sinestecnop olo.org https://www.sinest ecnopolo.org/	IAPMEI (2023)			
58.	AIBAP	Mira	Rua do Matadouro Valeirinha 3070-436 Mira	231247020 geral@miracenter .pt /miracenter2015@ gmail.com https://www.mirac enter.pt/	IAPMEI (2023)			
59.	Investir Torres Vedras	Torres Vedras	Edifício CAERO Rua António Leal d'Ascensão 2560-309 Torres Vedras	261310418 info@investir- tvedras.pt https://www.inves tir-tvedras.pt/	IAPMEI (2023)	Yes	Portuguese	5P
60.	Go-On by Nonagon	Açores	R. da Tecnologia K - Epsilon 2, 9560- 421 Lagoa	296249400 geral@nonagon.p t https://nonagon.p t/apresentacao- incubadora/	IAPMEI (2023)	Yes	English	4E
61.	BRIGANTIA ECOPARK	Bragança	Av. Cidade de León, 506 5300-358 Bragança	273304299 info@brigantia- ecopark.pt https://www.briga ntia-ecopark.pt/	IAPMEI (2023)	Yes	Portuguese	4P
62.	Regia Douro Park	Vila Real	Regia Douro Park, 5000-033 Vila Real	259308200 info@regiadouro.c om https://www.regia douro.com/	IAPMEI (2023)			
63.	StartSilkHub	Matosinhos	Rua da Lionesa, 446 Ed. C12 4465- 671 Leça do Balio	222083048 geral@astrolabio.c om.pt https://astrolabio.c om.pt/	IAPMEI (2023)			
64.	StartUp Lourinhã	Lourinhã	Centro Cultural Dr. Afonso Rodrigues Pereira Rua João Luís de Moura n.º 60 2530-157 Lourinhã	261410138 startup@cm- lourinha.pt https://startoplour inha.pt/	IAPMEI (2023)			
65.	Alenquer Inovar	Alenquer	Pavilhão Desportivo Municipal de Alenquer Rua Orlando Jorge Pereira, N.º1 2580 - 385 Alenquer	263711673 alenquer.inovar@ cm-alenquer.pt http://alenquerpor taldenegocios.pt/i novar/index.php	IAPMEI (2023)			
66.	3INT - Incubadora para Inovação do Interior e Negócios Transfronteiriços	Vimioso	Rua Fundo da Vila, n.º3 (Edifício antiga residência de estudantes) 5230-317 Vimioso	273518120 3int@cm- vimioso.pt https://www.cm- vimioso.pt/pages/ 293	IAPMEI (2023)			
67.	DOURO_STARTUP by Capital Douro	São João da Pesqueira	Praça da República - Museu Eduardo Tavares - São João da Pesqueira	917 239 568 info@capitaldouro .pt /capitaldouro@g mail.com http://capitaldour o.pt/projetos/dour o-startup- incubadora/	IAPMEI (2023)			
68.	CATAA/CEI Centro de Empresas Inovadoras	Castelo Branco	Av.º do Empresário, 1 6000-767 Castelo Branco	272241400 geral.cei@cataa- cei.pt / geral@cataa.pt http://www.cataa- cei.pt/#	IAPMEI (2023)			
69.	CESAE - Centro de Serviços e Apoio as Empresas	Porto	Rua Ciríaco Cardoso 186, 4150- 212 Porto	226195200 cesae@cesae.pt https://www.cesae digital.pt/	IAPMEI (2023)			
70.	Centro de Negócios e Inovação de Rio Maior	Rio Maior	Av. Dr.º Mário Soares - Pavilhão Multiusos 1º Piso Topo Norte 2040- 413 Rio Maior	243991265 geral@desmor.pt / centronegocios@ desmor.pt https://desmor.pt/	IAPMEI (2023)			
71.	Centro de Incubação Atlântico	Vila Nova de Gaia	Avenida dos Sanatórios, Edifício Heliantia 4405-604 - Valadares, Vila Nova de Gaia	227538800 geral@abs.pt / incubadora@abs. pt https://www.abs.p t/	IAPMEI (2023)			

72.	GrowIN Portugal	Faro	Largo Do Sol Posto 1, 8000-150, Faro	289170481 hi@growinportugal.com https://www.growinportugal.com/	IAPMEI (2023)			
73.	Startup Braga	Braga	Edifício GNRATION Praça Conde Agrolongo, n.º123 4700-312 Braga - Portugal	253142200 info@startupbraga.com https://www.startupbraga.com/	IAPMEI (2023)			
74.	IDEIA ATLÂNTICO	Braga	Centro de Negócios IDEIA ATLÂNTICO, CX 001 4719-005 Braga	707450100 yahatlantico@gmail.com / geral@ideia-atlantico.pt / account@ideia-atlantico.pt https://ideia-atlantico.pt/	IAPMEI (2023)			
75.	IEFF - Incubadora de Empresas da Figueira da Foz	Figueira da Foz	Parque industrial da Figueira da Foz - Rua das Acácias n.º40A 3090-380 Figueira da Foz	233407030 geral@ieff.pt https://ieff.pt/	IAPMEI (2023)			
76.	INOVAGAIA	Vila Nova de Gaia	Avenida Manuel Violas, 476 4410 - 137 S. Félix da Marinha Vila Nova de Gaia	227334140 inova@inovagaia.pt https://www.inovagaia.pt	IAPMEI (2023)	Yes	English	6E
77.	IET - Instituto Empresarial do Tâmega	Amarante	Tâmega Park - Edifício Mercúrio - Fração AC Agração - Telões 4600-758 Amarante	255431076 geral@iet.pt https://iet.pt/	IAPMEI (2023)	Yes	Portuguese	11P
78.	BioBIP - Bioenergy and Business Incubator of Portalegre	Portalegre	Campus Politécnico, 10 7300 - 555 Portalegre	245301555 biobip@ippportalegre.pt http://www.biobip.pt/	IAPMEI (2023)			
79.	STARTUP PORTO	Porto	Rua Arquitecto Lobão Vital 172 4200-374 Porto	225571020 portoglobalthub@sc.ipp.pt https://www.portoglobalthub.ipp.pt/	IAPMEI (2023)	Yes	English	13E
80.	IPN Incubadora	Coimbra	Rua Pedro Nunes, 3030 - 199 Coimbra	239700300 info.incubadora@ipn.pt https://www.ipn.pt/incubadora	IAPMEI (2023)	Yes	English	18E
81.	MENTORTEC	Matosinhos	201, 877 R. Dr. Afonso Cordeiro, Matosinhos	229396350 mentortec@mentortec.eu https://mentortec.eu/	IAPMEI (2023)			
82.	MOVEITEX	Paços de Ferreira	Avenida Dr. Nicolau Carneiro, 196 4590-612, Paços de Ferreira	255079685 geral@movetex.com https://movetex.com/	IAPMEI (2023)			
83.	Pólo de Incubação de Albergaria-a-Velha (AAV) da Incubadora de Empresas da Região de Aveiro (IERA)	Albergaria-a-Velha	Rua Américo Martins Pereira 3850 - 837 Albergaria-a-Velha	234529751 incubadora.empresas@cm-albergaria.pt https://www.cm-albergaria.pt/investir/incubadora-de-empresas-de-albergaria-a-velha	IAPMEI (2023)	Yes	Portuguese	17P
84.	Alvaiázere +	Alvaiázere	Rua de Santa Maria Madalena, n.º 11, 2.º Andar. 3250-121 Alvaiázere	236650160 geral@alvaiazere.pt http://www.alvaiazere.pt/	IAPMEI (2023)			
85.	Incubadora de Empresas do Curia Tecnoparque	Anadia	Curia Tecnoparque 3780-544 Tamengos	231519710 curtec.m.seabra@cm-anadia.pt / curiatecnoparque@cm-anadia.pt https://www.iera.pt/polos/incubadora-de-empresas-do-curia-tecnoparque/	IAPMEI (2023)			
86.	Incubadora de Empresas - C.M. Celorico de Basto	Celorico de Basto	Praça Cardeal D. António Ribeiro n.º 1 4890-291 Celorico de Basto	255320300 geral@mun-celoricodebasto.pt https://www.mun-celoricodebasto.pt/viver/investir/apoiar-ao-empresario-investidor	IAPMEI (2023)	Yes	Portuguese	12P
87.	Set.Up Guimarães	Guimarães	Largo Cónego José Maria Gomes 4804-534 Guimarães	253421231 geral@setupguimaraes.com / setupguimaraes@cm-guimaraes.pt	IAPMEI (2023)	Yes	English	7E

				https://www.setupguimaraes.com/en/				
88.	Startup Montemor-o-Novo	Montemor-o-Novo	Edifício Startup Montemor-o-Novo Zona Industrial da Adua, Lote L138 7050-001 Montemor-o-Novo	266898111 startup@cm-montemornovo.pt https://startupmontemornovo.com/	IAPMEI (2023)	Yes	English	19E
89.	Polo de Oliveira do Bairro da Incubadora de Empresas da Região de Aveiro (IERA)	Oliveira do Bairro	R. Bombeiros 13, 3770-102 Oliveira do Bairro	234732100 polo-iera@cm-olb.pt https://www.cm-olb.pt/pages/413	IAPMEI (2023)			
90.	Startup Portimão	Portimão	Sítio do Escampadinho, Mexilhoeira Grande, 8500-148 Portimão	925530997 geral@startupportimao.pt https://startupportimao.pt/index.php/pt/	IAPMEI (2023)	Yes	English	10E
91.	CRIAR tec	Açores	Rua do Cais, n.º 25 9940-355 São Roque do Pico	961642349 info@criartec.pt https://criartec.pt/pt	IAPMEI (2023)			
92.	VougaPark - Centro de Inovação	Sever do Vouga	Estrada Nacional 328, n.º 528 Lugar da estação 3740-070 Paradelas Sever do Vouga	234550070 geral@vougapark.pt https://www.vougapark.pt/	IAPMEI (2023)			
93.	Incubadora de Empresas Carmelitana	Tondela	Rua dos Combatentes da Grande Guerra, 3460-550 Tondela	232811110 incubadora@cm-tondela.pt http://cm-tondela.pt/index.php/municipio/camara-municipal/presidente/2-camara/459-incubadora-de-empresas	IAPMEI (2023)			
94.	StartUP Alentejo - Vendas Novas Empreende	Vendas Novas	Edifício Startup Alentejo Avenida 25 De Abril 7080-134 Vendas Novas	265807731 startupalentejo@cm-vendasnovas.pt http://www.startupalentejo.com/	IAPMEI (2023)			
95.	Famalicão Made IN	Famalicão	Rua Camilo Castelo Branco, N.º 108 4760-127 Vila Nova de Famalicão	252320930 madein@famalicao.pt https://www.famalicao.madein.pt/	IAPMEI (2023)	Yes	Portuguese	14P
96.	Incubadora A Praça	Fundão	Antiga Praça Municipal Rua dos 3 Lagares 6230-421 Fundão	275771169 dii@cm-fundao.pt https://movetofundao.pt/incubadora-a-praca/	IAPMEI (2023)	Yes	Portuguese	13P
97.	StartUp Torres Novas	Torres Novas	António César de Vasconcelos Correia, 2350-421 Torres Novas	249839489 startup@cm-torresnovas.pt https://startuptorresnovas.pt/index.php/pt-pt/	IAPMEI (2023)			
98.	Centro de Negócios e Incubadora do Alentejo	Évora	Parque Industrial e Tecnológico de Évora Rua Circular Norte 7005-841 Évora	266709115 geral@nere.pt / paulapaulino@nere.pt https://www.nere.pt/	IAPMEI (2023)	Yes	Portuguese	15P
99.	StartUp Santarém	Santarém	Largo do Infante Santo Antiga Escola Prática de Cavalaria 2005-246 Santarém	243321999 startup.santarem@nersant.pt https://startupnersant.pt/startup/santarem/	IAPMEI (2023)	Yes	Portuguese	7P
100.	CETEC - Centro de Empresas Tecnológicas de Coimbra	Coimbra	Complexo Tecnológico de Coimbra Rua Coronel Júlio Veiga Simão, Edifício Novotecna 3025-307 Coimbra	239497730 cetec@novotecna.pt / geral@novotecna.pt http://novotecna.pt/	IAPMEI (2023)			
101.	Parque Tecnológico de Óbidos	Óbidos	Parque Tecnológico de Óbidos - Edifícios Centrais, Rua da Criatividade 2510-216 Óbidos	262955700 obitec@cm-obidos.pt https://obidosparque.com/	IAPMEI (2023)	Yes	English	11E
102.	OPEN - Oportunidades Específicas de Negócios	Marinha Grande	Zona Industrial Casal da Lebre Rua da Bélgica, Lote 18	244570010 open@open.pt https://open.pt/	IAPMEI (2023)			

			2430-028 Marinha Grande					
103.	Parque do Alentejo de Ciência e Tecnologia	Évora	Herdade da Barba Rala Rua Luis Adelino Fonseca, Lote 1A 7005-345 Évora	924396890 geral@pact.pt https://www.pact.pt/site/	IAPMEI (2023)			
104.	Parkurbis	Covilhã	Parque de Ciência e Tecnologia da Covilhã, 6200-865 Covilhã	275957000 info@parkurbis.pt https://www.parkurbis.pt/	IAPMEI (2023)			
105.	Partnia	Caldas da Rainha	R. dos Heróis da Grande Guerra n.º40 1.º direito, 2500-202 Caldas da Rainha	262282063 geral@partnia.pt https://partnia.pt/	IAPMEI (2023)			
106.	UA Incubator	Ílhavo	PCI - Creative Science Park Aveiro Region Via do Conhecimento, Edifício Central 3830-352 Ílhavo	234243750 uaincubator@pci.pt https://www.iera.pt/polos/universidade-de-aveiro-incubator/	IAPMEI (2023)	Yes	English	14E
107.	TERINOV - Parque de Ciência e Tecnologia da Ilha Terceira	Angra do Heroísmo	Parque de Ciência e Tecnologia da Ilha Terceira 9700-702 Terra Chã	295249400 geral@terinovazores.pt https://terinovazores.pt/	IAPMEI (2023)			
108.	SANJOTEC - ASSOCIAÇÃO CIENTÍFICA E TECNOLÓGICA	São João da Madeira	R. de Fundões 151, 3700-121 São João da Madeira	256001900 geral@sanjotec.com https://www.sanjotec.com/	IAPMEI (2023)			
109.	VILAWORK - Barcelos Business Center	Barcelos	Avenida da Cal, Lote n.º 125, 1.º andar, 4750-787 Barcelos	253292861 info@vilawork.pt / fatima.alves@vilawork.pt https://vilawork.pt/	IAPMEI (2023)	Yes	English	8E
110.	START Esposende	Esposende	Largo Rodrigues Sampaio 37, 4740-218 Esposende	253960190 geral@startesposende.pt https://www.startesposende.pt/	IAPMEI (2023)			
111.	Startup Leiria	Leiria	R. da Carvalha 570, 2400-441 Leiria	244859460 geral@startupleiria.com https://startupleiria.com/en/home-en/	IAPMEI (2023)	Yes	English	9E
112.	Startup Madeira	Funchal	Campus da Penteada, 9020-105 Funchal	291723000 info@startupmadeira.eu https://startupmadeira.eu/	IAPMEI (2023)	Yes	English	17E
113.	TAGUSVALLEY	Abrantes	Rua José Dias Simão s/n, 2200-062 Abrantes	241330330 geral@tagusvalley.pt https://tagusvalley.pt/	IAPMEI (2023)			
114.	UBINNOVATIVE	Covilhã	Contactos Serviços Administrativos - Convento de Santo António, 6201-001 Covilhã	275329146 ubinnovative@ubi.pt https://www.ubi.pt/entidade/GID	IAPMEI (2023)			
115.	Incubadora da Ualg	Faro	Campus da Penha, 8005-139 Faro	289800097 cria@ualg.pt https://www.ualg.pt/incubacao	IAPMEI (2023)			
116.	UPTEC - Parque de Ciência e Tecnologia da Universidade do Porto	Porto	Rua Júlio de Matos, 828-882 4200-355 Porto	220301500 geral@uptec.up.pt https://uptec.up.pt/pt-pt/	IAPMEI (2023)			
117.	V21	Viseu	R. Dr. Luís Nava, 3500-846 Viseu	232436474 geral@v21.pt https://www.v21.pt/	IAPMEI (2023)			
118.	INOPOLE - Academia de Empreendedores	Coimbra	Campus Politécnico de Coimbra, Av. Mário Silva, 3045-601 Coimbra	239802353 ipc@ipc.pt / inopol@ipc.pt https://www.ipc.pt/ipc/id-e-inovac%CC%A7a%CC%83o/inopol/	IAPMEI (2023)			
119.	CIBT NERBE - Centro de Incubação de Base Tecnológica	Beja	R. Cidade de São Paulo, 7800-453 Beja	284311350 nerbe@mail.telepac.pt https://nerbe.pt/cibt-nerbe/	IAPMEI (2023)			
120.	STARTUP BARREIRO	Barreiro	Parque Empresarial da Baía do Tejo, Rua 2, Edifício n.º 23, 2830-302 Barreiro	910048093 startup@cm-barreiro.pt https://www.startupbarreiro.pt/	IAPMEI (2023)	Yes	Portuguese	9P

Appendix B | Online Survey - Structure (English Version)

Design Thinking In Startup Incubation & Mentoring

* Required

Hi, my name is Miguel :)

Thank you for being part of this research project. It is vital for us to get to know your company and its synergies with Startups. This exploratory online survey is part of a research process for developing a dissertation thesis for the master's degree in Design Management at IADE - Universidade Europeia, Portugal.

All the answers will be treated anonymously and in an academic environment only. The research outcomes can be shared with your company if you are interested.

Please note that this survey should be filled out by someone from your company who is aware of the dynamics developed with Startups.

Tell us about your company...

1. 1. From which company are you answering this survey? *

2. 2. What is your role in this company? *

Figure 17 | Online Survey - Structure (English Version) Part 1

3. 3. My company is... *

Mark only one oval.

- ☐ A private non-profit organization.
- ☐ A private for-profit organization.
- ☐ A public organization.
- ☐ An academic organization.

Tell us about your company and Startups...

4. 4. On average, with how many Startups has your company worked overtime? *

Mark only one oval.

- ☐ 0-5
- ☐ 5-10
- ☐ 10-20
- ☐ 20-50
- ☐ 50-100
- ☐ 100>

5. 5. In my company... *

Mark only one oval.

- ☐ We work with Startups from every business areas. *Skip to question 7*
- ☐ We only work with Startups from specific business areas.
Skip to question 6

Figure 18 | Online Survey - Structure (English Version) Part 2

6. 6. My company only works with Startups from the following business areas... *

7. 7. In my company... *

Mark only one oval.

- ☐ We work with Startups from all over the world. *Skip to question 9*
- ☐ We work with startups from all over Portugal. *Skip to question 9*
- ☐ We only work with Startups from a specific environment/place/city. *Skip to question 8*

8. 8. My company only work with Startups placed in... *

Tell us about the services your company provides to Startups...

9. 9. Does your company provide any of these ONLINE services? *

Check all that apply.

- ☐ Incubation Program.
- ☐ Acceleration Program.
- ☐ Mentoring Program.
- ☐ Training Program.
- ☐ Financing.
- ☐ Workshops.
- ☐ Meetings & Events.
- ☐ We don't provide any ONLINE services.
- ☐ Other:

Figure 19 | Online Survey - Structure (English Version) Part 3

10. 10. Does your company provide any of these ON-SITE services? *

Check all that apply.

- ☐ Incubation Program.
- ☐ Acceleration Program.
- ☐ Mentoring Program.
- ☐ Training Program.
- ☐ Financing.
- ☐ Workshops.
- ☐ Meetings & Events.
- ☐ We don't provide any ON-SITE services.
- ☐ Other: _____

Let us know about your company relationship with Design Thinking...



<http://youtube.com/watch?v=vQytKCT563I>

11. 11. Does your company ever approach Design Thinking with Startups? *

Mark only one oval.

- ☐ Yes. *Skip to question 12*
- ☐ No. *Skip to question 16*

Figure 20 | Online Survey - Structure (English Version) Part 4

12. 12. How often does your company approach Design Thinking with Startups? *

Check all that apply.

- ☐ It is often approached in some Meetings/Events.
☐ Some of our programs approach Design Thinking.
☐ Design thinking is part of every program that we offer.
☐ Other: _____

13. 13. When does your company approach Design Thinking with Startups? *

Check all that apply.

- ☐ We occasionally approach it some activities/workshops (e.g. to define a problem or generate ideias).
☐ We approach it as an integral process to business development, including the empathize, define, ideate, prototype, test and implement phases and its tools.
☐ Other: _____

14. 14. Is this methodology approached by designers? *

Mark only one oval.

- ☐ Yes.
☐ No.

15. 15. Are the ones who approach this methodology interns or outsourcers? *

Mark only one oval.

- ☐ Interns.
☐ Outsourcers.

Skip to question 17

Figure 21 | Online Survey - Structure (English Version) Part 5

16. 16. Why isn't this methodology approached with Startups? *

Check all that apply.

- ☐ We don't find it relevant.
- ☐ It's inadequate for our programs.
- ☐ We don't know how do properly address it.
- ☐ We don't have specialized team members to promote it.
- ☐ We never thought about implementing it.
- ☐ We didn't know it existed.
- ☐ It takes too much time.
- ☐ Other: _____

17. 17. Does your company ever approach Lean, Agile, Six Sigma or any other methodology with Startups? *

Mark only one oval.

- ☐ Yes.
- ☐ No.

18. 18. Tell us which of these methodologies is approached with Startups and why. *

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Figure 22 | Online Survey - Structure (English Version) Part 6

Appendix C | Online Survey - Structure (Portuguese Version)

Design Thinking na Incubação e Mentoria de Startups

* Required

Olá, o meu nome é Miguel :)

Obrigado por fazer parte deste projeto de investigação. É de grande importância conhecer a sua empresa e as sinergias que desenvolvem com Startups. Este inquérito online faz parte de um processo de investigação para o desenvolvimento de uma dissertação de mestrado em Design Management no IADE - Universidade Europeia, Portugal.

Todas as respostas serão tratadas de forma anónima e exclusivamente em meio académico. Os resultados desta investigação podem ser partilhados, caso exista interesse da sua parte.

Ressalvo que este questionário deve ser preenchido por alguém da sua empresa que esteja familiarizado com as dinâmicas desenvolvidas com Startups.

Sobre a sua empresa...

1. 1. De que empresa está a responder a este questionário? *

2. 2. Qual é a sua função/cargo nesta empresa? *

Figure 23 | Online Survey - Structure (Portuguese Version) Part 1

3. 3. A minha empresa é... *

Mark only one oval.

- ☐ Uma organização privada sem fins lucrativos.
- ☐ Uma organização privada com fins lucrativos.
- ☐ Uma organização pública.
- ☐ Uma organização académica.

Sobre a sua empresa e Startups...

4. 4. Em média, com quantas Startups a sua empresa já trabalhou ao longo do tempo? *

Mark only one oval.

- ☐ 0-5
- ☐ 5-10
- ☐ 10-20
- ☐ 20-50
- ☐ 50-100
- ☐ 100>

5. 5. Na minha empresa... *

Mark only one oval.

- ☐ Trabalhamos com Startups de todas as áreas de negócio.
Skip to question 6
- ☐ Trabalhamos com Startups de áreas de negócio específicas.

Figure 24 | Online Survey - Structure (Portuguese Version) Part 2

6. 6. A minha empresa só trabalha com Startups das seguintes áreas de negócio... *

7. 7. Na minha empresa... *

Mark only one oval.

- ☐ Trabalhamos com Startups de todo o mundo. *Skip to question 9*
- ☐ Trabalhamos com Startups de Portugal. *Skip to question 9*
- ☐ Só trabalhamos com Startups de determinado ambiente/lugar/cidade. *Skip to question 8*

8. 8. A minha empresa só trabalha com Startups que se localizem em / sejam de... *

Sobre os serviços que a sua empresa providencia a Startups...

Figure 25 | Online Survey - Structure (Portuguese Version) Part 3

9. 9. A sua empresa providencia algum destes serviços ONLINE? *

Check all that apply.

- ☐ Programa de Incubação.
- ☐ Programa de Aceleração.
- ☐ Programa de Mentoria.
- ☐ Programa de Formação.
- ☐ Financiamento.
- ☐ Workshops.
- ☐ Encontros e Eventos.
- ☐ Não providenciamos qualquer serviço ONLINE.
- ☐ Other: _____

10. 10. A sua empresa providencia algum destes serviços PRESENCIALMENTE? *

Check all that apply.

- ☐ Programa de Incubação.
- ☐ Programa de Aceleração.
- ☐ Programa de Mentoria.
- ☐ Programa de Formação.
- ☐ Financiamento.
- ☐ Workshops.
- ☐ Encontros e Eventos.
- ☐ Não providenciamos qualquer serviço PRESENCIALMENTE.
- ☐ Other: _____

Sobre a relação da sua empresa com Design Thinking...

Figure 26 | Online Survey - Structure (Portuguese Version) Part 4



11. 11. Em algum momento a sua empresa aborda Design Thinking com Startups? *

Mark only one oval.

- ☐ Sim. *Skip to question 12*
- ☐ Não. *Skip to question 16*

12. 12. Com que regularidade é que a sua empresa aborda Design Thinking com Startups? *

Check all that apply.

- ☐ O tema é abordado em alguns Encontros e Eventos.
- ☐ Alguns dos nossos programas abordam Design Thinking.
- ☐ Todos os programas que providenciamos abordam Design Thinking.
- ☐ Other: _____

Figure 27 | Online Survey - Structure (Portuguese Version) Part 5

13. 13. Em que circunstância é que a sua empresa aborda Design Thinking com Startups? *

Check all that apply.

- ☐ O tema é ocasionalmente abordado em algumas atividades/workshops, por exemplo, para definir um problema ou gerar ideias.
- ☐ Design Thinking é abordado enquanto processo integral para o desenvolvimento de negócios, incluindo as fases de empatia, definição, ideação, prototipagem, teste e implementação e as suas ferramentas.
- ☐ Other: _____

14. 14. Esta metodologia é abordada por designers? *

Mark only one oval.

- ☐ Sim.
- ☐ Não.

15. 15. Quem aborda esta metodologia faz parte da sua empresa (Interno) ou é contratado externamente (Outsourcer)? *

Mark only one oval.

- ☐ Faz parte da empresa (Interno).
- ☐ É contratado externamente (Outsourcer).

Skip to question 17

Figure 28 | Online Survey - Structure (Portuguese Version) Part 6

16. 16. Porque é que esta metodologia não é abordada com Startups? *

Check all that apply.

- ☐ Não a consideramos relevante.
- ☐ É inadequada para os nossos programas.
- ☐ Não sabemos como abordá-la devidamente.
- ☐ Não temos membros de equipa especializados para isso.
- ☐ Nunca pensámos em abordá-la/implementá-la.
- ☐ Não sabíamos que existia.
- ☐ Demora demasiado tempo.
- ☐ Other: _____

17. 17. Em algum momento a sua empresa aborda Lean, Agile, Six Sigma ou alguma outra metodologia com Startups? *

Mark only one oval.

- ☐ Sim.
- ☐ Não.

18. 18. Fale-nos sobre as metodologias que são abordadas e porquê. *

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Figure 29 | Online Survey - Structure (Portuguese Version) Part 7

Appendix D | Online Survey - Responses (English Version)

Table 29 | Online Survey - Responses (English Version)

Answer No.	1E	2E	3E	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E	17E	18E	19E	20E
Company Name	Build Up Labs	LISPOLIS	Audax-ISCTE / Labs Lisboa	Associação Nonagon	ADRAL	Inovagaia	Set.Up Guimarães	VilaWork	Startup Leiria	Startup Portimão	Óbidos Parque	ANPME	Startup Porto	UA Incubator - PCI	Productized	Acredita Portugal	Startup Madeira	IPN Incubadora	StartUP Montemor-o-Novo	Madan Parque
Replier Role	Startup Happiness Officer	Innovation Manager	Management & Organization Coordinator	Project Manager	Project Manager	Administrative Technician	Senior Technician	Manager	Director	Coordinator	Manager	Assesor	Director	Designer	CEO	Operations	?	Department Manager	Coordinator	Project Manager
Type of Company	Private for	Private non	Academic	Private non	Private non	Private non	Public	Private for	Private non	Public	Private non	Private non	Academic	Public	Private for	Private non	Public	Private non	Public	Public
Experience with Startups	50-100	50-100	100>	20-50	50-100	100>	100>	20-50	100>	20-50	0-5	100>	5-10	20-50	100>	20-50	100>	50-100	10-20	100>
Startups Business Area	Every	Specific Tech, health tech	Every	Specific Many	Specific Tech	Every	Specific Digital, Medtech, Biotech, Creative, Industrial	Every	Every	Specific Smart Cities	Specific Creative, Digital	Every	Every	Specific TICE, Materials, Agroindustrial, Sea economy, Energy, Health	Every	Every	Every	Every	Every	Specific Technology, Science
Startups Location	World	Portugal	Portugal	World	World	Portugal	World	World	World	World	World	World	World	World	World	World	Specific Madeira	World	Specific Montemor-o-Novo	World
Online Services	Incubation		Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation		Incubation		Incubation		Incubation		Incubation	Incubation	
	Acceleration						Acceleration		Acceleration	Acceleration		Acceleration								
	Mentoring	Mentoring	Mentoring		Mentoring		Mentoring	Mentoring	Mentoring	Mentoring				Mentoring	Mentoring	Mentoring		Mentoring	Mentoring	Mentoring
			Financing	Training			Training			Training				Training	Training			Training		Training
										Financing		Financing		Financing						
	Workshops	Workshops		Workshops	Workshops		Workshops		Workshops	Workshops		Workshops		Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops
	Meetings & Events			Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events		Meetings & Events	Meetings & Events		Meetings & Events		Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events
On-site Services	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation	Incubation		Incubation	Incubation	Incubation	Incubation	Incubation
	Acceleration						Acceleration		Acceleration	Acceleration		Acceleration	Acceleration	Acceleration	Acceleration	Acceleration	Acceleration	Acceleration	Acceleration	Acceleration
	Mentoring	Mentoring	Mentoring		Mentoring		Mentoring	Mentoring	Mentoring	Mentoring			Mentoring	Mentoring	Mentoring	Mentoring	Mentoring	Mentoring	Mentoring	Mentoring
			Training	Training			Training	Training		Training			Training	Training	Training			Training		
		Financing	Financing							Financing		Financing		Financing				Financing		Financing
	Workshops	Workshops	Workshops	Workshops	Workshops		Workshops	Workshops	Workshops	Workshops		Workshops		Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops
	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events		Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events
Is DT ever approached?	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	No	Yes
Where/when?						Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events					Meetings & Events			Meetings & Events	Meetings & Events		
			Some programs	Some programs						Some programs	Some programs						Some programs			
	Every program													Every program	Every program					Every program
What for?	Stage		Stage	Stage			Stage	Stage			Stage						Stage			
	Process					Process			Process	Process				Process	Process			Process		Process
Approached by designers?	No		No	No		No	Yes	No	Yes	Yes	Yes			No	Yes		Yes	Yes		Yes
In or out?	Interns		Interns	Interns		Interns	Outsourcers	Interns	Interns	Interns	Outsourcers			Interns	Outsourcers		Outsourcers	Interns		Interns
For those who don't use DT - why not?		Use other methodologies			Never thought							Lack of specialized team members	Never thought			Never thought			Lack of specialized team members	
Other methodologies?	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes
Which?	Lean	Lean	Lean	Lean					Lean						Lean			Lean		Lean
				Agile					Agile						Agile					Agile
									Six Sigma											
		Business Model Canvas		Business Model Canvas					Business Model Canvas				Business Model Canvas				Business Model Canvas	Business Model Canvas		Business Model Canvas
		Customer Development Model																		
									Customer Journey Map											
															OST					
	Own																			

Appendix E | Online Survey - Responses (Portuguese Version)

Table 30 | Online Survey - Responses (Portuguese Version)

Answer No.	1P	2P	3P	4P	5P	6P	7P	8P	9P	10P	11P	12P	13P	14P	15P	16P	17P	18P
Company Name	Amadora Tech	Startup Lab by SRS	Indico	Brigantia Ecopark	Investir Torres Vedras (Estufa)	(Invalid)	Nersant	DNA Cascais	STARTUP BARREIRO	IPStartUp	IET	Câmara Municipal de Celorico de Basto	Município do Fundão	Município de Vila Nova de Famalicão (Made IN)	NERE	Instituto Superior de Agronomia - ULisboa	Incubadora de Empresas de Albergaria-a-Velha	AIRV - Associação de Incubadoras da Região de Viseu
Replier Role	Diretor Geral	Gestor	Head of Platforms	Diretor	Gestora de Projetos		CEO	Gestor Projetos	Diretora Geral	Técnica de Empreendedorismo	Diretor Executivo	Técnica Superior	Técnico Superior	Gestor de Projetos de Empreendedorismo	Diretora Executiva	Innovation Manager	Técnica	Diretor Geral
Type of Company	Public	Private for	Private for	Private non	Private non		Private non	Private non	Public	Academic	Private non	Public	Public	Public	Private non	Academic	Public	Private non
Experience with Startups	100>	10-20	100>	20-50	50-100		100>	100>	20-50	50-100	100>	0-5	20-50	100>	100>	5-10	100>	50-100
Startups Business Area	Every	Every	Every	Specific	Specific		Every	Every	Specific	Every	Every	Every	Every	Every	Every	Specific	Every	Every
				Environment, Energy, Eco-Building, Tourism, Eco-Products, Other Areas Related To Tech Entrepreneurship	Creative Industries, Tech, Innovation				Culture, Creativity, Sustainability							Agrária, Florestal, Alimentar, Ambiente		
Startups Location	World	Portugal	Portugal	World	Portugal		World	Specific Cascais	World	World	World	World	World	Specific Vila Nova de Famalicão	World	Portugal	Specific Região de Aveiro	Portugal
Online Services			Incubation	Incubation	Incubation		Incubation		Incubation	Incubation		Incubation			Incubation			
		Acceleration	Acceleration				Acceleration				Acceleration	Acceleration		Acceleration	Acceleration			
		Mentoring	Mentoring	Mentoring			Mentoring	Mentoring	Mentoring	Mentoring			Mentoring	Mentoring	Mentoring		Mentoring	
		Training					Training			Training	Training				Training			Training
			Financing				Financing					Financing			Financing			
	Workshops	Workshops	Workshops	Workshops	Workshops		Workshops			Workshops	Workshops			Workshops	Workshops		Workshops	Workshops
	Meetings & Events		Meetings & Events	Meetings & Events			Meetings & Events				Meetings & Events			Meetings & Events	Meetings & Events			Meetings & Events
			Indico Founders Program powered by Google for Startups															
On-site Services	Incubation			Incubation	Incubation		Incubation	Incubation	Incubation	Incubation	Incubation	Incubation		Incubation	Incubation	Incubation	Incubation	Incubation
		Acceleration					Acceleration		Acceleration	Acceleration	Acceleration	Acceleration		Acceleration	Acceleration		Acceleration	
	Mentoring	Mentoring	Mentoring	Mentoring			Mentoring	Mentoring	Mentoring	Mentoring	Mentoring	Mentoring		Mentoring	Mentoring		Mentoring	Mentoring
		Training					Training	Training	Training	Training	Training	Training		Training	Training		Training	Training
			Financing				Financing	Financing			Financing	Financing		Financing	Financing			
	Workshops	Workshops		Workshops	Workshops		Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops	Workshops
	Meetings & Events		Meetings & Events	Meetings & Events	Meetings & Events		Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events
Is DT ever approached?	Yes	Yes	No	Yes	No		Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Where/when?	Meetings & Events	Meetings & Events		Meetings & Events			Meetings & Events		Meetings & Events			Meetings & Events		Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events	Meetings & Events
				Some programs					Some programs	Some programs	Some programs		Some programs	Some programs	Some programs			
What for?	Stage Process	Stage		Process			Process		Process	Process	Process	Stage		Stage	Stage	Stage	Stage	Stage
Approached by designers?	No	Yes		No			No		Yes	No	Yes	No	Yes	Yes	Yes	No	Yes	No
In or out?	Outsourcers	Outsourcers		Interns			Interns		Outsourcers	Interns	Interns	Interns	Outsourcers	Interns	Outsourcer	Interns	Outsourcers	Outsourcers
For those who don't use DT - why not?			Inadequate for our programs		Lack of specialized team members			Inadequate for our programs / Lack of specialized team members / Worked before with outsource partners										
Other methodologies?	No	No	Yes	Yes	No		Yes	No	No	No	Yes	Yes	No	No	Yes	No	No	Yes
Which?											Lean	Lean						
				Other														
			Sprint															

Appendix F | Structured Interviews - List Of Approached Startup Incubators

Table 31 | Structured Interviews - List Of Approached Startup Incubators

Order	Name	County	Address	Telephone / Email / Website	Source	Booked Interview	Given Interview	Valid Interview	Interview No.
1.	DNA Cascais	Cascais	Ninho de Empresas DNA Cascais, Cruz de Popa 2645-449 Alcabideche	214680185 geral@dnacascais.pt https://www.dnacascais.pt/	IAPMEI (2023)	No			
3.	Amadora Tech	Amadora	Rua Henrique Paiva Couceiro, N° 10 2700-453 Amadora	214997800 correio@amadorainova.pt http://amadorainova.pt/amadora-tech/	IAPMEI (2023)	Yes	Yes	No	
5.	Madan Parque	Almada	Rua dos Inventores 2825-182 Caparica	210438600 info@madanparque.pt https://madanparque.pt/	IAPMEI (2023)	Yes	Yes	Yes	8
6.	Build Up Labs	Lisboa	Edifício Altejo, Rua 3 da Matinha, N° 101 1950-326 Lisboa	218988160 hello@builduplabs.com https://builduplabs.com/	IAPMEI (2023)	Yes	Yes	Yes	6
14.	Indico	Lisboa	Rua do Instituto Industrial, 1 1200-120 Misericórdia	general@indicopital.com https://www.indicopital.com/	IAPMEI (2023)	No			
15.	IPStartUp	Setúbal	Campus do IPS, Estefanilha 2910-761 Setúbal	265 790 251 uid.ips@ips.pt https://www.ipstartup.ips.pt/	IAPMEI (2023)	No			
17.	LISPOLIS - Centro de Incubação e Desenvolvimento	Lisboa	Estrada Paço do Lumiar, N° 44 1600-546 Lisboa	217101700 geral@lispolis.pt http://www.lispolis.pt/	IAPMEI (2023)	Yes	Yes	Yes	10
23.	Audax-ISCTE	Lisboa	Rua Adriano Correia de Oliveira, N° 4 A 1600-312 Lisboa	211932235 audax@iscte-iul.pt https://audax.iscte-iul.pt/	IAPMEI (2023)	No			
26.	INOVISA	Lisboa	Edifício Inovisa - Pólo I, Tapada da Ajuda, 1349-017 Lisboa	geral@inovisa.pt / inovacao@isa.ulisboa.pt https://www.inovisa.pt/	Made of Lisboa (2023)	No			
27.	Labs Lisboa	Lisboa	Rua Adriano Correia de Oliveira, N° 4 A 1600-312 Lisboa	211932235 geral@labslisboa.pt https://labslisboa.pt/	Made of Lisboa (2023)	No			
33.	Startup Lab by SRS	Lisboa	Rua Dom Francisco Manuel de Melo, 21 1070-085 Lisboa	213132000 startup.lab@srsleгал.pt https://www.startuplab.pt/	Made of Lisboa (2023)	No			
38.	Productized	Lisboa	R. Moeda 7, 1200-109 Lisboa, 1200-109 Lisboa	info@productized.co / katerina@productized.co http://www.productized.co/	Made of Lisboa (2023)	No			
45.	ADRAL - Agência de Desenvolvimento Regional do Alentejo	Évora	Rua Circular Norte do PITE n° 35 Évoratech 7005 841 Évora	266769150 geral@adral.pt https://www.adral.pt/	IAPMEI (2023)	No			
52.	AIRV - Associação Empresarial da Região de Viseu	Viseu	Edifício Expobeiras Parque Industrial de Coimbrões, 3500-618 Viseu	232470290 geral@airv.pt https://www.airv.pt/	IAPMEI (2023)	No			
54.	INCUB`UP ANPME	Porto	Rua Júlio Dinis n° 210 4050 - 318 Porto	226052340 geral@anpme.pt https://www.anpme.pt/incubup/	IAPMEI (2023)	No			
55.	Unlimit (Associação Acredita Portugal)	Vila Nova de Gaia	R. Cândido dos Reis 137, 4430-999 Vila Nova de Gaia	hello@unlimit.ventures https://www.unlimit.ventures/	IAPMEI (2023)	No			
59.	Investir Torres Vedras	Torres Vedras	Edifício CAERO Rua António Leal d'Ascensão 2560-309 Torres Vedras	261310418 info@investirtvedras.pt https://www.investirtvedras.pt/	IAPMEI (2023)	No			
60.	Go-On by Nonagon	Açores	R. da Tecnologia K - Epsilon 2, 9560-421 Lagoa	296249400 geral@nonagon.pt https://nonagon.pt/apresentacao-incubadora/	IAPMEI (2023)	No			

61.	BRIGANTIA ECOPARK	Bragança	Av. Cidade de León, 506 5300-358 Bragança	273304299 info@brigantia-ecopark.pt https://www.brigantia-ecopark.pt/	IAPMEI (2023)	Yes	Yes	Yes	1
76.	INOVAGAIA	Vila Nova de Gaia	Avenida Manuel Violas, 476 4410 - 137 S. Félix da Marinha Vila Nova de Gaia	227334140 inova@inovagaia.pt https://www.inovagaia.pt	IAPMEI (2023)	No			
77.	IET - Instituto Empresarial do Tâmega	Amarante	Tâmega Park - Edifício Mercúrio - Fração AC Agração - Telões 4600-758 Amarante	255431076 geral@iet.pt https://iet.pt/	IAPMEI (2023)	Yes	Yes	Yes	2
79.	STARTUP PORTO	Porto	Rua Arquitecto Lobão Vital 172 4200-374 Porto	225571020 portoglobalhub@sc.ipp.pt https://www.portoglobalhub.ipp.pt/	IAPMEI (2023)	Yes	Yes	Yes	9
80.	IPN Incubadora	Coimbra	Rua Pedro Nunes, 3030 - 199 Coimbra	239700300 info.incubadora@ipn.pt https://www.ipn.pt/incubadora	IAPMEI (2023)	No			
89.	Pólo de Incubação de Albergaria-a-Velha (AAV) da Incubadora de Empresas da Região de Aveiro (IERA)	Albergaria-a-Velha	Rua Américo Martins Pereira 3850 - 837 Albergaria-a-Velha	234529751 incubadora.empresas@cm-albergaria.pt https://www.cm-albergaria.pt/investir/incubadora-de-empresas-de-albergaria-a-velha	IAPMEI (2023)	No			
86.	Incubadora de Empresas - C.M. Celorico de Basto	Celorico de Basto	Praça Cardeal D. António Ribeiro n.º1 4890-291 Celorico de Basto	255320300 geral@mun-celoricobasto.pt https://www.mun-celoricobasto.pt/viver/investir/apoiar-ao-empresario-investidor	IAPMEI (2023)	No			
87.	Set.Up Guimarães	Guimarães	Largo Cónego José Maria Gomes 4804-534 Guimarães	253421231 geral@setupguimaraes.com / setupguimaraes@cm-guimaraes.pt https://www.setupguimaraes.com/en/	IAPMEI (2023)	Yes	Yes	Yes	11
88.	Startup Montemor-o-Novo	Montemor-o-Novo	Edifício Startup Montemor-o-Novo Zona Industrial da Adua, Lote L138 7050-001 Montemor-o-Novo	266898111 startup@cm-montemornovo.pt https://startupmontemornovo.com/	IAPMEI (2023)	Yes	Yes	Yes	7
90.	Startup Portimão	Portimão	Sítio do Escampadinho, Mexilhoeira Grande, 8500-148 Portimão	925530997 geral@startupportimao.pt https://startupportimao.pt/index.php/pt/	IAPMEI (2023)	Yes	Yes	Yes	5
95.	Famalicão Made IN	Famalicão	Rua Camilo Castelo Branco, N.º108 4760-127 Vila Nova de Famalicão	252320930 madein@famalicão.pt https://www.famalicãomadein.pt/	IAPMEI (2023)	No	Portuguese		14P
96.	Incubadora A Praça	Fundão	Antiga Praça Municipal Rua dos 3 Lagares 6230-421 Fundão	275771169 dii@cm-fundao.pt https://movetofundao.pt/incubadora-a-praca/	IAPMEI (2023)	No	Portuguese		13P
98.	Centro de Negócios e Incubadora do Alentejo	Évora	Parque Industrial e Tecnológico de Évora Rua Circular Norte 7005-841 Évora	266709115 geral@nere.pt / paulapaulino@nere.pt https://www.nere.pt/	IAPMEI (2023)	No	Portuguese		15P
99.	StartUp Santarém	Santarém	Largo do Infante Santo Antiga Escola Prática de Cavalaria 2005-246 Santarém	243321999 startup.santarem@nersant.pt https://startup.nersant.pt/startup/santarem/	IAPMEI (2023)	No			
101	Parque Tecnológico de Óbidos	Óbidos	Parque Tecnológico de Óbidos - Edifícios Centrais, Rua da Criatividade 2510-216 Óbidos	262955700 obitec@cm-obidos.pt https://obidosparque.com/	IAPMEI (2023)	No			
106.	UA Incubator	Ílhavo	PCI - Creative Science Park Aveiro Region Via do Conhecimento, Edifício Central	234243750 uaincubator@pci.pt https://www.iera.pt/polos/universidade	IAPMEI (2023)	No			

			3830-352 Ilhavo	de-de-aveiro-incubator/					
109.	VILAWORK - Barcelos Business Center	Barcelos	Avenida da Cal, Lote n.º 125, 1º andar, 4750-787 Barcelos	253292861 info@vilawork.pt / fatima.alves@vilawork.pt https://vilawork.pt/	IAPMEI (2023)	No			
111.	Startup Leiria	Leiria	R. da Carvalha 570, 2400-441 Leiria	244859460 geral@startupleiria.com https://startupleiria.com/en/home-en/	IAPMEI (2023)	Yes	Yes	Yes	4
112.	Startup Madeira	Funchal	Campus da Penteada, 9020-105 Funchal	291723000 info@startupmadeira.eu https://startupmadeira.eu/	IAPMEI (2023)	Yes	Yes	Yes	3
120.	STARTUP BARREIRO	Barreiro	Parque Empresarial da Baía do Tejo, Rua 2, Edifício n.º 23, 2830-302 Barreiro	910048093 startup@cm-barreiro.pt https://www.startupbarreiro.pt/	IAPMEI (2023)	Yes	No		

Appendix G | Structured Interviews - Organized By Startup Incubators

Interview No. 1 - Brigantia Ecopark (Level 5)

Alex Rodrigues - Executive Director (March 17th 2023 - 09:30 AM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"To support the idea construction, mapping, and processes. We work on this with the entrepreneurs who come to us. Often people come here with a business idea or even already have a business but still face some difficulty optimizing it. We use this type of tools but not only these. We also have others that we use in some cases. For example, we work a lot with Lean or Kaizen tools as well. (...) We are constantly adapting to the reality of each entrepreneur or businessman who seeks us out, but always with the intention of never leaving them without an answer, without support. If we don't know, let's look for someone who knows, matching supply and demand here. (...)."

2. How has this experience been? How do startups accept this?

"Startups have been feeling involved, in fact, there is something that we try not to do - for us, all ideas are valid, however far-fetched they may be or appear to be in the first phase. We support people to do so but we do not replace people, that is: you have your business idea, this idea that you want to develop. Okay, let's go through these design thinking tools, shape them. My role here is simply, almost, to mentor. I can even warn you and give you my opinion here about what I could eventually do based on my experience, on my connections to the business world, I give you my feedback. But it's like this: if I tell you that it's better to go left and you want to go right, you are the owner of your business. I'll give you an example: very recently I've been mentoring a group of young people who started putting the cart before the horse (...) they thought of setting up a motorcycle experience business but they didn't plan anything and bought the motorcycles. (...) Within this joint reflection that we did, what emerged from there was simple: they optimized the business with other areas that were not initially foreseen, they realized that maybe what they idealized (...) did not suit the reality of the local tourist market, they realized that for maintaining the system as they wanted required a lot of manpower (...). After everything was mapped (...) to see how ideas sometimes evolve, building and deconstructing, until we reached a point (...) where they created two patents that they submitted in the meantime (...) this problem of manpower made them to come up with a solution that led to not one but two patents."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

(No answer due to the interviewee's lack of time.)

4. Do you consider that design thinking is a competitive advantage to startups' business development?

(No answer due to the interviewee's lack of time.)

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

(No answer due to the interviewee's lack of time.)

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

(No answer due to the interviewee's lack of time.)

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

"We have so much to evolve. Evolution has to be constant because the market is always evolving, and therefore when you work with creativity and innovation, you always have to be at the forefront, and this often forces you to read a lot, to be attentive to the market, to participate in many things to investigate as well. (...) What we now want to do even in terms of financing (based on the program Portugal) 2030 is to continue to form teams, we also feel that we need to grow."

8. Since this methodology is approached by interns that are not designers, have you ever thought of hiring designers to approach this methodology? Do you feel like it would be an advantage?

"Yes, and not just in terms of design thinking, we can also support entrepreneurs with product design or even product packaging. We always have to work on the communication part. Design is not limited to design thinking, it will also be added to marketing and communication. (...) We follow a humble path in this sense in which we are a team of 3 people (...) and we don't know everything, our relief is that we have a good network, and we look externally for local companies to support us."

Interview No. 2 - IET - Instituto Empresarial do Tâmega (Level 7)

Vera Silva - Project Manager (March 23rd 2023 - 10:00 AM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"We do all sorts of activities with them. (...) several different types of boot camps (...) The 'Jump Box' are boot camps that we do for an intensive week (...) During that time we ask a lot of questions (...) we always bring here people from other companies that we think are interesting for their themes. And it's about shaking. (...) 'Jumping' addresses various topics from self-knowledge to what it really is to be an entrepreneur. The 'Jump Project' is trying to understand where you see yourself with the company or even as a person in x time. A third day is 'Jump Tools', which is the part of the tools they need for, and there comes in a lot of design thinking, the canvas, the swot analyses. Many don't even have that sensitivity, what it is or what it's for - they have an idea and that's it. The fourth day is the 'Jump Market' (...) if you don't understand what situation you are in or how the national market is doing, the international market, what is done well abroad, what is not to be repeated. That is, mess with them there and try to make them think. The last one we call the 'Jump Pitch', because after all this they really have to know how to sell their product or their company or even the person they are. (...) On that day they have to know how to communicate (...) we always bring here either investors or companies or entrepreneurs (...)."

2. How has this experience been? How do startups accept this?

"We've already done so many boot camps here in Amarante that we're already being called to other cities, to other municipalities, and we're working that way with a brand that we've already created called 'Jump Box', that's where design thinking comes in."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"Many of them arrive here (...) and say 'I want to be a boss'. (...) If you want to be an entrepreneur, you have to know what it is to be an entrepreneur, if you have an entrepreneurial spirit. We are the first to say that the idea is very good but you don't have an entrepreneurial spirit. But of course we don't give up on them right away, we try to understand how resilient they are."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"I think so. It's a way for them to look, to see, to think, to question themselves, to mix there. (...) We, when we presented this strategy, because this is a strategy, they manage to look at that written and drawn brainstorming and manage to get somewhere. I really believe that this strategy is very important, which many still don't know."

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

"No doubt. (...) Even we (incubator) have to do this to improve ourselves and value ourselves, that's what being an entrepreneur is, that's what being proactive is. (...)."

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

"We do questionnaires, to try to understand. (...) We only started to realize that, that it was important to evaluate, about a year ago. One thing we realized was that I can't be the one to ask these questions because then I'm already so in (...) that I could be influencing. What we did last year, in all activities (...) we asked ISCTE, which is carrying out the impact assessment. We pay to do this assessment so that we know at the end of this year how much of an impact it has been. (...) Sometimes the hardest part is getting people to respond to us. (...) I'm excited, I'm dying to see if the work we've been doing with these young people is really having an impact on them."

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

"We were doing a design thinking for us (incubator) at the beginning of the year. (...) Maybe we have this facility because we are inside, we are aware of the tools that exist. (...) We need more human resources (...) we only have three permanent people here."

8. Do you feel it is crucial to have intern designers approach this methodology? Why?

"I'm familiar but I wasn't comfortable doing this kind of work and sharing this kind of knowledge. I can, but if there is already someone specialized in this, aren't we going to get the best ones? We need to go get people who are comfortable working in that area so that they own the passion they already have, it's easier to get the message across. I know how to do that, but maybe I don't know how to do it as well as those people. It is an investment that makes perfect sense."

Interview No. 3 - Startup Madeira (Level 2)

Micaela Vieira - Project Manager (March 23rd 2023 - 11:00 AM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

“Usually in our programs, through our consultants or mentors, who we always invite to be present, we always try to create a line of thought here, a priori, depending on the projects we are doing, depending on the maturity of each project. However, it is always important, no matter how established a project is, even if it has been on the market for 2 or 3 years (...) it is important sometimes to rethink, to go back a little, to review everything that has been done - from the moment, or why it was created, until the moment the product is on the market. And this all has a design thinking. Even if it's just a solution, you need to think about why the solution is being built that way, the format, that way of being presented to the end customer. For this reason, it is important for us to have specialists with us who really understand this way of thinking and this way of talking and understanding the entrepreneur and having very easy communication between both parties. Therefore, when our startups participate in our program, what we always do is always try to think about what they need, what their needs are, so that they can strengthen the product or service in the final part. In all of our programs, we end up having moments like these or specific workshops, even on design thinking, or in an indirect way, it is always talked about in any project we have.”

2. How has this experience been? How do startups accept this?

“It's always interesting. (...) People who, for example, are still building the product or service, it is very interesting to have this follow-up and this challenge, it is still a challenge that is launched to the entrepreneur, to execute step by step what is to be built and already thinking about the assumptions that will be raised and thinking about the challenges that the customer will face, in each moment of the solution and the sooner they are thought of in these moments the better. And sometimes that's why it's very important for design thinking to always be accompanied by a moment of listening the end customer, whether with partners, friends, people who really manage to test at the same time, and find bugs, find problems, challenges so that these can already be thought of even before being put on the market. Therefore, it is important to always test. Design thinking is an interesting methodology to do this in a reasoned way. So, for those just starting out it's interesting, for companies that are already in the market they can often think, ok, I'll have to go back to do this, but sometimes it's good because they find

challenges that they hadn't thought about yet and then it's over always because it's productive because no matter how much they go back (...) it's interesting because they always end up finding details that can always be improved and sometimes it's nice to have those moments."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"For services and solutions that are already implemented (...) sometimes it is a challenge but I always want to explain that it is good to review what is being put on the market. As much as they say "I've been through this", a day or two later they end up with "okay, this was interesting for me because I saw a presentation format of what I was doing there, it's not as clear to the customer as I am I thought it was or through the feedback I had, through this challenge, this exercise, I managed to realize that after all that call to action that I had there, nobody was doing it because it wasn't so clear". It always ends up being productive."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"Yes, like any other methodology. Obviously, the most important thing is always to understand what the startup is, what the company needs, what the big challenge is. However, regardless, I think it is very interesting to go through the largest number of exercises, whether from the moment of construction to the moment of implementation (...) It is important to use methodologies and continuous exercises to always improve and adapt your product and service and here design thinking can be one of those, regardless of the stage it is in (the startup/company)."

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

"Certainly. All exercises also serve to test and analyze, listen to, and even evaluate the capabilities that that company has and this is important to do and design thinking is one of the methodologies that can be used. The important thing is to really customize the one for each company that makes more sense, but I think design thinking can be and should be one of those that helps to create greater success here (...) but it is a good methodology for that."

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

"Assessing the impact, in itself, is already an assessment with many challenges. It is difficult to assess the widespread impact. What we always do is try to customize and individualize, case by case, we cannot say that that methodology was perfect for all startups. (...) A very important thing to establish in any program that we have (...) are the objectives of each project. (...) The way to evaluate here is a very simple milestone that is whether or not they managed to improve the project through that workshop. Sometimes it is a "yes or no" poll or it is something that we will only be able to evaluate during a year or two years from the moment they are implemented (...) and it also takes time to understand, if it was more sales, if it was more clicks, if it was more communication (...)."

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

"Technology is always evolving, people are always evolving, so those programs also have to constantly evolve and adapt to the market, to the needs, just like a startup, so much so that our projects have been very an aspect in which we have been monitoring what the needs are and what kind of challenges, exercises and accompaniments we can give our entrepreneurs. Therefore, at all. I think that new methodologies are always appearing or whenever new challenges appear in the market or ideas for new programs, whenever it makes sense we adapt and create. (...) And this is also a way for us to internally worry a little about how we do design thinking. (...) Whenever we do a new edition (of programs) we always adapt with the new trends, what is being done, and also analyzing what went well, what went wrong, in each program, to improve and with feedback from the people who participate. (...) We do design thinking about times, themes, the impact it will have. We also do this as a project."

8. Since this methodology is approached by outsourced designers, have you ever considered promoting design thinking as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas)?

"Yes, good question. (...) If we go now to a design thinking workshop, there are one or two programs in which we clearly assume that specific day for that theme, in which the specialty is really that. However, I believe that the methodology is so interesting that this ends up being done in a dynamic and authentic way during the programs even if it is

not the name of that methodology but it ends up being talked about, focused and addressed throughout the program. throughout, from start to finish and even after. (...) Therefore, perhaps what can happen is still forcing or reinforcing this in our programs, but this ends up being always done and thought about."

Interview No. 4 - Startup Leiria (Level 3)

Bruno Ramalho - Financial and International Projects Coordinator (March 23rd 2023 - 4:00 PM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"In internal consulting processes. (...) Senior consultants in particular use it in the initial phase, when trying to define the product, the proposal for the market, we try to get entrepreneurs to think (...) from the user's point of view, in the logic of how to create the product and how to adapt the product or value proposition to the user in order to meet what the market wants. We don't use the traditional design thinking processes of let's sit down at a table and let's do a top-to-bottom design thinking process here, we don't do it that way. I mean, we can do it in specific, specific cases, but in general it's a dynamic process and we use design thinking techniques and we put it on and many times we're not even telling the entrepreneur that we're using design thinking. They don't need to know they are using it to use it."

2. How has this experience been? How do startups accept this?

"It depends largely. It depends a lot on the entrepreneur, on the spirit of the entrepreneur. That is, there is no direct answer to this. We have entrepreneurs who arrive with an open mind, willing to listen to everything, and enter these processes with a free head and absorb their reflections, and then we have others who approach us and think they know everything, neither design thinking nor anything, they are those hard and closed heads that we sometimes get caught. Ok, we know that we are mentoring but we already know that 100 come in and 1000 come out (...) They are already focused on what they have and "my product is the best" (...) and sometimes we ask "so, is that it? to the market?" and they say "no, I don't need it because I know my product is the best", when that's the case there's not much to do either."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"This is one of the great difficulties (the one pointed out in the previous question). When we catch people like that for us it is highly frustrating because we can't help. (...) Then the support is not so deep, of course, we provide support in the (...) part of the contact. If the person comes with a made-up head, there is no design thinking process that is worth it."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"Yes. The design thinking process as a whole is very interesting but it is not necessary to use it all. Just the part of empathizing, the part of diverging, having a divergence of ideas and coming back to a convergence of ideas (...) only this part of the design thinking process (...) will allow us to put ourselves in the client's shoes, think about the client and understand something that is more than a product, what is my value proposition. A very common thing is that people think they sell products or services, in reality what they sell is a value proposition to the market. To understand this value proposition, this part of empathizing is necessary because we are thinking that the customer is buying, or we are assuming that the customer is going to buy for the wrong reason. Therefore, I would say that some design thinking techniques in this area are essential. (...) People often don't know that we are using design thinking, nor do they have to. It is what it is. We have to have some of these techniques to make them have this thought and understand customers, potential customers and realize what they can do to improve in relation to customers."

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

"Yes, guaranteed. It's exponentially bigger. (...) Because then you are already talking to the market."

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

"No. Not specifically. (...) We don't use methodologies as a whole. We use techniques (...) as needed or depending on the profile of the entrepreneur. (...) Here we go, adapting to the need. As such, we have no way of measuring, nor is it an indicator that we are very interested in understanding, which of these methodologies is more efficient because there is no correct answer. We measure the efficiency of our consulting but in consulting I often don't even know what techniques were used. (...) I don't know what goes on in the other consultants' meetings. I have an idea, more or less."

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

“There are always things to improve. (...) We not only use parts, but sometimes we create variations of the methodology (...) and this is very common. But I would say that having a tool that integrates most of these things would make sense.”

8. Since this methodology is approached by intern designers, have you ever thought about approaching this methodology consistently over time and not only in meetings & events? Do you feel like it would be an advantage?

“We never considered it for two reasons: point number one, financial issues, hiring is expensive and we are a small institution in terms of size, and then because the skills we normally look for in consultants are a little broader than technical specialists. We prefer less specialized people, but with broader knowledge than being there looking for someone very specific who can be very useful in one part but then cannot respond to other things that the projects need. It's our vision.”

Interview No. 5 - Startup Portimão (Level 7)

Rui Rosa - Project Management Coordinator (March 24th 2023 - 10:00 AM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"In some trainings, for example in boot camp, yes, although I confess that it is not 100% my area or that I do not give these trainings. (...) We usually work a lot with our entrepreneurs based on trying to understand what they lack, what they need (...) and then try through mentoring, or simple conversations that are actually mentoring, see what they need and start working with them on that basis."

2. How has this experience been? How do startups accept this?

(Question not asked, the interviewee did not feel comfortable answering).

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"It may go through a lot of what they want because sometimes they themselves may not really know what they want, or know well the path they are going to take to get there, maybe they already have the final goal, known and maybe even achievable but those difficulties after the path or what they have to do along the way is that sometimes it is complicated. On the other hand, sometimes there are others who just need someone to listen to them, someone to walk beside them, I notice that a lot. (...) Sometimes they are even on a good path or maybe they need some slight alignment in the strategy there but maybe just listening to someone (...) sometimes it's enough."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"Yes, because they acquire more experience (...) a different view and have a different perspective of the whole (...) they have different opinions."

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

"Each case is different. (...) Having mentors who, for example, can be an added value and we have to go for that part.(...) We don't do all the work either, we have a network of mentors, and maybe we should see a mentor who has a very specific expertise that can help them. (...) So this is a continuous improvement process that we have. But also through the feedback they give us."

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

"For example, now we are in a boot camp, we had two days and we will have another two days in April. But they themselves, even anonymously, who is participating, our entrepreneurs and other entrepreneurs who apply and are selected, but at the end of each day we have an evaluation questionnaire, which is even anonymous, they say what they think and what suggestions for improvement they have. (...) We also asked who or what kind of person they would like to be there (...) something that we can take people there, we also always have this concern to meet the real needs."

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

"Our team has some size. We are hired by the municipality, our team is more or less trained. Is different. As we also work a lot with our network of mentors or partners but it depends on the situations. There are situations in which a larger team may be needed, but as we have our own technicians, we respond as well."

8. Do you feel it is crucial to have intern designers approach this methodology? Why?

(Question not asked, the interviewee did not feel comfortable answering).

Interview No. 6 - Build Up Labs (Level 5)

Raquel Santos - Startup Happiness Officer (March 24th 2023 - 11:30 AM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"(We approach design thinking) but we don't usually use that term. We go much more by the terms "lean startup", "ideation", I think it turns out to be the same thing. Just for context, we have startups in very different stages, usually when we use this type of methodologies, only those in the early stage and we don't have any pre-defined program for all startups, that is, we in the first meeting with startup we make a plan according to the needs of the startup and the stage and then usually when they are in another stage we end up doing some workshops with them to help them (...). We use our own framework to help with many things. So this is a framework that we created as a studio, to use in the studio, and we ended up sharing it with the public, now it's available to anyone who wants it."

2. How has this experience been? How do startups accept this?

"They like it a lot. (...) One of the super important things in this type of methodology workshop is to ensure that the team is aligned. We already did this workshop with one person or two people (...) but we also did it a little while ago with a startup that is already more advanced but still needs to do some experiments and understand the target. They are already a team of 12 people and we did a workshop with half the team and what they said was "this was incredible because we have a lot of difficulties in guaranteeing that everyone is on the same page" and our methodology ended up helping them. them, without discussing for 3 hours, making decisions. (...) If you get there and hold a meeting with everyone and ask "what do you think we should do?", then everyone gives their opinion and it never ends. What we do with our framework is individual brainstorming, each one puts their ideas there, we use Miro, and then we gather all the ideas, group them (...) and then we vote, without discussing, we vote alone. And if necessary, of course, there is a little talk. But that alone for them was like "wow", because it is much more efficient than listening to each one's opinion, on top of that they are decisions that are actually temporary (...) because then it is the customers who make the decisions."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"We do the workshop, they love it, they're like "wow, that was it" but then the part of actually running the experiments and then having the conclusions based on data, they get a little overwhelmed and end up not even implementing it. (...) We do a workshop (...) and then to test it we suggest small experiments, like a week, in which they launch campaigns (...) just to test it out and many of them end up not doing it."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"It's a good question. I think it helps. I think one of the problems with these approaches is that afterwards you get stuck in ideation. (...) We were always around these methodologies and these things and then when the time came to execute and make decisions (...) we didn't... (...). What I learned from design thinking is a lot of ideation, it doesn't tell you later now "do this"."

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

"Design thinking helps a lot to align the team, to get everyone on the same page. (...) It helps... (...) I don't know if I can say that it's a success factor, of increasing success, even because thinking about the startups that we have probably didn't even use these methodologies."

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

"It's more organic. One thing that we have been reflecting on in recent months is our lack of evaluation or metrics to assess the impact of what we do with startups. It's a topic we'd like to explore further."

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

"That's a complex question.(...) Returning to the problem of lack of execution after experiences, we would like to help startups to execute more, but not us executing. (...) So we really liked having a product to generate everything, which generates websites, marketing campaigns, I think I liked it. (...) I think it's ok. (...) The workshop itself I think is well done. I think that what's missing is the follow-up."

8. Since this methodology is approached by interns that are not designers, have you ever thought of hiring designers to approach this methodology? Do you feel like it would be an advantage?

“No. (...) First we are a super small team, it would be for the resources. (...) But then we resorted a lot to external mentors, all volunteers, but we also didn't ask for a lot of their time, just once in a while(...) Having someone from design thinking in our network I think it would make sense because it's something that I don't think we have.”

Interview No. 7 - Startup Montemor-o-Novo (Level 0)

Teresa Biléu - Coordenadora (March 24th 2023 - 2:00 PM)

1. Which business development methodologies do you approach with startups? What could I expect if I was a startup?

“Usually our first contacts are made by email or by phone. Our radius of action is mainly here Montemor-o-Novo (...) Then there is always a visit to the space. From that moment on (...) there is always a conversation about the business, if it already exists, if not, the area, what services or products it intends to sell, the profile of the people, if they already have some experience, if they don't (...). Then an application is presented, submitted for evaluation (...) If approved, the contract is communicated and signed (...) for 3 years, maximum length of stay, with the possibility of extending it for 18 months, upon presentation of a reasoned request. During this period, what we always do is an initial meeting (...) a company that already exists has to have a situation, if it is a project that is starting it is another, there are always companies that have structured business plans and others that it does not have. (...) It varies a lot from case to case. (...) And then we hold bimonthly meetings (...) to have things settled and a guiding line for that project.”

2. Have you ever considered approaching design thinking with startups?

“Yes. By chance, not only after having answered the form but more recently I was thinking about this question. We do not address it because we do not have anyone with the competence to do so.”

3. What is keeping you away from approaching it? What do you find more challenging about doing it?

“It would have to be either through third parties who have the skills to do so, including an incubation program or including an ideation program, for example, but which I think is not ideal because it will have to be a more continuous session than a session or two, through the training that we try to have throughout the year. (...) I think that not having the opportunity to do this on an ongoing basis, or immediate capacity, would be an important time to include a session on design thinking for entrepreneurs.”

4. Do you consider that you have enough internal resources to promote it? Would you find outsourcing designers to promote it in the first stages easier?

“We have to do the best we can with what we have. If I had a great team at my disposal, I don't, when I don't have it internally I have to try to do it in the best way. It has to be through someone much better than I can do it.”

5. Do you consider that design thinking is a competitive advantage to startups' business development?

"Yes, I think so. I think that currently anything that complements the basics of business is a competitive advantage. (...) Companies come very focused on the product or service (...) and often don't think about everything else that involves. As they have difficulties, they find out. (...) Having a broader view allows you to see and experience several things at the same time and not go discovering step by step."

6. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

"Yes, and on the one hand you are anticipating problems. And it's not easy, for those who are very involved, it's not easy to see them, even bump into them. (...) I feel that a little bit at these meetings is me confronting them with issues that did not arise. (...) It means having a broader view."

7. Do you think design thinking would effectively make your company more appealing to startups?

"I consider so. It would be a differentiating factor because there are not many of us either (in the region) (...) and I think this is important from a perspective of continuous improvement. (...) Everything you add to the services is an added value."

Interview No. 8 - Madan Parque (Level 7)

Alcino Pascoal - Advisor to the Board (March 24th 2023 -3:00 PM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"What we always try to do is at least (...) try to understand if the business model is effectively in place, was it well thought out or not, if the business plan is being implemented or if it needs any changes and it is with this objective that we work. We use the business model canvas tool to fine-tune (...) We look at the company and try to understand how it has structured its business (...) and we use all these methodologies."

2. How has this experience been? How do startups accept this?

"Many of them (entrepreneurs) did not know the term "persona" other business model canvas had heard about it but very little indeed. If you are entrepreneurs (...) who already have 6/7 years of activity, some of them are not so aware of these new methodologies, for these tools and we have to almost catechize them here, so take a design thinking course in a week (...) so that they begin to better understand how they can think about their business in a structured way using this methodological framework."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"We don't have them because we are all mentors in this area, we are more than used to the tools, it is already part of our portfolio of skills that we put at the service of our companies. On the business side, it varies a little. (...)."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"Yes, no doubt. Declaredly. (...) It's a good reference, it's a good framework to use these design thinking methodologies to help simplify the presentation of the business. Then, as many of them need to quickly be able to express themselves and express in concrete what they do, what is their value proposition, simple, clear and direct, for an investor to listen to, who doesn't have much time. (...)."

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

“We are trained to do this and to instill this knowledge in them as well. (...) If they are well advised and understand the advantages of this type of methodology and specific tools, then they can be more agile in the market.”

6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

“We have had a lot of demand (...) we are very focused on delivery, which is welcoming customers, doing onboarding, there is this need to go to work. We are two technicians supporting 70 entrepreneurial projects. This part of the metric is really very important, but we haven't reached the stage where we can start measuring the metric. Of course, this metric of increasing the number of customers, we have the metric of capital that was raised by our companies, of access to funds (...) more systematically. This is one of those questions that also concerns us. (...) There is a long-standing need for the national entrepreneurial ecosystem to have better developed metrics that allow us to extract specific information from the startups we support.”

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

“The issue of capacity build, retaining talent in the team and eventually recruiting new human resources. Our needs at the moment are in these three vectors (...) to become even more competent by accessing advanced training with possibly new methodologies and/or tools that help our daily practice in supporting startups and entrepreneurs.”

8. Do you feel it is crucial to have intern designers approach this methodology? Why?

“I learned from a group of researchers who introduced design thinking in Portugal, almost 30 years ago, and I learned from the source. (...) GUDA - Give U Design Art, the founders of this company (Susana Leonor and Sofia Martins) were my mentors in design thinking. (...) We learned from whom we should have learned. It's a satisfaction.”

Interview No. 9 - Startup Porto (Level 0)

Rafael Pedrosa - Superior Technician (March 28th 2023 - 12:00 PM)

1. Which business development methodologies do you approach with startups? What could I expect if I was a startup?

"As we are still at the beginning, I would say that we still do not have a very defined methodology. (...) At the moment we are working to, in a certain way, complement this situation with some of our programs and developed internally, but what we do a lot so far is to associate ourselves with other partners who already have their programs, their initiatives and try to anchor ourselves in these initiatives that exist, also giving a little of our follow-up and trying, in some way, that our imprint is also marked, but fundamentally what we do is interact with our partners. Then, the 4/5/6 initiatives that we usually have, which are usually organized by our partners, we will then distribute our projects according to what is already being carried out normally by our partners. (...) Right now we are planning two of our programs, which we authored, and which are to be applied within our network."

2. Have you ever considered approaching design thinking with startups?

"Yes. In the planning that we are doing, although it is our intention to give some degree of freedom to whoever is going to work on this program in a more concrete, more operational way, naturally we are going to give master guidelines and at least one of them we are effectively considering the use from design thinking, because some of the initiatives that we have shared with our partners have integrated design thinking, so we have some design thinking experiences and I think that it actually makes sense to integrate them. (...) It is our intention but it may not happen if we are presented with something, in due time, that is more interesting and that we manage to include in our program."

3. What is keeping you away from approaching it? What do you find more challenging about doing it?

"We are now in the program design phase, there is an intention to use design thinking, however we have not closed yet. This means that when I start talking to those who are going to implement our program, if he presents me with another methodology that according to our target audience is more appropriate, I see no reason to maintain interest in that methodology. I'm open, I'm interested, I like it, I think it makes sense."

4. Do you consider that you have enough internal resources to promote it? Would you find outsourcing designers to promote it in the first stages easier?

“We have people here on our team who, as a result of their training and experience, are already comfortable with design thinking and have worked well, so (...) I have no doubt that I have more than enough skills here to respond. In this methodology.”

5. Do you consider that design thinking is a competitive advantage to startups' business development?

“Yes. If we think from a focused point of view, on the consumer's need for the product that we are going to present (...) I would say that in most situations (...) I would say that it will respond to most of the business initiatives we can work with here. However, this does not mean that it actually answers all of them. (...) In some situations I would say that this methodology may not be the most virtuous.”

6. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

“No doubt. That, I think, turns out to be the great asset that this type of infrastructure should have (...) is having people capable of being aware of the offer that exists in terms of models, having knowledge of the ecosystem and the partners that make it up, basically manage to provide for the business initiatives that come to us. (...)”

7. Do you think design thinking would effectively make your company more appealing to startups?

“I would say that this will have a lot to do with the stage of evolution of the incubator itself. That is, if the incubator is operating in a more general way and if the target public is different types of promoters, let's say, with their projects with different types of needs, then I would say yes because we are going to have a program in that different profiles will participate, whether of promoters or companies, it will be interesting for us to have as many methodologies as possible so that we can understand which one can be better accepted by entrepreneurs, although we can suggest one or the other. (...)”

Interview No. 10 - LISPOLIS (Level 0)

Pedro Rebordão - Manager for Promotion and Innovation (April 4th 2023 - 10:00 AM)

1. Which business development methodologies do you approach with startups? What could I expect if I was a startup?

"We use something, a mix between the business development model and lean startup, which is a light version of the other, I would say, for technology businesses. Basically what is on the table here is always validation. (...) It's finding ways for people to try to understand. (...) We always do this bearing in mind that failing fast is cheap. (...) When people are working on a project, I think people often forget one thing, which is the opportunity cost. (...) It is good that people have the notion that they are doing what they are doing and that they quickly understand whether or not it can go ahead. The quicker they realize, the less money they've spent, if it's to close, the quicker they can start doing other things."

2. Have you ever considered approaching design thinking with startups?

"No, for no harm."

3. Why not?

"When we talk to startups, we don't tell them that we are using the business model or lean startup, or we don't tell them that we are using whatever it is. (...) There are a series of methodologies always doing the same things. (...) Entrepreneurs, if they want to raise money, how are they going to be able to raise the 200k, to then have an 18-month runway. This is the drive more than the tool."

4. Would you be willing to approach it somehow? What do you find more challenging about doing it?

(Question not asked, the interviewee implied this is not a hypothesis to be considered).

5. Do you consider that design thinking is a competitive advantage to startups' business development?

"Yes, being used alone will not lead to anything. It's more of a tool. It can be an advantage from the perspective of being one more tool that people have that can help solve certain issues that they have to solve, I'm sure it does."

6. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

(Question not asked, the interviewee implied that it is not a distinctive methodology).

7. Do you think design thinking would effectively make your company more appealing to startups?

"In that sense, yes, the more knowledge people have, the more tools they have to use, the best people I know to do this don't use just one tool. (...) They are people who are always looking for different approaches, even because we get tired of what we are saying and think that we are becoming repetitive or that we are no longer able to derive value from the tools we used. (...) The more tools people have (...) the more likely they are to solve their problems."

Interview No. 11 - Set.Up Guimarães (Level 1)

Rui Pinheiro - Superior Technician (April 4th 2023 - 11:00 AM)

1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

"We've already held some design thinking sessions here to solve entrepreneurs' problems and external companies came to hold these workshops, these sessions, and talk a little bit. It was not just promoting the design thinking session but teaching and explaining what design thinking is. Then, individually, the entrepreneurs who are incubated here (...) I think they will use design thinking (...) because many of them are of a creative nature."

2. How has this experience been? How do startups accept this?

"We did it right at the beginning, it was some time ago, a few sessions. I think it went really well. At the time, we had a good response from the entrepreneurs, very participative, very practical sessions, they participated a lot. (...) It served, essentially, to discuss and debate some of the challenges they had and effectively try to solve here some solutions to the same challenges."

3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

"I think that many times it is even in identifying the problem, because to define the solution you need to know what the problem is, what the challenge is. Entrepreneurs often think that they have a certain challenge but that in practice, after being decomposed, after being well analyzed, the challenge is completely different. Maybe it's even further upstream, for example. Stopping to think is often very important."

4. Do you consider that design thinking is a competitive advantage to startups' business development?

"Of course. (...) The goal of reaching solutions to solve problems through creativity turns out to be very important. For example, if we are going to talk about technological startups that are very focused on developing the product, on the more technical part, saying so, it makes perfect sense sometimes (...) to leave the box a little and use another type of methodology. Now, I believe that maybe not all companies, not all entrepreneurs can understand what it's for until they actually do design thinking and work with this type of tools. Maybe just working, just being there, maybe with some facilitators who know the tools well and have the ability to streamline. Maybe in an initial phase having

that help, having that support, turns out to be very important. Perhaps in the creative base incubator, the guys are already more used to this type of tools, this type of thing, brainstorming, knocking on the next office to ask, talking, asking for suggestions, working together, this type of synergy is very important. I think that for more technological startups, where the team is very technical, it is really necessary to know and know how to work with this type of tools.”

5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

“Undoubtedly. Mainly because they better understand the problems and needs of the customers and in my view products or services to be successful have to solve problems for people, potential customers. (...) There are still companies that spend 1, 2, 3 years closed in an office, indoors, developing the best product in the world without talking without testing, without validating or invalidating with the customer. I think that this type of tools, like design thinking, makes people think a little further and think about developing their own tools as a solution to people’s problems. Many times the problem that the entrepreneur thinks his product solves is not the problem that people have, maybe it’s a problem that the entrepreneur has but most people don’t have that problem in the first place. This stimulus of perceiving (...) There is already something wrong here when a company develops a product and thinks a posteriori what problem the product is solving and it must be the opposite. First there is a problem and then the product must solve the problem. Design thinking can actually help to invalidate the product or service at an early stage, and that’s also important, rather than spending money and time on something no one will want.”

6. Do you somehow measure the impact of design thinking on startups’ performance? Can you somehow measure how efficient it has been?

“No. In practice no, in theory maybe yes. (...) It is not very regular that we promote design thinking workshops with entrepreneurs so the metric is perhaps more qualitative than quantitative, perhaps it is trying to understand a little bit what has changed, if anything has changed. We have no way of quantitatively measuring the impact, unfortunately.”

7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

“There are always (things to be improved) and there is also the intention and interest to increasingly use design thinking in other workshops. I think it makes perfect sense. Everything that helps companies to develop better, basically to stimulate creativity, (...)”

to make them think a little outside the box, to get out of their comfort zone, I think is super positive. (...) Everything that is pedagogical for us is important and almost a priority.”

8. Have you ever considered approaching this methodology consistently over time and not only in meetings & events and a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas)? Do you feel like it would be an advantage?

“No. In a formal way and from that perspective, I don’t think so, we never thought about it, from that perspective. I think we can think of creating a new session, once again, as a way of giving companies tools and capabilities so they can also streamline their sessions. (...) Effectively, our team does not have the capacity or availability, unfortunately, to promote this type of sessions. We can, effectively, go get some external entity as we did (...) but we are not able to be available on a daily basis, unfortunately, to be with companies to promote this type of sessions, because we are a very small team and not everyone has that ability, internally, to promote and streamline this type of sessions. It was spectacular if we managed to do it.”

Appendix H | Structured Interviews - Organized By Questions - Startup Incubators That Approach Design Thinking With Startups

Question 1. How do you usually approach design thinking with startups? What could I expect if I was a startup?

1. Brigantia Ecopark (Level 5)

“To support the idea construction, mapping, and processes. We work on this with the entrepreneurs who come to us. Often people come here with a business idea or even already have a business but still face some difficulty optimizing it. We use this type of tools but not only these. We also have others that we use in some cases. For example, we work a lot with Lean or Kaizen tools as well. (...) We are constantly adapting to the reality of each entrepreneur or businessman who seeks us out, but always with the intention of never leaving them without an answer, without support. If we don't know, let's look for someone who knows, matching supply and demand here. (...).”

2. IET - Instituto Empresarial do Tâmega (Level 7)

“We do all sorts of activities with them. (...) several different types of boot camps (...)The ‘Jump Box’ are boot camps that we do for an intensive week (...) During that time we ask a lot of questions (...) we always bring here people from other companies that we think are interesting for their themes. And it's about shaking. (...) ‘Jumping’ addresses various topics from self-knowledge to what it really is to be an entrepreneur. The ‘Jump Project’ is trying to understand where you see yourself with the company or even as a person in x time. A third day is ‘Jump Tools’, which is the part of the tools they need for, and there comes in a lot of design thinking, the canvas, the swot analyses. Many don't even have that sensitivity, what it is or what it's for - they have an idea and that's it. The fourth day is the ‘Jump Market’ (...) if you don't understand what situation you are in or how the national market is doing, the international market, what is done well abroad, what is not to be repeated. That is, mess with them there and try to make them think. The last one we call the ‘Jump Pitch’, because after all this they really have to know how to sell their product or their company or even the person they are. (...) On that day they have to know how to communicate (...) we always bring here either investors or companies or entrepreneurs (...).”

3. Startup Madeira (Level 2)

“Usually in our programs, through our consultants or mentors, who we always invite to be present, we always try to create a line of thought here, a priori, depending on the projects we are doing, depending on the maturity of each project. However, it is always important, no matter how established a project is, even if it has been on the market for 2 or 3 years (...) it is important sometimes to rethink, to go back a little, to review everything that has been done - from the moment, or why it was created, until the moment the product is on the market. And this all has a design thinking. Even if it's just a solution, you need to think about why the solution is being built that way, the format, that way of being presented to the end customer. For this reason, it is important for us to have specialists with us who really understand this way of thinking and this way of talking and understanding the entrepreneur and having very easy communication between both parties. Therefore, when our startups participate in our program, what we always do is always try to think about what they need, what their needs are, so that they can strengthen the product or service in the final part. In all of our programs, we end up having moments like these or specific workshops, even on design thinking, or in an indirect way, it is always talked about in any project we have.”

4. Startup Leiria (Level 3)

“In internal consulting processes. (...) Senior consultants in particular use it in the initial phase, when trying to define the product, the proposal for the market, we try to get entrepreneurs to think (...) from the user's point of view, in the logic of how to create the product and how to adapt the product or value proposition to the user in order to meet what the market wants. We don't use the traditional design thinking processes of let's sit down at a table and let's do a top-to-bottom design thinking process here, we don't do it that way. I mean, we can do it in specific, specific cases, but in general it's a dynamic process and we use design thinking techniques and we put it on and many times we're not even telling the entrepreneur that we're using design thinking. They don't need to know they are using it to use it.”

5. Startup Portimão (Level 7)

“In some trainings, for example in boot camp, yes, although I confess that it is not 100% my area or that I do not give these trainings. (...) We usually work a lot with our entrepreneurs based on trying to understand what they lack, what they need (...) and

then try through mentoring, or simple conversations that are actually mentoring, see what they need and start working with them on that basis.”

6. Build Up Labs (Level 5)

“(We approach design thinking) but we don’t usually use that term. We go much more by the terms “lean startup”, “ideation”, I think it turns out to be the same thing. Just for context, we have startups in very different stages, usually when we use this type of methodologies, only those in the early stage and we don’t have any pre-defined program for all startups, that is, we in the first meeting with startup we make a plan according to the needs of the startup and the stage and then usually when they are in another stage we end up doing some workshops with them to help them (...). We use our own framework to help with many things. So this is a framework that we created as a studio, to use in the studio, and we ended up sharing it with the public, now It’s available to anyone who wants it.”

8. Madan Parque (Level 7)

“What we always try to do is at least (...) try to understand if the business model is effectively in place, was it well thought out or not, if the business plan is being implemented or if it needs any changes and it is with this objective that we work. We use the business model canvas tool to fine-tune (...) We look at the company and try to understand how it has structured its business (...) and we use all these methodologies.”

11. Set.Up Guimarães (Level 1)

“We’ve already held some design thinking sessions here to solve entrepreneurs’ problems and external companies came to hold these workshops, these sessions, and talk a little bit. It was not just promoting the design thinking session but teaching and explaining what design thinking is. Then, individually, the entrepreneurs who are incubated here (...) I think they will use design thinking (...) because many of them are of a creative nature.”

Question 2. How has this experience been? How do startups accept this?

1. Brigantia Ecopark (Level 5)

“Startups have been feeling involved, in fact, there is something that we try not to do - for us, all ideas are valid, however far-fetched they may be or appear to be in the first phase. We support people to do so but we do not replace people, that is: you have your business idea, this idea that you want to develop. Okay, let's go through these design thinking tools, shape them. My role here is simply, almost, to mentor. I can even warn you and give you my opinion here about what I could eventually do based on my experience, on my connections to the business world, I give you my feedback. But it's like this: if I tell you that it's better to go left and you want to go right, you are the owner of your business. I'll give you an example: very recently I've been mentoring a group of young people who started putting the cart before the horse (...) they thought of setting up a motorcycle experience business but they didn't plan anything and bought the motorcycles. (...) Within this joint reflection that we did, what emerged from there was simple: they optimized the business with other areas that were not initially foreseen, they realized that maybe what they idealized (...) did not suit the reality of the local tourist market, they realized that for maintaining the system as they wanted required a lot of manpower (...). After everything was mapped (...) to see how ideas sometimes evolve, building and deconstructing, until we reached a point (...) where they created two patents that they submitted in the meantime (...) this problem of manpower made them to come up with a solution that led to not one but two patents.”

2. IET - Instituto Empresarial do Tâmega (Level 7)

“We've already done so many boot camps here in Amarante that we're already being called to other cities, to other municipalities, and we're working that way with a brand that we've already created called 'Jump Box', that's where design thinking comes in.”

3. Startup Madeira (Level 2)

“It's always interesting. (...) People who, for example, are still building the product or service, it is very interesting to have this follow-up and this challenge, it is still a challenge that is launched to the entrepreneur, to execute step by step what is to be built and already thinking about the assumptions that will be raised and thinking about the challenges that the customer will face, in each moment of the solution and the sooner they are thought of in these moments the better. And sometimes that's why it's very important for design thinking to always be accompanied by a moment of listening the

end customer, whether with partners, friends, people who really manage to test at the same time, and find bugs, find problems, challenges so that these can already be thought of even before being put on the market. Therefore, it is important to always test. Design thinking is an interesting methodology to do this in a reasoned way. So, for those just starting out it's interesting, for companies that are already in the market they can often think, ok, I'll have to go back to do this, but sometimes it's good because they find challenges that they hadn't thought about yet and then it's over always because it's productive because no matter how much they go back (...) it's interesting because they always end up finding details that can always be improved and sometimes it's nice to have those moments."

4. Startup Leiria (Level 3)

"It depends largely. It depends a lot on the entrepreneur, on the spirit of the entrepreneur. That is, there is no direct answer to this. We have entrepreneurs who arrive with an open mind, willing to listen to everything, and enter these processes with a free head and absorb their reflections, and then we have others who approach us and think they know everything, neither design thinking nor anything, they are those hard and closed heads that we sometimes get caught. Ok, we know that we are mentoring but we already know that 100 come in and 1000 come out (...) They are already focused on what they have and "my product is the best" (...) and sometimes we ask "so, is that it? To the market?" and they say "no, I don't need it because I know my product is the best", when that's the case there's not much to do either."

5. Startup Portimão (Level 7)

(Question not asked, the interviewee did not feel comfortable answering).

6. Build Up Labs (Level 5)

"They like it a lot. (...) One of the super important things in this type of methodology workshop is to ensure that the team is aligned. We already did this workshop with one person or two people (...) but we also did it a little while ago with a startup that is already more advanced but still needs to do some experiments and understand the target. They are already a team of 12 people and we did a workshop with half the team and what they said was "this was incredible because we have a lot of difficulties in guaranteeing that everyone is on the same page" and our methodology ended up helping them. Them, without discussing for 3 hours, making decisions. (...) If you get there and hold a meeting with everyone and ask "what do you think we should do?", then everyone gives their

opinion and it never ends. What we do with our framework is individual brainstorming, each one puts their ideas there, we use Miro, and then we gather all the ideas, group them (...) and then we vote, without discussing, we vote alone. And if necessary, of course, there is a little talk. But that alone for them was like “wow”, because it is much more efficient than listening to each one’s opinion, on top of that they are decisions that are actually temporary (...) because then it is the customers who make the decisions.”

8. Madan Parque (Level 7)

“Many of them (entrepreneurs) did not know the term “persona” other business model canvas had heard about it but very little indeed. If you are entrepreneurs (...) who already have 6/7 years of activity, some of them are not so aware of these new methodologies, for these tools and we have to almost catechize them here, so take a design thinking course in a week (...) so that they begin to better understand how they can think about their business in a structured way using this methodological framework.”

11. Set.Up Guimarães (Level 1)

“We did it right at the beginning, it was some time ago, a few sessions. I think it went really well. At the time, we had a good response from the entrepreneurs, very participative, very practical sessions, they participated a lot. (...) It served, essentially, to discuss and debate some of the challenges they had and effectively try to solve here some solutions to the same challenges.”

Question 3. What are the biggest challenges when approaching design thinking with startups? How do you overcome them?

1. Brigantia Ecopark (Level 5)

(No answer due to the interviewee's lack of time.)

2. IET - Instituto Empresarial do Tâmega (Level 7)

"Many of them arrive here (...) and say "I want to be a boss". (...) If you want to be an entrepreneur, you have to know what it is to be an entrepreneur, if you have an entrepreneurial spirit. We are the first to say that the idea is very good but you don't have an entrepreneurial spirit. But of course we don't give up on them right away, we try to understand how resilient they are."

3. Startup Madeira (Level 2)

"For services and solutions that are already implemented (...) sometimes it is a challenge but I always want to explain that it is good to review what is being put on the market. As much as they say "I've been through this", a day or two later they end up with "okay, this was interesting for me because I saw a presentation format of what I was doing there, it's not as clear to the customer as I am I thought it was or through the feedback I had, through this challenge, this exercise, I managed to realize that after all that call to action that I had there, nobody was doing it because it wasn't so clear". It always ends up being productive."

4. Startup Leiria (Level 3)

"This is one of the great difficulties (the one pointed out in the previous question). When we catch people like that for us it is highly frustrating because we can't help. (...) Then the support is not so deep, of course, we provide support in the (...) part of the contact. If the person comes with a made-up head, there is no design thinking process that is worth it."

5. Startup Portimão (Level 7)

"It may go through a lot of what they want because sometimes they themselves may not really know what they want, or know well the path they are going to take to get there, maybe they already have the final goal, known and maybe even achievable but those difficulties after the path or what they have to do along the way is that sometimes it is complicated. On the other hand, sometimes there are others who just need

someone to listen to them, someone to walk beside them, I notice that a lot. (...) Sometimes they are even on a good path or maybe they need some slight alignment in the strategy there but maybe just listening to someone (...) sometimes it's enough."

6. Build Up Labs (Level 5)

"We do the workshop, they love it, they're like "wow, that was it" but then the part of actually running the experiments and then having the conclusions based on data, they get a little overwhelmed and end up not even implementing it. (...) We do a workshop (...) and then to test it we suggest small experiments, like a week, in which they launch campaigns (...) just to test it out and many of them end up not doing it."

8. Madan Parque (Level 7)

"We don't have them because we are all mentors in this area, we are more than used to the tools, it is already part of our portfolio of skills that we put at the service of our companies. On the business side, it varies a little. (...)."

11. Set.Up Guimarães (Level 1)

"I think that many times it is even in identifying the problem, because to define the solution you need to know what the problem is, what the challenge is. Entrepreneurs often think that they have a certain challenge but that in practice, after being decomposed, after being well analyzed, the challenge is completely different. Maybe it's even further upstream, for example. Stopping to think is often very important."

Question 4. Do you consider that design thinking is a competitive advantage to startups' business development?

1. Brigantia Ecopark (Level 5)

(No answer due to the interviewee's lack of time.)

2. IET - Instituto Empresarial do Tâmega (Level 7)

"I think so. It's a way for them to look, to see, to think, to question themselves, to mix there. (...) We, when we presented this strategy, because this is a strategy, they manage to look at that written and drawn brainstorming and manage to get somewhere. I really believe that this strategy is very important, which many still don't know."

3. Startup Madeira (Level 2)

"Yes, like any other methodology. Obviously, the most important thing is always to understand what the startup is, what the company needs, what the big challenge is. However, regardless, I think it is very interesting to go through the largest number of exercises, whether from the moment of construction to the moment of implementation (...) It is important to use methodologies and continuous exercises to always improve and adapt your product and service and here design thinking can be one of those, regardless of the stage it is in (the startup/company)."

4. Startup Leiria (Level 3)

"Yes. The design thinking process as a whole is very interesting but it is not necessary to use it all. Just the part of empathizing, the part of diverging, having a divergence of ideas and coming back to a convergence of ideas (...) only this part of the design thinking process (...) will allow us to put ourselves in the client's shoes, think about the client and understand something that is more than a product, what is my value proposition. A very common thing is that people think they sell products or services, in reality what they sell is a value proposition to the market. To understand this value proposition, this part of empathizing is necessary because we are thinking that the customer is buying, or we are assuming that the customer is going to buy for the wrong reason. Therefore, I would say that some design thinking techniques in this area are essential. (...) People often don't know that we are using design thinking, nor do they have to. It is what it is. We have to have some of these techniques to make them have this thought and understand customers, potential customers and realize what they can do to improve in relation to customers."

5. Startup Portimão (Level 7)

"Yes, because they acquire more experience (...) a different view and have a different perspective of the whole (...) they have different opinions."

6. Build Up Labs (Level 5)

"It's a good question. I think it helps. I think one of the problems with these approaches is that afterwards you get stuck in ideation. (...) We were always around these methodologies and these things and then when the time came to execute and make decisions (...) we didn't... (...). What I learned from design thinking is a lot of ideation, it doesn't tell you later now "do this"."

8. Madan Parque (Level 7)

"Yes, no doubt. Declaredly. (...) It's a good reference, it's a good framework to use these design thinking methodologies to help simplify the presentation of the business. Then, as many of them need to quickly be able to express themselves and express in concrete what they do, what is their value proposition, simple, clear and direct, for an investor to listen to, who doesn't have much time. (...)."

11. Set.Up Guimarães (Level 1)

"Of course. (...) The goal of reaching solutions to solve problems through creativity turns out to be very important. For example, if we are going to talk about technological startups that are very focused on developing the product, on the more technical part, saying so, it makes perfect sense sometimes (...) to leave the box a little and use another type of methodology. Now, I believe that maybe not all companies, not all entrepreneurs can understand what it's for until they actually do design thinking and work with this type of tools. Maybe just working, just being there, maybe with some facilitators who know the tools well and have the ability to streamline. Maybe in an initial phase having that help, having that support, turns out to be very important. Perhaps in the creative base incubator, the guys are already more used to this type of tools, this type of thing, brainstorming, knocking on the next office to ask, talking, asking for suggestions, working together, this type of synergy is very important. I think that for more technological startups, where the team is very technical, it is really necessary to know and know how to work with this type of tools."

Question 5. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

1. Brigantia Ecopark (Level 5)

(No answer due to the interviewee's lack of time.)

2. IET - Instituto Empresarial do Tâmega (Level 7)

"No doubt. (...) Even we (incubator) have to do this to improve ourselves and value ourselves, that's what being an entrepreneur is, that's what being proactive is. (...)."

3. Startup Madeira (Level 2)

"Certainly. All exercises also serve to test and analyze, listen to, and even evaluate the capabilities that that company has and this is important to do and design thinking is one of the methodologies that can be used. The important thing is to really customize the one for each company that makes more sense, but I think design thinking can be and should be one of those that helps to create greater success here (...) but it is a good methodology for that."

4. Startup Leiria (Level 3)

"Yes, guaranteed. It's exponentially bigger. (...) Because then you are already talking to the market."

5. Startup Portimão (Level 7)

"Each case is different. (...) Having mentors who, for example, can be an added value and we have to go for that part.(...) We don't do all the work either, we have a network of mentors, and maybe we should see a mentor who has a very specific expertise that can help them. (...) So this is a continuous improvement process that we have. But also through the feedback they give us."

6. Build Up Labs (Level 5)

"Design thinking helps a lot to align the team, to get everyone on the same page. (...) It helps... (...) I don't know if I can say that it's a success factor, of increasing success, even because thinking about the startups that we have probably didn't even use these methodologies."

8. Madan Parque (Level 7)

"We are trained to do this and to instill this knowledge in them as well. (...) If they are well advised and understand the advantages of this type of methodology and specific tools, then they can be more agile in the market."

11. Set.Up Guimarães (Level 1)

"Undoubtedly. Mainly because they better understand the problems and needs of the customers and in my view products or services to be successful have to solve problems for people, potential customers. (...) There are still companies that spend 1, 2, 3 years closed in an office, indoors, developing the best product in the world without talking without testing, without validating or invalidating with the customer. I think that this type of tools, like design thinking, makes people think a little further and think about developing their own tools as a solution to people's problems. Many times the problem that the entrepreneur thinks his product solves is not the problem that people have, maybe it's a problem that the entrepreneur has but most people don't have that problem in the first place. This stimulus of perceiving (...) There is already something wrong here when a company develops a product and thinks a posteriori what problem the product is solving and it must be the opposite. First there is a problem and then the product must solve the problem. Design thinking can actually help to invalidate the product or service at an early stage, and that's also important, rather than spending money and time on something no one will want."

Question 6. Do you somehow measure the impact of design thinking on startups' performance? Can you somehow measure how efficient it has been?

1. Brigantia Ecopark (Level 5)

(No answer due to the interviewee's lack of time.)

2. IET - Instituto Empresarial do Tâmega (Level 7)

"We do questionnaires, to try to understand. (...) We only started to realize that, that it was important to evaluate, about a year ago. One thing we realized was that I can't be the one to ask these questions because then I'm already so in (...) that I could be influencing. What we did last year, in all activities (...) we asked ISCTE, which is carrying out the impact assessment. We pay to do this assessment so that we know at the end of this year how much of an impact it has been. (...) Sometimes the hardest part is getting people to respond to us. (...) I'm excited, I'm dying to see if the work we've been doing with these young people is really having an impact on them."

3. Startup Madeira (Level 2)

"Assessing the impact, in itself, is already an assessment with many challenges. It is difficult to assess the widespread impact. What we always do is try to customize and individualize, case by case, we cannot say that that methodology was perfect for all startups. (...) A very important thing to establish in any program that we have (...) are the objectives of each project. (...) The way to evaluate here is a very simple milestone that is whether or not they managed to improve the project through that workshop. Sometimes it is a "yes or no" poll or it is something that we will only be able to evaluate during a year or two years from the moment they are implemented (...) and it also takes time to understand, if it was more sales, if it was more clicks, if it was more communication (...)."

4. Startup Leiria (Level 3) (Not approached regularly)

"No. Not specifically. (...) We don't use methodologies as a whole. We use techniques (...) as needed or depending on the profile of the entrepreneur. (...) Here we go, adapting to the need. As such, we have no way of measuring, nor is it an indicator that we are very interested in understanding, which of these methodologies is more efficient because there is no correct answer. We measure the efficiency of our consulting but in consulting I often don't even know what techniques were used. (...) I don't know what goes on in the other consultants' meetings. I have an idea, more or less."

5. Startup Portimão (Level 7)

“For example, now we are in a boot camp, we had two days and we will have another two days in April. But they themselves, even anonymously, who is participating, our entrepreneurs and other entrepreneurs who apply and are selected, but at the end of each day we have an evaluation questionnaire, which is even anonymous, they say what they think and what suggestions for improvement they have. (...) We also asked who or what kind of person they would like to be there (...) something that we can take people there, we also always have this concern to meet the real needs.”

6. Build Up Labs (Level 5)

“It's more organic. One thing that we have been reflecting on in recent months is our lack of evaluation or metrics to assess the impact of what we do with startups. It's a topic we'd like to explore further.”

8. Madan Parque (Level 7)

“We have had a lot of demand (...) we are very focused on delivery, which is welcoming customers, doing onboarding, there is this need to go to work. We are two technicians supporting 70 entrepreneurial projects. This part of the metric is really very important, but we haven't reached the stage where we can start measuring the metric. Of course, this metric of increasing the number of customers, we have the metric of capital that was raised by our companies, of access to funds (...) more systematically. This is one of those questions that also concerns us. (...) There is a long-standing need for the national entrepreneurial ecosystem to have better-developed metrics that allow us to extract specific information from the startups we support.”

11. Set.Up Guimarães (Level 1)

“No. In practice no, in theory maybe yes. (...) It is not very regular that we promote design thinking workshops with entrepreneurs so the metric is perhaps more qualitative than quantitative, perhaps it is trying to understand a little bit what has changed, if anything has changed. We have no way of quantitatively measuring the impact, unfortunately.”

Question 7. Do you feel your design thinking practices have reached the top level? What would you like to be improved?

1. Brigantia Ecopark (Level 5)

"We have so much to evolve. Evolution has to be constant because the market is always evolving, and therefore when you work with creativity and innovation, you always have to be at the forefront, and this often forces you to read a lot, to be attentive to the market, to participate in many things to investigate as well. (...) What we now want to do even in terms of financing (based on the program Portugal) 2030 is to continue to form teams, we also feel that we need to grow."

2. IET - Instituto Empresarial do Tâmega (Level 7)

"We were doing a design thinking for us (incubator) at the beginning of the year. (...) Maybe we have this facility because we are inside, we are aware of the tools that exist. (...) We need more human resources (...) we only have three permanent people here."

3. Startup Madeira (Level 2)

"Technology is always evolving, people are always evolving, so those programs also have to constantly evolve and adapt to the market, to the needs, just like a startup, so much so that our projects have been very an aspect in which we have been monitoring what the needs are and what kind of challenges, exercises and accompaniments we can give our entrepreneurs. Therefore, at all. I think that new methodologies are always appearing or whenever new challenges appear in the market or ideas for new programs, whenever it makes sense we adapt and create. (...) And this is also a way for us to internally worry a little about how we do design thinking. (...) Whenever we do a new edition (of programs) we always adapt with the new trends, what is being done, and also analyzing what went well, what went wrong, in each program, to improve and with feedback from the people who participate. (...) We do design thinking about times, themes, the impact it will have. We also do this as a project."

4. Startup Leiria (Level 3)

"There are always things to improve. (...) We not only use parts, but sometimes we create variations of the methodology (...) and this is very common. But I would say that having a tool that integrates most of these things would make sense."

5. Startup Portimão (Level 7)

"Our team has some size. We are hired by the municipality, our team is more or less trained. Is different. As we also work a lot with our network of mentors or partners but it depends on the situations. There are situations in which a larger team may be needed, but as we have our own technicians, we respond as well."

6. Build Up Labs (Level 5)

"That's a complex question.(...) Returning to the problem of lack of execution after experiences, we would like to help startups to execute more, but not us executing. (...) So we really liked having a product to generate everything, which generates websites, marketing campaigns, I think I liked it. (...) I think it's ok. (...) The workshop itself I think is well done. I think that what's missing is the follow-up."

8. Madan Parque (Level 7)

"The issue of capacity build, retaining talent in the team and eventually recruiting new human resources. Our needs at the moment are in these three vectors (...) to become even more competent by accessing advanced training with possibly new methodologies and/or tools that help our daily practice in supporting startups and entrepreneurs."

11. Set.Up Guimarães (Level 1)

"There are always (things to be improved) and there is also the intention and interest to increasingly use design thinking in other workshops. I think it makes perfect sense. Everything that helps companies to develop better, basically to stimulate creativity, (...) to make them think a little outside the box, to get out of their comfort zone, I think is super positive. (...) Everything that is pedagogical for us is important and almost a priority."

Question 8. Specific Question (Level Related)

1. Brigantia Ecopark (Level 5)

Since this methodology is approached by interns that are not designers, have you ever thought of hiring designers to approach this methodology? Do you feel like it would be an advantage?

"Yes, and not just in terms of design thinking, we can also support entrepreneurs with product design or even product packaging. We always have to work on the communication part. Design is not limited to design thinking, it will also be added to marketing and communication. (...) We follow a humble path in this sense in which we are a team of 3 people (...) and we don't know everything, our relief is that we have a good network, and we look externally for local companies to support us."

2. IET - Instituto Empresarial do Tâmega (Level 7)

Do you feel it is crucial to have intern designers approach this methodology? Why?

"I'm familiar but I wasn't comfortable doing this kind of work and sharing this kind of knowledge. I can, but if there is already someone specialized in this, aren't we going to get the best ones? We need to go get people who are comfortable working in that area so that they own the passion they already have, it's easier to get the message across. I know how to do that, but maybe I don't know how to do it as well as those people. It is an investment that makes perfect sense."

3. Startup Madeira (Level 2)

Since this methodology is approached by outsourced designers, have you ever considered promoting design thinking as a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas)?

"Yes, good question. (...) If we go now to a design thinking workshop, there are one or two programs in which we clearly assume that specific day for that theme, in which the specialty is really that. However, I believe that the methodology is so interesting that this ends up being done in a dynamic and authentic way during the programs even if it is not the name of that methodology but it ends up being talked about, focused and addressed throughout the program. throughout, from start to finish and even after. (...) Therefore, perhaps what can happen is still forcing or reinforcing this in our programs, but this ends up being always done and thought about."

4. Startup Leiria (Level 3)

Since this methodology is approached by intern designers, have you ever thought about approaching this methodology consistently over time and not only in meetings & events? Do you feel like it would be an advantage?

“We never considered it for two reasons: point number one, financial issues, hiring is expensive and we are a small institution in terms of size, and then because the skills we normally look for in consultants are a little broader than technical specialists. We prefer less specialized people, but with broader knowledge than being there looking for someone very specific who can be very useful in one part but then cannot respond to other things that the projects need. It's our vision.”

5. Startup Portimão (Level 7)

Do you feel it is crucial to have intern designers approach this methodology? Why?

(Question not asked, the interviewee did not feel comfortable answering).

6. Build Up Labs (Level 5)

Since this methodology is approached by interns that are not designers, have you ever thought of hiring designers to approach this methodology? Do you feel like it would be an advantage?

“No. (...) First we are a super small team, it would be for the resources. (...) But then we resorted a lot to external mentors, all volunteers, but we also didn't ask for a lot of their time, just once in a while (...) Having someone from design thinking in our network I think it would make sense because it's something that I don't think we have.”

8. Madan Parque (Level 7)

Do you feel it is crucial to have intern designers approach this methodology? Why?

“I learned from a group of researchers who introduced design thinking in Portugal, almost 30 years ago, and I learned from the source. (...) GUDA - Give U Design Art, the founders of this company (Susana Leonor and Sofia Martins) were my mentors in design thinking. (...) We learned from whom we should have learned. It's a satisfaction.”

11. Set.Up Guimarães (Level 1)

Have you ever considered approaching this methodology consistently over time and not only in meetings & events and a structured methodology for business development as a whole process rather than merely approaching it in specific phases (e.g., to define a problem or generate ideas)? Do you feel like it would be an advantage?

"No. In a formal way and from that perspective, I don't think so, we never thought about it, from that perspective. I think we can think of creating a new session, once again, as a way of giving companies tools and capabilities so they can also streamline their sessions. (...) Effectively, our team does not have the capacity or availability, unfortunately, to promote this type of sessions. We can, effectively, go get some external entity as we did (...) but we are not able to be available on a daily basis, unfortunately, to be with companies to promote this type of sessions, because we are a very small team and not everyone has that ability, internally, to promote and streamline this type of sessions. It was spectacular if we managed to do it."

Appendix I | Structured Interviews - Organized By Questions - Startup Incubators That Do Not Approach Design Thinking With Startups

**Question 1. Which business development methodologies do you approach with startups?
What could I expect if I was a startup?**

7. Startup Montemor-o-Novo (Level 0)

“Usually our first contacts are made by email or by phone. Our radius of action is mainly here in Montemor-o-Novo (...) Then there is always a visit to the space. From that moment on (...) there is always a conversation about the business, if it already exists, if not, the area, what services or products it intends to sell, the profile of the people, if they already have some experience, if they don't (...). Then an application is presented, submitted for evaluation (...) If approved, the contract is communicated and signed (...) for 3 years, maximum length of stay, with the possibility of extending it for 18 months, upon presentation of a reasoned request. During this period, what we always do is an initial meeting (...) a company that already exists has to have a situation, if it is a project that is starting it is another, there are always companies that have structured business plans and others that it does not have. (...) It varies a lot from case to case. (...) And then we hold bimonthly meetings (...) to have things settled and a guiding line for that project.”

9. Startup Porto (Level 0)

“As we are still at the beginning, I would say that we still do not have a very defined methodology. (...) At the moment we are working to, in a certain way, complement this situation with some of our programs and developed internally, but what we do a lot so far is to associate ourselves with other partners who already have their programs, their initiatives and try to anchor ourselves in these initiatives that exist, also giving a little of our follow-up and trying, in some way, that our imprint is also marked, but fundamentally what we do is interact with our partners. Then, the 4/5/6 initiatives that we usually have, which are usually organized by our partners, we will then distribute our projects according to what is already being carried out normally by our partners. (...) Right now we are planning two of our programs, which we authored, and which are to be applied within our network.”

10. LISPOLIS (Level 0)

"We use something, a mix between the business development model and lean startup, which is a light version of the other, I would say, for technology businesses. Basically what is on the table here is always validation. (...) It's finding ways for people to try to understand. (...) We always do this bearing in mind that failing fast is cheap. (...) When people are working on a project, I think people often forget one thing, which is the opportunity cost. (...) It is good that people have the notion that they are doing what they are doing and that they quickly understand whether or not it can go ahead. The quicker they realize, the less money they've spent, if it's to close, the quicker they can start doing other things."

Question 2. Have you ever considered approaching design thinking with startups?

7. Startup Montemor-o-Novo (Level 0)

“Yes. By chance, not only after having answered the form but more recently I was thinking about this question. We do not address it because we do not have anyone with the competence to do so.”

9. Startup Porto (Level 0)

“Yes. In the planning that we are doing, although it is our intention to give some degree of freedom to whoever is going to work on this program in a more concrete, more operational way, naturally we are going to give master guidelines and at least one of them we are effectively considering the use from design thinking, because some of the initiatives that we have shared with our partners have integrated design thinking, so we have some design thinking experiences and I think that it actually makes sense to integrate them. (...) It is our intention but it may not happen if we are presented with something, in due time, that is more interesting and that we manage to include in our program.”

10. LISPOLIS (Level 0)

“No, for no harm.”

Question 3A. What is keeping you away from approaching it? What do you find more challenging about doing it?

7. Startup Montemor-o-Novo (Level 0)

“It would have to be either through third parties who have the skills to do so, including an incubation program or including an ideation program, for example, but which I think is not ideal because it will have to be a more continuous session than a session or two , through the training that we try to have throughout the year. (...) I think that not having the opportunity to do this on an ongoing basis, or immediate capacity, would be an important time to include a session on design thinking for entrepreneurs.”

9. Startup Porto (Level 0)

“We are now in the program design phase, there is an intention to use design thinking, however we have not closed yet. This means that when I start talking to those who are going to implement our program, if he presents me with another methodology that according to our target audience is more appropriate, I see no reason to maintain interest in that methodology. I'm open, I'm interested, I like it, I think it makes sense.”

Question 3B. Why not?

10. LISPOLIS (Level 0)

“When we talk to startups, we don't tell them that we are using the business model or lean startup, or we don't tell them that we are using whatever it is. (...) There are a series of methodologies always doing the same things. (...) Entrepreneurs, if they want to raise money, how are they going to be able to raise the 200k, to then have an 18-month runway. This is the drive more than the tool.”

Question 4A. Do you consider that you have enough internal resources to promote it? Would you find outsourcing designers to promote it in the first stages easier?

7. Startup Montemor-o-Novo (Level 0)

"We have to do the best we can with what we have. If I had a great team at my disposal, I don't, when I don't have it internally I have to try to do it in the best way. It has to be through someone much better than I can do it."

9. Startup Porto (Level 0)

"We have people here on our team who, as a result of their training and experience, are already comfortable with design thinking and have worked well, so (...) I have no doubt that I have more than enough skills here to respond. in this methodology."

Question 4B. Would you be willing to approach it somehow? What do you find more challenging about doing it?

10. LISPOLIS (Level 0)

(Question not asked, the interviewee implied this is not a hypothesis to be considered).

Question 5. Do you consider that design thinking is a competitive advantage to startups' business development?

7. Startup Montemor-o-Novo (Level 0)

"Yes, I think so. I think that currently anything that complements the basics of business is a competitive advantage. (...) Companies come very focused on the product or service (...) and often don't think about everything else that involves. As they have difficulties, they find out. (...) Having a broader view allows you to see and experience several things at the same time and not go discovering step by step."

9. Startup Porto (Level 0)

"Yes. If we think from a focused point of view, on the consumer's need for the product that we are going to present (...) I would say that in most situations (...) I would say that it will respond to most of the business initiatives we can work with here. However, this does not mean that it actually answers all of them. (...) In some situations I would say that this methodology may not be the most virtuous."

10. LISPOLIS (Level 0)

"Yes, being used alone will not lead to anything. It's more of a tool. It can be an advantage from the perspective of being one more tool that people have that can help solve certain issues that they have to solve, I'm sure it does."

Question 6. Do you agree that a coordinated approach to design thinking can outcome in a higher chance of success for startups?

7. Startup Montemor-o-Novo (Level 0)

“Yes, and on the one hand you are anticipating problems. And it's not easy, for those who are very involved, it's not easy to see them, even bump into them. (...) I feel that a little bit at these meetings is me confronting them with issues that did not arise. (...) It means having a broader view.”

9. Startup Porto (Level 0)

“No doubt. That, I think, turns out to be the great asset that this type of infrastructure should have (...) is having people capable of being aware of the offer that exists in terms of models, having knowledge of the ecosystem and the partners that make it up, basically manage to provide for the business initiatives that come to us. (...)”

10. LISPOLIS (Level 0)

(Question not asked, the interviewee implied that it is not a distinctive methodology).

Question 7. Do you think design thinking would effectively make your company more appealing to startups?

7. Startup Montemor-o-Novo (Level 0)

"I consider so. It would be a differentiating factor because there are not many of us either (in the region) (...) and I think this is important from a perspective of continuous improvement. (...) Everything you add to the services is an added value."

9. Startup Porto (Level 0)

"I would say that this will have a lot to do with the stage of evolution of the incubator itself. That is, if the incubator is operating in a more general way and if the target public is different types of promoters, let's say, with their projects with different types of needs, then I would say yes because we are going to have a program in that different profiles will participate, whether of promoters or companies, it will be interesting for us to have as many methodologies as possible so that we can understand which one can be better accepted by entrepreneurs, although we can suggest one or the other. (...)."

10. LISPOLIS (Level 0)

"In that sense, yes, the more knowledge people have, the more tools they have to use, the best people I know to do this don't use just one tool. (...) They are people who are always looking for different approaches, even because we get tired of what we are saying and think that we are becoming repetitive or that we are no longer able to derive value from the tools we used. (...) The more tools people have (...) the more likely they are to solve their problems."