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Boosting Design Thinking adoption in organisations through a game-based toolkit: A gamified approach in building facilitators to overcome Design Thinking adoption barriers

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Design Thinking is increasingly used within organisations to achieve innovative results that give companies a competitive advantage. However, this is not an easily achievable result: companies face multiple obstacles that slow adoption and often force companies not to pursue adoption. The scientific community has not identified clear contributions that can help overcome the barriers discussed in the literature for years, giving the possibility to companies to boost Design Thinking adoption. By studying 10 private organisations that have adopted Design Thinking effectively, overcoming the main adoption obstacles, this study tries to identify which facilitators can be adopted to enable an effective adoption. This puts companies in a position to benefit from Design Thinking and achieve innovative performance. In any case, these represent complex notions to be even understood. As an additional result, the study recognises how game-based formats enhance and facilitate the adoption mentioned above of Design Thinking within private organisations. The literature has already identified that game-based formats facilitate the understanding and digestion of new concepts and procedures. This study expands the range of applications of gamified approaches in unconventional contexts and scope, verifying the benefits also in relation to Design Thinking. A new game-based format has been designed for this research, which was also tested. The study demonstrates how the integration in the organisational culture of approaches such as Design Thinking through a gamified format represents one of the critical ways companies can embrace to face the internal tension of transformation, speeding up the adoption process to give companies the possibility to adopt innovation processes faster.

KEYWORDS
Design Thinking, Design Thinking adoption, game-based formats, innovation, innovation process, organisational change, strategy making

1 | INTRODUCTION

Private organisations are becoming more interested in implementing methods and approaches coming from the design disciplines. In particular, in the last decades, there has been increasing attention and interest in how Design Thinking (DT) may be applied to obtain innovative results and performances.

Many organisations have embraced Design Thinking as a strategic tool in recent years. DT is a practice rather than a precise science. Design Thinking represents a complex phenomenon, and the literature that deals with it also reflects this complexity, not providing a consolidated and shared definition. Some use 'Design Thinking' as a word to refer to 'the way designers think and work' (Cross, 2001). Others often related to the usage and application of many methodologies, giving the idea that Design Thinking is a straightforward skill anybody can learn. Inside the literature, it is possible to find also contributions stating that Design Thinking is not merely a description of a designer's way of thinking (Norman, 2010; Porcini, 2009).

Scholars from the design, business, and management disciplines have critically analysed Design Thinking during the past 20 years. The benefits of Design Thinking for organisational innovation and transformation, better decision-making (Liedtka, 2015), customer orientation (Kumar & Whitney, 2007), and competitive advantage (Martin & Martin, 2009) have been well-documented in recent literature.

The adoption of Design Thinking is frequently only partially accomplished through quick solutions and initiatives, leading to the introduction of Design Thinking superficially without changing organisational culture or structure. Therefore, it is necessary to adopt well-defined strategies that consider the right time of absorption and adoption to achieve optimal results. Organisations have experimented with various methods to promote Design Thinking, including creating innovation labs with designers, hiring designers for strategic roles, and requiring staff to participate in training sessions frequently offered by design consultancies (Van der Bijl-Brouwer et al., 2019). However, it is recognised that many companies have a slow uptake of DT in practice (Gruber et al., 2015; Kolko, 2015; Liedtka, 2015), concluding that there are several adoption barriers organisations need to address (Engberts & Borgman, 2018). In fact, this adoption frequently is associated with limited incorporation of Design Thinking into the business (Junginger, 2009). According to Wrigley et al. (2020), design intervention typically occurs inside an organisation through forms that have flat engagements and a short-term impact.

Managers still need guidance on how to integrate Design Thinking and occasionally, even on the outcomes to be anticipated from its adoption, which causes uncertainty around resource allocation and investment.

There is, however, a gap in the literature: scholars for several years have focused on addressing and mapping the different adoption barriers that companies may encounter during Design Thinking adoption processes. However, there are fewer contributions to resolve these barriers.

Thus, this study aims to identify possible facilitators to put into practice and a new way/format for understanding barriers and facilitators faster, speeding the innovation process.

To solve the identified gap associated with facilitators in Design Thinking adoption, this research first tried to map the barriers already discussed in the literature. After that, the study analysed 10 companies that have already effectively introduced Design Thinking. Analysing companies already adopting Design Thinking was a fundamental action to map facilitators to be adopted to overcome the main barriers related to Design Thinking adoption. A first result was an overview of effective facilitators that can be adopted. However, as mentioned, companies need to understand how to adopt Design Thinking to really succeed in incorporating it. Therefore, an experiment was conducted, creating a game-based format 'Beyond Design Thinking' that would support companies in understanding both the barriers and the facilitators to adopt, supporting companies in understanding how to implement facilitators and generating as final effect an acceleration in the understanding and adoption of Design Thinking.

A game-based output was chosen because recent studies have demonstrated the importance of game-based formats in introducing innovation into the workplace and how game forms can help people comprehend specific concepts more quickly (Gudiksen, 2015).

The development of game-based formats has gained popularity in recent years across several disciplines, including strategy and management and product and service offerings. Lately, it is starting to be also studied inside the context of Design Thinking (Gudiksen, 2015).

The article is structured as follows: the subsequent section, the literature review, summarises essential contributions on the relationship between Design Thinking and innovative outcomes and the main barriers identified to date in the literature concerning the adoption of Design Thinking holding back innovation efforts. This sets the basis for understanding which main obstacles are studied in this research and which were attempted to be answered through the identified facilitators. Moreover, the literature review section reports the importance of game-based formats to facilitate innovation more clearly and quickly. In the following sections, an overview of the research methodology is presented to describe then the qualitative empirical results obtained. Finally, the results are discussed regarding theoretical contributions, and finally, the study's contribution and future steps are identified.

2 | LITERATURE REVIEW

2.1 | Design Thinking and its role in innovation processes inside organisations

Design has always been a primary source of inspiration for innovation (Utterback et al., 2006). Over time, design has evolved and changed, taking on multiple roles in various contexts.

The scientific community is underlining more and more how design can be a valuable way to develop new offers, products, and

services (Borja de Mozota, 2006; Brown, 2008; Bruce & Bessant, 2002; Kotler & Rath, 1984; Verganti, 2008, 2009).

Over the years, it has become possible to see how Design Thinking is one of the most promising design methodologies that can foster innovation within organisations.

Design Thinking is the phenomenon that, more than others, shows the connection between design and management (Zurlo, 2019).

The growing interest in the management literature consolidated the positive implications of Design Thinking for innovation, strategic options generation, and management education (Beckman & Barry, 2007; Garbuio et al., 2015; Glen et al., 2014).

Design Thinking has also been shown to have positive benefits on organisational change and innovation (Brown, 2009), better decision-making (Liedtka, 2015), client orientation (Kumar & Whitney, 2007), and competitive advantage (Martin & Martin, 2009).

Organisations use Design Thinking for a variety of reasons, including to promote innovation, particularly disruptive innovation, and internal changes in mindsets, perspectives, and behaviours (i.e., a change in organisational culture), to enhance customer experiences, promote internal teamwork, dismantle silos, recruit and retain highly creative employees, as well as bring fundamental changes in organisational and social systems (Dunne, 2018a, 2018b). It has also been recognised how its adoption can drive organisations to reach market innovation, promote organisational change, and set new strategic direction (Magistretti et al., 2022).

Eradatifam et al. (2020) state that DT has five key goals:

1. Including customers, stakeholders, and experts who may offer guidance on 'potential impacts' in the innovation process;
2. A better comprehension of the needs and expectations of the customers by including them at every stage;
3. Using interdisciplinary collaboration to explore and manage new distribution channels fully;
4. Putting an effective monitoring system at the centre of the innovation process to reduce risks posed by innovations;
5. Redefining organisations' roles as social actors who actively influence society's destiny.

Given the above, Design Thinking can represent a huge potential for business and innovation challenges (Seidel & Fixson, 2013; Verganti, 2008), and it can significantly improve customer experiences (Gruber et al., 2015; Kolko, 2015). For these reasons, organisations desire to implement it.

2.2 | Design Thinking barriers to adoption

Studies have shown that businesses with design at the centre of their value development strategy perform better.

However, adopting design and Design Thinking to gain an advantage over competitors requires having design as 'integral in the organisation'.

Organisations have experimented with various strategies for fostering the use of design, including creating innovation laboratories with designers, hiring designers for strategic roles, and requiring staff to participate in training sessions, frequently offered by design consultancies (Van Der Bijl-Brouwer et al., 2019).

However, it is acknowledged that many businesses have a slow adoption of DT in practice (Gruber et al., 2015; Kolko, 2015; Liedtka, 2015), which has led researchers to conclude that there are several adoption hurdles that businesses need to overcome (Engberts & Borgman, 2018).

In this study, four major categories of macro-obstacles were found. Over 60 barriers were identified during the literature review process and were grouped into four macro-barriers.

The uncertainty produced by change is one of the most recurrent mentioned macro-barriers (Ackoff, 1974; Hutchison, 2001; Kilmann, 1984; Martin & Martin, 2009; Tetenbaum, 1998; Weeks et al., 2004). Companies are hesitant to switch from standard procedures that yield consistent benefits because they are unsure of the new process's impact.

As a result, management frequently chooses to implement changes that do not call for significant investments and provide specific solutions in a short time.

Leadership is a second significant macro-barrier discussed for adopting Design Thinking (Beckman & Barry, 2007; Carlgren et al., 2014; Dunne, 2018a; Dunne, 2018b; Junginger, 2009; Kimbell, 2011). Because they are frequently unfamiliar with the method, managers frequently need to recognise the potential advantages. Furthermore, they are unaware of it and cannot put it into practice, which results in several issues and delays.

It is challenging for leaders to comprehend how to apply it in the organisation or identify the best possibilities to foster employee appreciation of Design Thinking because they need to be aware of its characteristics.

The third well-established macro-barrier to the adoption of Design Thinking is the incompatibility of the language and approaches of Design Thinking (Avital et al., 2007; Björklund et al., 2020; Boland et al., 2008; Dunne, 2018a; Dunne, 2018b; Kupp et al., 2017; Stephens & Boland, 2015; Zurlo, 2019). Both the terms and the tools proper for Design Thinking are not commonly used in other sectors. Employees frequently react negatively to adoption and fail to grasp the strategy due to this. According to Björklund et al. (2020), when businesses try to include Design Thinking, they frequently encounter problems since engineers' and management's methodologies and approaches diverge from those of Design Thinking.

Finally, the last category of macro-barrier discussed in the literature is the simplification and misunderstanding of the method (Björklund et al., 2020; Dunne, 2018a; Ersoy, 2018; Zurlo, 2019).

Design Thinking is frequently simplified and trivialised since it is perceived as a process that does not produce accurate and immediate outcomes, can be quickly learned, and uses tools that encourage diverse and unstructured activity. The relevance of the method is frequently diminished by the trivialisation of Design Thinking and the development of solutions that provide late results.

Design Thinking is frequently perceived as only a set of tools with no genuine advantages or valuable techniques, which diminishes the concept. Prejudice against Design Thinking results from this.

To counter the barriers mentioned above, it is crucial to understand what facilitators might be put in place to overcome them. However, to succeed in this process, it is, first of all, necessary that companies also understand the barriers they may face to be aware of them and reduce risks. It is then fundamental to identify a format that simply and effectively makes it easy to vehicle both barriers and enablers to different stakeholders. This helps to have a total understanding of the phenomenon and to accelerate the integration process.

2.3 | The role of game-based formats to facilitate Design Thinking adoption

In analysing the literature to understand possible ways and forms to facilitate the understanding of both the barriers to be addressed and the facilitators to be put into practice, it has emerged how the classic theoretical formats often need to be more effective in this field.

Among the various possibilities of conveying information clearly and enabling fast adoption, game-based formats emerge strongly.

Recent studies have shown the need for game-based formats, demonstrating how they can help introduce innovation into work environments and how game forms can help people understand specific concepts more quickly (Gudiksen, 2015).

In recent years, game-based format development has become increasingly popular across a range of disciplines, including strategy and management, product and service offerings, and they are starting to be studied also in the field of Design Thinking (Gudiksen, 2015).

This is because gamification enables the transfer of essential and well-established game elements, such as fun and intrinsic motivation, into professional settings (Schmidt, Emmerich, & Schmidt, 2015).

It has been observed how the use of game elements in non-game contexts brings different positive effects (Deterding, Dixon, et al., 2011), reporting successful implications in motivation (Alsawaier, 2018) and engagement (Bitrián et al., 2021).

Gamification is defined 'as the use of game design elements in non-game contexts with the objective to motivate and increase user activity and retention' (Deterding, Dixon, et al., 2011; Deterding, Khaled, et al., 2011).

According to Kapp (2012), using gamification enables the use of game-based mechanisms and associated game-thinking dynamics to address problems since it has the potential to promote learning, engage users, and encourage participation.

Numerous examples of how game-based formats enable the possibility of working effectively on innovation processes and generating reliable results have come to light over time. The LEGO Serious Play is an excellent example of this.

The strength of the game-based format rests in its use of a design language that enables everyone involved to incorporate a variety of actors (Brandt et al., 2008). According to Hamari et al. (2014), this leads to the development of new behaviours and enhanced motivation. Studies also demonstrate how game mechanics can affect motivation, enjoyment, and engagement when preparing a task or working in a group. (Hamari et al., 2014).

Numerous studies in the literature and numerous examples on the Internet have documented the benefits mentioned above (Hamari et al., 2014; Blohm & Leimeister, 2013; Schacht & Schacht, 2012; Zichermann & Cunningham, 2011). Different studies also demonstrated how gamification can be useful in business to boost employee productivity or efficiency, encourage engagement and competitiveness, and boost business success in clearly defined job areas (Breuer et al., 2022).

Early experiments also try to verify the validity of these benefits in the world of Design Thinking. This is because, according to Iversen and Buur (2002), game-based formats make it simpler and quicker to learn and assimilate design-related abilities.

Game-based formats must be 'structured' play to be genuinely beneficial (Caillois, 2001 [1961]; Prensky, 2003). Therefore, to be considered valid formats and not improvised mediums, it is necessary to have well-established rules in their use (Huizinga, 1955; Caillois, 2001 [1961]; Tekinbas & Zimmerman, 2003).

This study aims to two primary outcomes. On one side, it wants to describe the essential facilitators organisations can use during Design Thinking adoption to overcome the consolidated barriers to adoption. On the other hand, the study wants to explain how the use of game-based formats can support organisations in a conscious and faster adoption of Design Thinking, supporting organisations in achieving better organisational results and performance.

Specifically, there are two research questions underlying this contribution:

> RQ1. What are the main **enablers** that should be implemented to **facilitate** Design Thinking adoption inside organisations to counter recurrent (and established) barriers to adoption?
> RQ2. *Can the Design Thinking adoption **be boosted** thanks to the adoption of a game-based format?*

3 | RESEARCH METHODOLOGY

To answer to the mentioned research questions, an exploratory case study analysis was employed. This method is beneficial when there is no preset outcome. It supports researchers in answering the 'how' and 'what' of a study (Yin, 2009). An exploratory case study can be employed whenever a particular occurrence is novel and substantially unexplored and there are not enough theories to develop ex-ante hypotheses throughout the investigation.

When looking for enablers (in terms of 'how' and 'what') that make it possible to overcome obstacles in implementing Design Thinking, the exploratory case study technique appears to be the most appropriate.

In addition, a new game-based format with card decks was developed to answer the second research question. This choice was made because several contributions in the literature suggest how card decks foster thinking, offering specific perspectives on a topic mixed with reflective questions (Schmidt, Emmerich, & Schmidt, 2015). These aspects are essential for the present study. Schmidt, Schmidt, et al. (2015) also demonstrated how using card formats inside the workplace can enhance motivation in people. This represents a key point considering the context of the application of this study and the related game-based format created.

Moreover, it was demonstrated how card-based formats are beneficial to suggest information to complete a task (Breuer et al., 2022), thus being a useful format to suggest to companies what to do to achieve Design Thinking adoption.

The card format gives the possibility to assimilate abstract or complex information in a simple way: in this case, it can therefore facilitate the understanding of the different barriers that hinder the possibility to innovate in the company. Moreover, always Breuer et al. (2022) stated how the card format gives the possibility to learn by doing: it is therefore optimal for understanding more easily the right moves to put into practice in business strategy. In fact, as it will be described in the barriers section, difficulty in understanding is often one of the first barriers to adoption.

The format has been effectively used in different contexts, such as areas of playful experiences (Zimmermann & Salen, 2004), behaviour change (Lockton et al., 2010), and also user-centred design. Complex issues and novel ideas can become intuitive and understandable for those participating in the process when card formats are used in gaming activities (Su et al., 2014).

3.1 | Empirical setting

The analysis was performed using 10 case studies of large organisations from various industries using Design Thinking for a while. Organisations from multiple industries were selected in order to have a diversified sample and to have the possibility to identify recurrences in the use of facilitators. The criterion for choosing the sample was to take organisations that had not only been implementing Design Thinking for some time but had also achieved accurate results thanks to its application (results which have also been publicised in various media). Table 1 lists the multiple organisations, their industry, and the year they first embraced Design Thinking.

A series of semi-structured interviews were conducted to gain an understanding of the facilitators adopted and the relative benefits found. Once the facilitators were mapped in this study and the game-based format was created, a test session of the game-based format produced as a result of the study was also carried out with some of the organisations used in the sample mentioned above. The session served to understand the benefits of the new tool. A new phase of semi-structured interviews followed the previous steps, to analyse the benefits and implications of the output produced.

TABLE 1 List of organisations used as the sample, their sectors, and year of DT adoption.

	Sector	Year of DT adoption
Organisation 1	Multinational conglomerate corporation	2015
Organisation 2	Telecommunications	2010
Organisation 3	Smart energy solutions	2019
Organisation 4	Finance	2019
Organisation 5	Electrical appliance	2012
Organisation 6	Food and beverage	2012
Organisation 7	IT service management	2018
Organisation 8	Technological components	2015
Organisation 9	Insurance	2017
Organisation 10	Telecommunications	2017

3.2 | Data collection

Semi-structured interviews with each organisation lasted roughly an hour and were done by two researchers as part of the analysis. Because of their ability to collect the rich material required for case study research, semi-structured interviews are used (Edwards & Talbot, 1999; Gillham, 2000). All the interviewees had important positions within the organisations that were selected. This was crucial to get as much information as possible and explore the implications and advantages of the various facilitators used. The protocol created for the semi-structured interviews aimed to understand (as demanded by the exploratory analysis) *what* various facilitators had been set up to allow the adoption of Design Thinking and *how* they had been put into practice inside the organisations. All the interviews were taped and transcribed.

The protocol to investigate the facilitators used inside the different organisations was composed of three sections:

- General information: The first section's objectives were to gather data about the organisation, its adoption of Design Thinking, and the key individual who made possible the starting of the Design Thinking adoption.
- Understanding the various facilitators (what): Questions about facilitators implemented to promote the adoption of Design Thinking were included in the second section of the interviews.
- Understanding the implementation process of the different facilitators (how): The focus of the third section was to understand how the facilitators identified to overcome the most typical barriers for adoption were introduced inside the company.

Once the facilitators were discovered, thanks to the activities described above, and once the game-based format was implemented, test sessions were organised with some of the organisations in the sample. The sample of companies taken for the test focused on

the sample previously explained in Table 1, selecting the companies with the lowest level of adoption of Design Thinking. This is because testing it with companies with a high level of adoption would have resulted in only a partial assessment of the tool's usefulness, as they had already overcome most of the barriers and put some of the necessary facilitators into practice. Working instead on the companies with the lowest adoption level allowed them to test the tool first-hand and validate its effectiveness. Six companies were selected from the initial sample, and several toolkit tests were conducted. Each test lasted 1 h and was mainly aimed at verifying the functioning and mechanics of the toolkit. The test was carried out with maximum freedom of use of the tool by the participants. The supporting researchers observed the session in silence and intervened only if explicitly requested by the participant, in case of doubts about the dynamics of the tool's usage. All tests were filmed and recorded.

Finally, after the test session, new semi-structured interview sessions were organised with the test participants to investigate the benefits the participants experienced from its adoption. Each interview lasted an average of 45 min. All the interviews were taped and transcribed.

The protocol was divided into two main sections:

- Ease of using the game-based format: The first section contained questions on how clear and easy the tool is to use in the required steps.
- Benefits of the game-based format: The second session investigated the benefits found both in understanding barriers and facilitators and in supporting the introduction of new actions to speed up the adoption of Design Thinking within the organisation.

3.3 | Data analysis

Researchers had complete access to the data because every interview had been recorded and typed out, giving the possibility to study the data collected and maximise the results for the study (Braun &

Clarke, 2006). To begin an accurate analysis, a complete transcription is also necessary (Lapadat & Lindsay, 1999). After being transcribed, the data were examined by MaxQda to provide a more organised framework for doing the analysis. MaxQda software supported thematic analysis (Braun & Clarke, 2006) by identifying, analysing, and reporting patterns within data. Two researchers conducted the analysis. Following a first-hand discussion, the research team invited two outside researchers to combine their findings and add additional commentary to the statistical findings.

4 | RESULTS

The results section consists of three main parts. First, the results on the identification of facilitators within the organisations presented in the sample are presented. Subsequently, the game-based format that was produced to enable understanding of both the barriers (already established in the literature, but clustered in this study) and the facilitators to overcome them (the result of this study) is presented. Finally, the benefits of using the new game-based format are described, highlighting how using this type of tool in relation to Design Thinking can catalyse innovation inside organisations.

4.1 | Design Thinking facilitators

Four key macro facilitators for adopting Design Thinking have been identified thanks to the different interviews, their coding, and the analysis that followed. Additionally, as a result of the thematic analysis, it was possible to identify a secondary level of coding. The second level contains practical actions that organisations must take to allow the adoption of Design Thinking.

Below are presented the four macro facilitators (aggregated dimensions of coding) and for each of them the relevant practical actions identified (second-order theme of coding), also reported in Table 2.

TABLE 2 Contribution of this study: Four macro categories of facilitators for Design Thinking adoption identified and related actions to implement.

First level: Macro facilitator (Aggregated dimension)	Second level: Practical actions (Second-order theme)
1. The presence of a network who already adopted Design Thinking	1.1. Creation of focal points
	1.2. Showing examples
	1.3. Talk frequently with senior management
2. The presence of a strategy and implementation plan of adoption	2.1. Creation of trainings
	2.2. Develop actions of communications
	2.3. Creation of incentives
3. The presence of employees ready for change	3.1. Stimulate people to get out of their comfort zone
	3.2. Create the right mix between generations of employees
4. The presence of designers inside the different projects avoiding making them isolated	4.1. Adopt Design Thinking as soon as possible
	4.2. Underline the advantages of working with the internal Design Thinking team

4.1.1 | Macro category one: The presence of a network who already adopted Design Thinking

The presence of Design Thinking professionals within or outside the organisation supporting the adoption process is linked to the first macro category that has emerged. In the various companies examined, developing a network of people to serve as a catalyst and clear up any doubts on the subject was a crucial step.

The first significant action to implement was the 'creation of focal points' (element 1.1), which should always be present within the organisation. They are highly knowledgeable about the subject and eager to help those unsure or uncertain, encouraging the adoption of Design Thinking.

'Showing examples' (element 1.2) is a second critical action to implement for the first macro facilitator. All the interviews suggested that both management and other business divisions commonly need to learn about the applicability and benefits of the strategy. Showing examples of other companies implementing Design Thinking and obtaining tangible results can increase people's interest in the topic.

'Talk frequently with senior management' (element 1.3) is the last action that emerged related to the first macro category of the facilitator. Doing so is fundamental to outline the method's benefits and convince them to adopt more. This activity proved to be significant since it persuades actors in the organisation who manage the money and that understanding the method can then finance Design Thinking experiments.

4.1.2 | Macro category two: The presence of a strategy and implementation plan for adoption

The second macro category obtained from this study is related to creating a detailed plan of activities with impacts on several levels that may involve the organisation's various stakeholders.

'Creation of trainings' (element 2.1) emerged as the first significant action. The different interviews revealed how training was organised with different formats, all aiming to spread awareness of the method and attempt to implement it. Different recognised forms are in-house training with outside specialists, outsourced courses, and outsourced initiatives on the topic where participants can start a conversation on Design Thinking with other professionals.

'Develop actions for communication' (element 2.2) is a second crucial action identified for the second macro facilitator that arose. It is essential to communicate internally and externally what the company is doing related to Design Thinking. Internally the initiatives are mostly related to printed and intranet formats. Externally, social media emerged as beneficial not only for the organisation's reputation but also for activating an exchange of ideas among employees and people outside the company who were already using Design Thinking.

The 'creation of incentives' (element 2.3) is the last practical action associated with the second macro facilitator category. Incentives do not just mean financial rewards. Among the various situations, it was recognised that giving incentives in reputation, while providing visibility to those people testing the new methods, was then attracting other people to do the same. People were also pleased and proud to have worked on projects that had won awards, recognising that Design Thinking projects had a high possibility of winning awards for the obtained results.

4.1.3 | Macro category three: The presence of employees ready for change

The third macro category that emerged affects the realm of the individual employee. Employees are a significant barrier to the adoption of Design Thinking.

'Stimulate people to get out of their comfort zone' (element 3.1) is the first action discovered to be necessary. Here, it appears essential to support employees in cultivating curiosity and keeping abreast of the latest developments in the different markets. Additionally, it seemed essential to train employees to be ready for the change, trying to understand how to not work just in 'safe spaces' but trying to move into new solutions.

The second crucial aspect recognised by the third macro facilitator is the necessity to 'create the right mix between generations of employees" (element 3.2). According to some respondents, young people have a larger workforce and a greater inclination for change than those who have previously worked regularly for the company for several years. The combination would allow for fresh air inside organisations and stimulate older people.

4.1.4 | Macro category four: The presence of designers inside the different projects avoiding making them isolated

The fourth (and last) macro category of facilitator obtained from this study is related to the value of integrating designers into diverse initiatives across the entire organisation instead of keeping the Design Thinking team alone.

The first action that emerged as the most crucial is to "adopt Design Thinking as soon as possible' (element 4.1) to allow the Design Thinking team to participate early in projects and suggest novel ways for executing them. It has been recognised how employees recognise more advantages in adopting Design Thinking if the related team participates since the beginning of the process. This is because Design Thinking can significantly contribute to the problem-framing stage of the project.

To 'underline the advantages of working with the internal Design Thinking team' is the second crucial action that emerged about the fourth macro facilitator identified (element 4.2). It was recognised the importance of letting people understand how working with the internal DT reduces information spillovers and shortened project schedules, as well as being cheaper for the company. This is because working with external teams requires technical time to transfer information, involves outsiders in the project, and costs more money.

4.2 | Beyond Design Thinking: The game-based format to support Design Thinking implementation

As already mentioned within this study, once the barriers and facilitators had been identified, it was necessary to think about how they could be communicated and quickly absorbed primarily to the key figures in the company but also to all the actors involved in the process of Design Thinking adoption. Considering the established benefits of game-based formats, already described in the literature review, in terms of engagement, motivation, and ease of comprehension of information, it was decided to try to develop a new game-based format. In particular, as already mentioned, it was decided to focus on the card format, because it has already been explored as examples and benefits.

'Beyond Design Thinking' (see Figure 1) is realised through a set of cards connected to an online platform.

It was designed to allow mainly managers (but can be used by different stakeholders to enhance knowledge on the topic) to understand better the steps they may take to overcome specific barriers they can face while trying to implement Design Thinking in organisations.

It has been conceived with two main parts: first, a digital self-assessment of barriers (provided with a full explanation), and second, recommendations for facilitators that can be put in place in order to foster the adoption of Design Thinking, which players will be able to select through a gamified approach.

The decision to develop a game that combines digital and physical is made because the initial digital assessment simplifies the player's experience. The online assessment is in fact designed to pose a series of questions on the adoption of Design Thinking in the company and the resources owned by the participating company to achieve the above-mentioned adoption. Through the answers provided in the online assessment, the system will calculate the different barriers participants need to be aware of and the facilitators associated with them. Developing a tree system of this kind would be more complicated and might make using the tool-less stimulating.

'Beyond Design Thinking' was conceived with six main phases. Below are described the key moments of the toolkit and the function of each of its components, represented in Figure 2.

- Phase 1: Each company that wants to use the game-based format carries out a preliminary activity to determine how many 'energy tokens' each company has available. Indeed, it is crucial to determine the extent of the actions that each company can put into practice, as all companies cannot deploy all facilitators without considering their size and, thus, the effort they can deploy.

The number of energies available will be divided into three large groups, considering whether the company using the game is a small, medium, or big company.

This was one of the research results: the different actions that different companies of different sizes have taken to implement Design Thinking were analysed and clusterised by the number of resources deployed.

To each action was assigned some tokens. Seeing the average of the total 'energy tokens' of the actions implemented by the different typologies of companies, the set of tokens to be given initially to each company category was determined.

- Phase 2: The player will have to answer an online questionnaire that based on the structure of the company and its experience in the world of Design Thinking will determine which barriers the company needs to watch out for. The online results are linked to cards. Each barrier has a number corresponding to a card explaining the barrier. Each barrier is explained through a dedicated 'barrier card' inside the 'barrier card deck'. Each barrier card, apart from the explanation of the barrier itself, contains at the end a series of facilitator codes that can be deployed to counter that barrier (see Figure 3).
- Phase 3: The player using the game-based format has to search the related facilitator cards from the related deck to identify the relevant cards to explore.

FIGURE 1 Visualisation of the conceived game-based format. [Colour figure can be viewed at wileyonlinelibrary.com]

FIGURE 2 Main elements of the game-based format. [Colour figure can be viewed at wileyonlinelibrary.com]

FIGURE 3 Visualisation of both barrier and facilitator cards. [Colour figure can be viewed at wileyonlinelibrary.com]

Each facilitator card explains the mentioned facilitators and indicates how many energy tokens are required to implement it (see Figure 3). This set of cards presents facilitators from the four categories obtained during the theoretical research explained below in the results section.

- Phase 4: Thanks also to the support of a designed board, the player using the game-based format will have to prioritize the available facilitator cards, respecting the energy tokens available.

- Phase 5: The player can do different trials to try different combinations of facilitator cards, considering the available energy tokens.

- Phase 6: The player must present the final choice of facilitators to be adopted through the designed board. This board allows the player to arrange the facilitator cards freely, but at least one card from each of the two 'must-have' facilitator card categories must be present. Two of the four facilitator types identified in the study were found to be fundamental in all circumstances (must-haves), according to the qualitative comparative analysis conducted in the original study that allowed the creation of this tool: 'The presence

of a network that has already adopted Design Thinking' and 'The presence of actions sustaining the implementation' (the names of these facilitator cards refer to the kinds of facilitators described in the results section).

The creation of the tool reflects the research carried out. The questionnaire to be carried out by the companies incorporates the questions used in the research to reveal the main problems (and related barriers) they may encounter in adopting Design Thinking. A relative barrier-cards-deck was created starting from the different barriers identified in the literature review. The study continued with identifying different facilitators that companies can implement to overcome the barriers and encourage the adoption of Design Thinking. These facilitators were also associated with facilitator-cards-deck and linked to the different barriers they can solve.

4.3 | The importance of game-based formats to support the Design Thinking adoption

The last result concerns the adoption of the game-based toolkit, representing the crucial and empirical validation of the two previous clusters of results. Once the game-based format was created, it was first tested, and semi-structured interviews were subsequently carried out. The different interviews gave the possibility to understand that the game-based format can represent a valuable way to boost and strengthen the Design Thinking adoption inside organisations, facilitating the achievement of innovative outcomes.

In particular, it was possible to identify five positive effects.

The first positive result relates to understanding both barriers and facilitators.

Participants stated that this mode served as an accelerator in their understanding of the problem. Very often, they found themselves in the position of having to search for information on blogs and scientific articles that did not provide in just a place an overview of all possible barriers and facilitators. The collection of these two elements through the cards, on the other hand, functioned as an element to make the understanding of barriers and facilitators faster and more immediate.

One of the participants during the ex-post interviews commented:

> This tool allowed me to find all the information in one resource. The explanations are clear and reduced, thus saving time for research and giving the possibility to understand the elements to be taken into account directly.

A second result is represented by a better understanding of the need for structured actions to adopt Design Thinking, reducing the idea that this can be done with quick activities.

Seeing the variety of possible actions and reading their explanation made the testers realise how adoption requires structured rather than immediate investment. Very often, as stated in the review of

barriers at the beginning of the article, people believe that Design Thinking can be easily implemented because it is mainly linked to using tools. Knowing the different barriers and the time it takes to implement the facilitators correctly made it possible to understand how the Design Thinking process requires precise and planned investments.

One of the interviewees stated:

> Reading articles and blogs, I believed adopting Design Thinking was faster and required less investment. I did not think these actions required more focused planning and the necessary resources. The game-based format helped me reflect on these aspects.

The third result is related to developing a greater understanding of the importance of following the different actions to be taken. Participants reported that they understood the need for an action plan, covering several levels and areas. Many were unaware of the four macro categories of facilitators to be considered to act on the different levels and foster adoption. Most felt that in-house or external training courses would be sufficient to create an initial understanding and then set to work immediately to test possible introductions of the method.

The fourth result is related to greater ease of planning the actions to be taken in the company to facilitate the adoption of Design Thinking.

It was discovered how the toolkit made it easy to prioritise different actions. In addition, the link between the energies available to the company and the energies needed to implement each facilitator made it possible to manage better the choice of actions to be taken inside organisations. One of the interviewees stated:

> Having a tool that already gives me an estimate of the time/energy needed to implement the different actions has allowed me to plan the possible actions in the company faster. My company had never implemented some of the suggested actions, so it would have been difficult to understand how much time and energy they would require. The risk would then have been to ignore some actions or to do the wrong planning. The use of the tool supported me in making the choice and reducing the risk and uncertainty.

Finally, the last result to emerge from the analysis concerns a greater interest and involvement in the topics described in the toolkit generated by the game-based and not exclusively theory-study-based mode from the participants. The game-based dimension made users more likely to understand the information provided. Many have complained that helpful information on Design Thinking can be found in scientific articles or blogs that should be shorter for those who want an immediate understanding. The toolkit, on the other hand, made it possible to find clear and concise information. All users reported reading all the barrier and facilitator cards provided in the

game-based format. They reported that this was possible because cards were easy to understand and short on information. It, therefore, emerged that this facilitated the understanding of many concepts, often ignored by some, in a more streamlined and engaging manner. One of the respondents' comments was:

> This mode allowed me to understand more quickly some content I needed to be aware of. I often find myself reading articles on the subject that take me up to an hour per article. The synthesis of information and the ease of communication of these elements allowed me to understand much more information.

5 | DISCUSSION

The article contributes to understanding what facilitators should be put in place to facilitate the adoption of Design Thinking and how using a game-based format can enable this adoption more easily.

The first contribution concerns the identification of facilitators to counter the barriers to adoption established in the literature. In the literature review for this study, it was possible to underline how businesses are increasingly operating in an uncertain environment.

In this environment, innovation and performance enhancement are more important than ever for any organisation to be competitive (Gino & Staats, 2015). It was observed that among the many potential factors for gaining a competitive edge, Design Thinking could be a legitimate means of attaining innovation in businesses and setting them apart from their rivals.

Companies should use a special method called 'Design Thinking' to explore new markets and deal with fresh heuristics. However, as mentioned several times in this article, the introduction of Design Thinking comes up against multiple barriers. The study discovers and maps possible facilitators organisations can implement to overcome the barriers faced. Those investments should be considered as fundamental if organisations want to achieve new performances. Biçer (2021) stated that if organisations in the future want to succeed and advance, they must be aware of and commit to making the necessary changes. Investing in the different actions identified in the article is, therefore, crucial to achieve a coherent introduction of Design Thinking that allows companies to make the most of the results possible. It resulted as fundamental to make managers conscious of the importance of effectively implementing Design Thinking inside companies, making them aware of the method. In particular, it was noticed how they need time to absorb it and the necessity of different initiatives to really appreciate it. This reflects what Saviozzi et al. (2014) argue about the importance for managers to start studying Design Thinking at a scholastic level. Understanding the method and how to introduce it is of paramount importance. This is because Design Thinking has an uncommon nature and terminology, being different from the processes often adopted in companies. Björklund et al. (2020) point out how these differences lead companies to experience friction in implementing Design Thinking. Companies must therefore understand the right implementation plan and equip themselves with key figures to support the adoption process.

The second contribution concerns creating and testing a new game-based format that can reduce all the problems mentioned above, allowing companies to understand the method and guide them in implementing Design Thinking. It emerged how using gamification to explain Design Thinking offers better clarity about the method and helps draft a more thorough strategy. Rules and procedures for gamification prevent efforts from being wasted and ensure that everyone is focused on the desired outcomes, which helps to improve goal setting, organisational alignment, and participation of multiple actors (Huxham & Vangen, 2004; Ollila & Yström, 2016). Moreover, providing knowledge on Design Thinking through a game format has been seen to give a quicker understanding of concepts. This finding also confirms what Camacho (2016) said about games in general, proving that it is also valid for Design Thinking studies. For him, they provide a more engaging type of language that helps to overcome misalignments in meaning and gives the possibility to understand concepts better (Camacho, 2016).

The study also gives the possibility to confirm the applicability in the area of Design Thinking of another concept related to game-based format. Ollila and Elmquist (2011) reported how games could create more collaboration among people and more knowledge from external stakeholders. It was possible to see how this is also valid in the context of Design Thinking. The test of the toolkit showed how it gives the possibility to reason more easily and between more actors about the actions to be taken. In addition, it was shown how it allows absorbing external knowledge more quickly, which was commonly stated to take longer. Finally, it has been shown how the use of the game-based format within the world of Design Thinking helps companies understand how to prioritise the actions to be taken and be aware of the commitment required by them.

Overall, it was recognised how the use of game-based formats in relation to Design Thinking appears to be an effective tool that allows for a better understanding of key concepts, reducing absorption time and avoiding unsuccessful and useless implementation efforts.

6 | CONCLUSIONS AND FUTURE RESEARCH

This research looks at potential facilitators for overcoming the many adoption barriers that can appear during the adoption of Design Thinking. It offers some categories of facilitators and related practical activities that companies can implement to overcome well-established barriers.

What design researchers can do is provide detailed explanations of the 'how' and justifications for the 'why' things happen. This can configure design as an agent for change that brings and supports DT adoption within a non-design-intensive context, making it root.

As an additional component, the research provides a game-based format for organisations called 'Beyond Design Thinking' to help them identify any obstacles they may face during the adoption process and

what specific facilitators they may use to overcome them. Companies are assisted in analysing and choosing facilitators while considering factors such as organisation size and the number of resources they can leverage during the adoption process.

For those reasons, the study may also contribute to organisational change theories because the results outlined above aim to shorten adoption times and streamline adoption procedures to enable businesses to adopt Design Thinking to produce innovation fully. In terms of managerial implications, the study intends to help managers comprehend how to implement Design Thinking to obtain results giving a competitive advantage.

Furthermore, the implementation of the game-based format as well as supporting the adoption of Design Thinking may be useful to raise awareness on the topic in non-design organisations. These might better understand why DT should and can be adopted as a means to activate transformation paths. This reflection can generate new possibilities for discussion around organisational theories.

Finally, the study makes it possible to expand some of the benefits of game-based formats within the world of Design Thinking, which to date has been verified in other sectors but only partly concerning DT.

In order to determine whether the results that emerged in the coding process are really effective, the coding procedures and insights discovered could later be confirmed by other external researchers.

Furthermore, to adequately explain the research behind the study, it will be necessary to develop new articles as contributions to the literature that focus on the theoretical study on mapping barriers and their facilitators. Finally, in the future, it would be useful to test the toolkit on a larger number of companies to map further benefits and prioritise the different positive implications resulting from its use. This may also lead to further theoretical contributions that focus vertically on the toolkit developed and the relative benefits it can bring to companies.

CONFLICT OF INTEREST STATEMENT

The authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

DATA AVAILABILITY STATEMENT

The data supporting this study's findings are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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