DESIGN THINKING IN THE ARAB WORLD: PERSPECTIVES, CHALLENGES AND OPPORTUNITIES

By

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1 Introduction: Thesis Aim and Scope of the Study

This chapter serves as an introduction to the thesis. It starts by providing an overview of Design Thinking in its original cultural context and the relevance of research to the Arab world, followed by the research questions and aims. It also introduces the methodological design of the study and provides an outline of the thesis' structure.

1.1 Design thinking in its original cultural context

There is little agreement in the literature on the precise definition of Design Thinking (Koh et al., 2015). Therefore, there are different views on how Design Thinking has been understood throughout its evolution. Simon's (1969) work is early evidence of the roots of Design Thinking. His cognitive approach to decision-making and views on design theory paved the way to establish design as "the transformation of existing conditions into preferred ones" (Simon, 1996, p. 4). Schön (1983), on the other hand, focused more on the 'practice' side of Design Thinking and emphasized the 'reflection-upon-creation' aspect (Johansson-Sköldberg et al., 2013), which can improve the work of designers. One distinguished center of origin for Design Thinking is Stanford University in the

U.S., where the term "Design Thinking" was already used in the 1950s, and continuous developments have taken place ever since (von Thienen et al., 2016, 2017b, 2019, 2021; Auernhammer & Roth, 2021). Several strands of influence from the U.S. and beyond merged into a unique innovation culture and set of innovation methodologies. Design Thinking in this context focuses mainly on creativity education at academic institutions and the advancement of desirable innovation in professional practice. Later, a partially independent strand of research emerged under the headline Design Thinking, focused on the thought processes of design professionals (e.g., Archer, 1969; Buchanan, 1992; Cross, 2011). These different notions of Design Thinking overlap partially, and the exchange between multiple communities concerned with Design Thinking has led to even richer theoretical bases as well as practices. Lindberg (2013) provides an overview of how the concept of Design Thinking is used in several threads of academic discussions and how discourses have influenced each other. The development of Design Thinking, however, has been a complex process with multiple lines of expertise and application concerns leading to current practices, and an agreed-upon definition of Design Thinking is yet to appear (Liedtka, 2015). Nevertheless, Design Thinking has been mainly growing over the past two decades as an approach to innovation and creativity. Tim Brown, executive chair of IDEO, defines Design Thinking as "a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success." (About IDEO, 2022). Other researchers view Design Thinking as a heuristic, a series of steps or as strategies that scaffold people to have the ability to solve complex or 'wicked' problems or to create an innovative product (Koh et al., 2015; Razzouk & Shute, 2012). Design Thinking, in its currently dominant understanding, has been widely implemented in different fields and used in many aspects of life, such as business (Liedtka & Ogilvie, 2011; Kelley & Kelley, 2013; von Thienen et al., 2017a), research (Plattner et al., 2011, 2012), education (Plattner et al., 2009; Roth, 2015; Sababha et al., 2021), social entrepreneurship (Chou, 2018), and other domains (e.g., Burnett & Evans, 2017; McDonagh & Thomas, 2010; Lewis et al., 2020). Many organizations – both private and public

sector – have begun to apply Design Thinking in their professional practices, and for many of them, Design Thinking has become an essential part in their digital transformation journey (Gerken et al., 2022). Notably, Design Thinking is intended for, and used in, all areas of life (Plattner et al., 2009; Meinel et al., 2017). For the purpose of this study, Design Thinking is adopted as ***a process, a mindset, and a human-centered approach to creativity, collaboration, and innovation.***

Over time, several frameworks of Design Thinking have been developed by different individuals, universities, and companies around the world (e.g., Brown, 2008; British Council, 2016). Although each framework uses its own terminology, they all focus on intensively investigating the users' needs to define the real problem the user is dealing with and ideate, prototype, and test possible solutions to that problem. One of the most popular frameworks is that of the Hasso Plattner Institute of Design at Stanford (known as 'd.school'). The d.school was established in 2004 at Stanford University in the USA. In 2007, a sister school called the HPI School of Design Thinking (known as 'D-School') was established at the Hasso Plattner Institute (HPI) in Potsdam, Germany, at which another framework was developed (Figure 1). Although the phases in these two frameworks are often presented in a linear way, Design Thinking is an iterative process (Mononen 2017; de Paula, 2019) in which the designer can go back and forth between phases based on the needs of the challenge at hand.

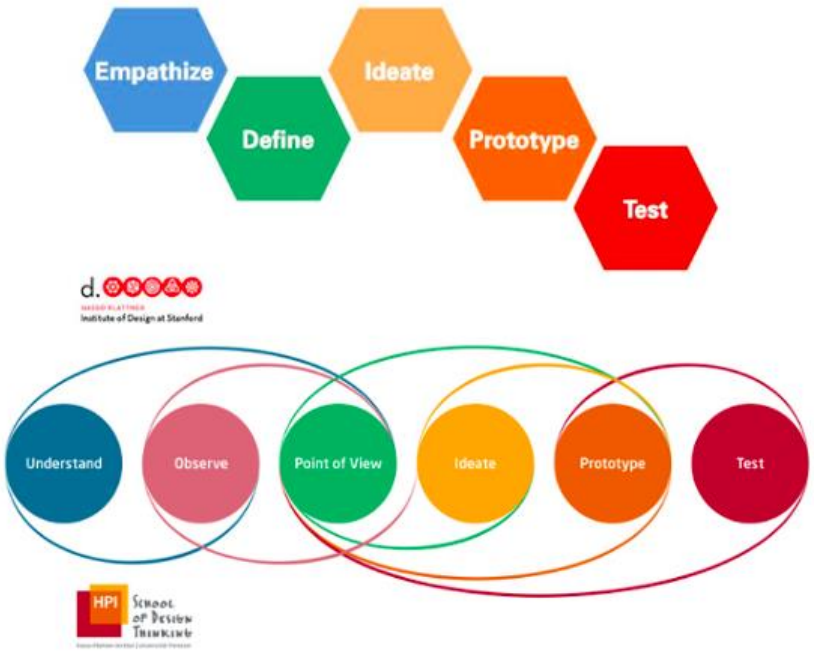

Figure 1 The Design Thinking process frameworks used at the Stanford d.school and the HPI D-School

Besides the framework/process itself, the Design Thinking mindset is one of the integral elements of the Design Thinking approach (Hassi & Laakso, 2011; Carlgren, 2013), which can be defined as a set of "vital attitudes for the design thinker to hold" (Both & Baggereor, 2010, p. II). Several researchers have explored and described the essential characteristics of good design thinkers (e.g., Schweitzer et al., 2016; von Thienen et al., 2014; Dosi et al., 2018) and the mindset associated with these characteristics. A good design thinker, for example, "has many ideas", "can observe without being judgmental", and "develops many prototypes" (von Thienen et al., 2017a, 2019).

1.2 Relevance of this Study, Design Thinking in Non-Western Cultural Context: The Arab World

During the exploration of the spread and adoption of Design Thinking across the world, many studies on the history and application of Design Thinking were identified. Nevertheless, the majority of these studies were conducted in a Western cultural context, whether focusing mainly on its application in organizations (e.g., Royalty & Roth, 2016; Mayer et al., 2021; Dunne, 2018; Gerken, 2022), reviewing its adaptation or integration in education (e.g., Lor, 2017; Panke, 2019; McLaughlin et al., 2019; Al-Qaralleh et al., 2021), or exploring Design Thinking education (e.g., Rauth et al., 2010). Furthermore, only a few studies published in English have been recognized to be exploring Design Thinking application in a non-Western cultural context. Taheri (2021) claims that while the majority of studies that investigate the intersection of culture and Design Thinking in different countries focus on the adaptation of Design Thinking in organizations (e.g., Dribbisch, 2017; Ge & Maisch, 2016; Thao, 2016), the studies investigating Design Thinking education focus mainly on the Western schools. She adds that scholars who studied non-Western educational programs, such as Koh et al. (2015) and Kurokawa (2013), did not discuss local cultural adaptation of Design Thinking in their research.

It seems though that most of the identified studies that examine Design Thinking education in non-Western cultural context target Asian countries in particular. For example, in the Chinese context, Zhang et al. (2021) conducted a comparative research on STEM education in the U.S., K-12 Design Thinking education in China, phenomenon-based learning in Finnish, and Design and Technology Courses in England. The aim of their study was to summarize the state of Design Thinking education in K-12 around the world, investigate the current challenges and propose means to promote K-12 Design Thinking education in China. Through their literature research and comparative case study, they concluded that in order to

promote high quality K-12 Design Thinking education in China, using service design methodology is important in integrating social resources and coordinating all stakeholders involved.

In another study from Shanghai Tech University in China, Lee and Yuan (2018) who used to teach Design Thinking following the Stanford tradition shared their work on how they redesigned the course to better accommodate the needs of their Chinese students since the Western educational approach did not fully fulfill these needs.

In her study, Taheri (2021) investigated the impact of the socio-cultural context on Design Thinking education by conducting 22 in-depth interviews with Design Thinking educators at the Genovasi d.school in Kuala Lumpur, Malaysia, and the d-school of University of Cape Town in South Africa. Her investigation revealed some differences in the application of the Western Design Thinking approach, tools and methods in a non-Western cultural context and the importance of adaptation to the investigated context and accommodating the local audience. As an outcome, she provided a model of Design Thinking education and a set of recommendations for future Design Thinking course designers to consider when designing for non-Western cultural contexts.

The literature review shows that other few studies concerning education took place in non-Western countries but were not focusing on the educational model itself, but rather on other topics such as the influence of single-disciplinary teams and cross-disciplinary teams on students in Design Thinking education in a university in Taiwan (Ma & Tang, 2021), or reporting on teaching Design Thinking at an undergraduate program in Singapore (Chon & Sim, 2019) but they did not address the cultural perspective of students nor whether an adaptation to the Western model took place.

Although Design Thinking has been applied in different fields, its application may differ from one field to another. In an effort to have a better understanding of how

Design Thinking is interpreted and utilized in the corporate contexts, researchers from the Hasso Plattner Institute (HPI) conducted the first large-sample survey of Design Thinking adoption in practice, entitled "The Current State of Design Thinking Practice in Organizations" (Schmiedgen et al., 2016). The study provided the first evidence for how Design Thinking is being perceived and applied by the business community worldwide. However, there was a significant lack of survey respondents from Arabic-speaking countries, leaving it unclear whether the concept of Design Thinking was adopted at all in this region, or how it would be understood and applied. A systematic literature review was conducted to learn more about the situation of Design Thinking in the Arab region in general. The results, however, showed limited research work that makes it very challenging to understand when and how Design Thinking started to emerge in Arabic-speaking countries, and to which extent it was adopted. Hence, exploring how Design Thinking had emerged, adopted and developed in different geographical and cultural contexts is an important area for research contribution. The contribution of this thesis will help broaden the understanding of the history of Design Thinking in the Arab region, as well as support educators and practitioners to design and deliver better Design Thinking programs for Arab audiences.

1.2.1 What is Arab Culture?

Hofstede, Hofstede & Minkov (2010) define 'culture' as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 6). The Arab culture has its own language, cultural values, and social norms that differ significantly from those of Western cultures (Obeidat et al., 2012). Therefore, it is important to explore how -and if- such a culture perceives Design Thinking tools and mindset differently from their perceptions in the Western culture.

The Arab world is defined as "those countries where Arabic is the dominant language" (NO, 2006, p. 1). Arab countries are diverse in terms of ethnicities and

religions, with Islam being the dominant religion. There are twenty-two Arabic-speaking countries in the world, including Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen[1]. The Arabic language is the sixth official language of the United Nations, and it is used by more than 400 million people (UNESCO, 2021). Therefore, and due to the importance of the Arabic language and for other various economic and cultural reasons, investigating the adoption of Design Thinking in the Arab world will broaden the empirical base and give insights into the use of Design Thinking tools and methods in the region.

1.3 RESEARCH AIM, SIGNIFICANCE AND QUESTIONS

The primary purpose of this thesis is to investigate how Design Thinking emerged, spread, and was adopted in the Arab world. This will help draw some recommendations on what to consider when designing and running Design Thinking educational programs in the region and which aspects can support effective capacity building. This study is significantly relevant both theoretically and practically. In terms of theoretical considerations, this is one of the first novel studies to investigate the emergence of Design Thinking in the Arab world and to explore the different levels of adoption in different Arabic-Speaking countries. This study is also practically relevant as it provides actionable recommendations to equip local educators and facilitators, as well as international trainers who design and deliver Design Thinking activities in Arabic-speaking countries, with necessary insights and advice on how to fulfil the needs of the Arab participants to achieve

[1]https://www.investopedia.com/terms/a/arableague.asp#:~:text=The%2022%20members%20of%20the,Eritrea%2C%20India%2C%20and%20Venezuela.

successful training outcomes. To accomplish this, the following research questions were formulated to guide the study:

1. What is the most widely adopted Arabic term for Design Thinking, when did it first appear, and who coined it? (Insights on this question are crucial and fundamental to tracking the development of Design Thinking in the region. Without knowledge of proper translations and relevant keywords, topical discussions in the region cannot be identified.)

2. Who are the organizations/people most active in promoting Design Thinking in the Arab world (for-profit or non-profit, government, others)?

3. Which industries/sectors are the first adopters of Design Thinking in the Arab world?

4. What are the commonalities and differences in Design Thinking adoption across various Arabic-speaking countries?

5. What factors need to be considered to spread Design Thinking further and build the local capacity in Design Thinking in the Arab world?

1.4 MOTIVATIONS

Three key points drive the motivation for this research:

1. The limited availability of data on the status of Design thinking in the Arab world reveals a gap in understanding the history and development of Design Thinking at a global level.

2. Understanding the cultural context and people's behavior towards Design Thinking in the Arab region will help Design Thinking educators and practitioners develop better tools and programs targeted at the region.

3. Personal motivation: The author was born and raised in an Arab country but she left to continue her life abroad about 19 years ago. During those years, she moved several times across different continents. She got to learn, practice, and witness the application of Design Thinking in different cultural contexts, all of which were in Western countries. However, throughout those events, she could not help but wonder how Arab people would perceive this innovative approach in particular and whether they could get along with its mindset. Later on, when she ran her first Design Thinking workshop at an Arab university, she encountered some challenges that left her frustrated! She believes that she also imposed some challenges on Arab participants, though she supposedly understood the culture! She immediately realized that the way Design Thinking is taught and trained on at Stanford-Potsdam is not fully applicable when interacting with Arabs. This triggered the author's curiosity to investigate the situation further and explore how to apply the methodology in the Arab region better, believing that it could help solve many of the pressing, complex social and political problems the region is suffering from.

1.5 THESIS' STRUCTURE

This thesis is structured as follows: Chapter 2 presents a systematic review of the literature and media on Design Thinking in the Arab world. The research design and methodology are then introduced and discussed in Chapter 3, including the explanation and justification for the mixed-method approach used in the research, which uses both quantitative and qualitative data methods. Chapter 4 focuses on presenting and discussing the quantitative data results, and chapter 5 describes the qualitative findings and discussion. Finally, the thesis concludes with chapter 6, which summarizes the study and its contributions, proposes recommendations on

Design Thinking capacity building in the Arab world and spreading it further, presents the limitations, and provides directions for future research (Figure 2).

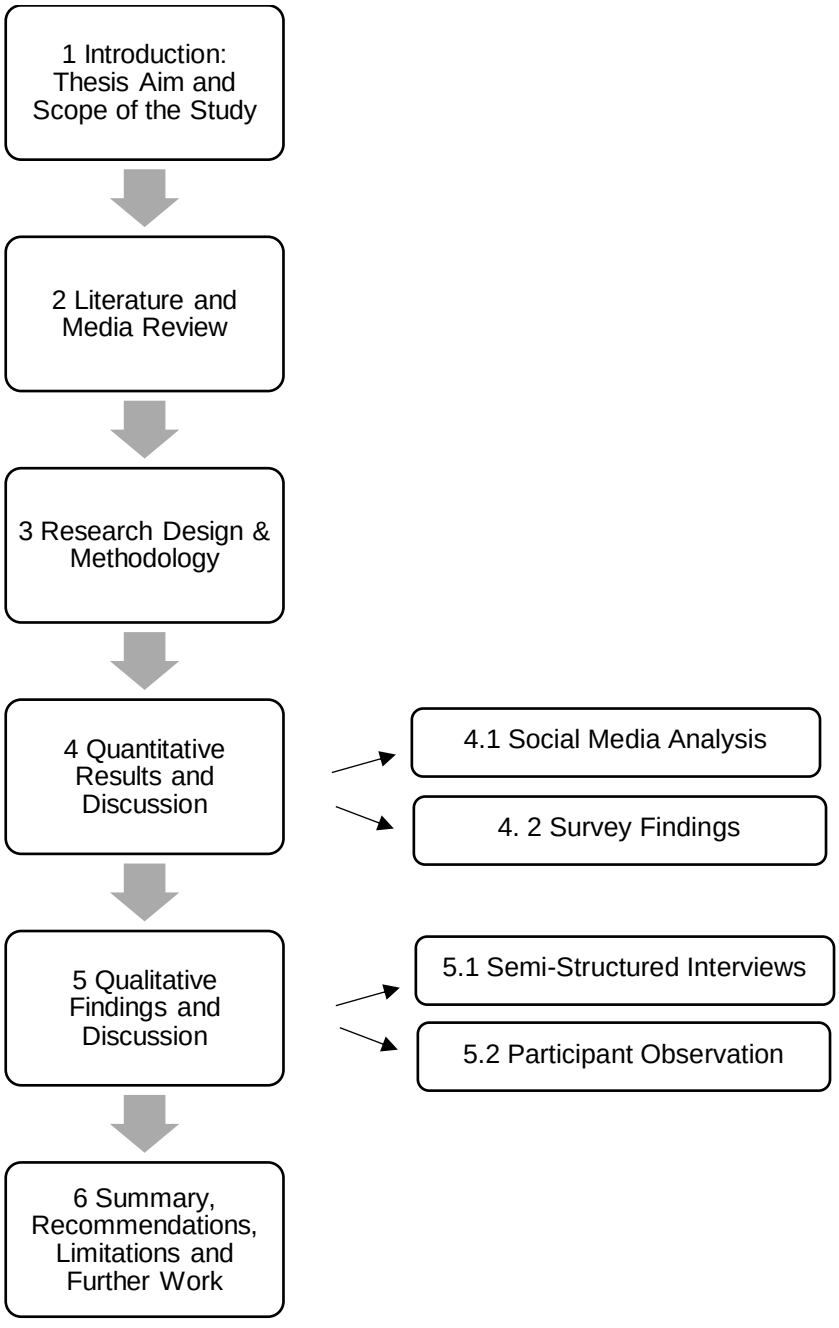

Figure 2 Thesis structure

2 LITERATURE AND MEDIA REVIEW

This chapter provides the first report of the research outcomes based on a systematic literature review. The review covers the entire year of 2010 (the first time the Arabic translation of Design Thinking "التفكير التصميمي" was coined) and extends up to, and includes, May 2019. The research questions that guided this part of the study are:

1. What is the most widely adopted Arabic term of Design Thinking, when did it first appear and who coined it?

2. Who are the organizations/people most active in promoting Design Thinking in the Arab world (for-profit or non-profit, government, others)?

3. Which industries/sectors are the first adopters of Design Thinking in the Arab world?

2.1 STUDY APPROACH

In order to provide a comprehensive assessment of the adoption of Design Thinking in the Arab world, a systematic literature review was conducted following the guidelines of the PRISMA framework (Liberati et al., 2009) to ensure the quality and transparency of the review process. The review followed a four-stage process:

1. Identification of keywords

2. Developing the search strategy

3. Relevance-based filtration and selection

4. Reporting on findings

2.1.1 Identification of Keywords

To establish the broadest possible search of Design Thinking in the Arab world, scouting for potential keywords that could be associated with Design Thinking in the Arabic language was the first step. The initial mapping of all terms associated with Design Thinking showed that there is no widely accepted translation of the term “Design Thinking” in Arabic and that there were, in fact, several terms used to refer to the subject. These terms include تصميم التفكير, الفكر التصميمي، التفكير التصميمي and التصميم المتمحور حول الإنسان. However, a closer inspection of the different translations used among the Design Thinking community in the Arab world led to adding several other English keywords to capture the related English content published by Arabic-speaking authors. Table 1 presents the range of keywords identified as referring to Design Thinking in Arabic and English.

Keywords	
Arabic keywords	**English keywords**
تصميم التفكير	Design Thinking Arabic
الفكر التصميمي	Design Thinking Arab
التفكير التصميمي	Design Arab
التصميم المتمحور حول الإنسان	Human Centered Design Arab

Table 1 Keywords used for the systematic literature review

2.1.2 Developing the Search Strategy

The search process followed three phases. First, using the terms already identified in Arabic and English, a search was done on five primary research databases (Academia, Research Gate, Institute for Education Sciences, Science Direct, and Google Scholar). The articles examined were published in English and Arabic between January 2000 and May 2019, which is considered a suitable period for capturing the global emergence and evolution of Design Thinking. Four (4) Arabic results and sixteen (16) English results were found. In the second phase, the words "Design" and "Arab" were employed to encompass as many various approaches as possible. It is likely that researchers use design without naming it as such, and as a result, some relevant results may have been missed during the first search. Adding additional search phrases, on the other hand, may raise the potential for contamination of the results. The small number of peer-reviewed search results determined that the field of Design Thinking in the Arab world was most likely confined to the professional sphere and had not yet been thoroughly explored by academic researchers. Therefore, as a third phase, the discovery was extended by conducting a web search for Design Thinking-related attempts, initiatives, workshops, training, articles, blog posts, and videos. This expanded search revealed 150 results, confirming the initial assumptions regarding Design Thinking's wider adoption outside the research community (Figure 3).

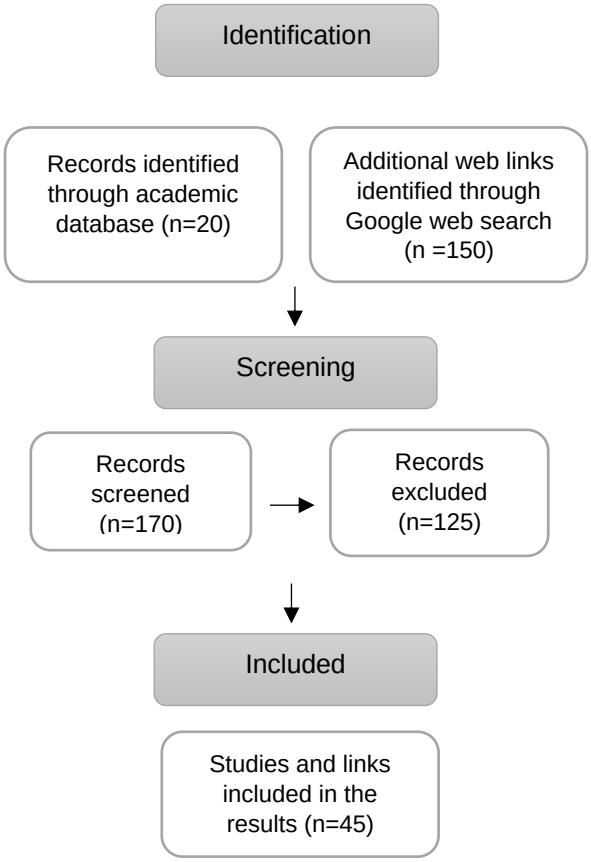

Figure 3 Filtration of identified articles and selection process

2.1.3 Filtration and Selection

The concept of Design Thinking as a process, a mindset, and a human-centered approach to creativity, collaboration, and innovation was adopted in screening the collected data. For content selection, a two-stage process was followed, with each phase focusing on the content's relevance to this concept of Design Thinking. First, only the titles and abstracts of papers were evaluated. Studies that were judged to be unrelated to Design Thinking were removed. Second, all content was subjected to a full-text analysis to ensure relevance. Many articles were eliminated at this stage due to their misinterpretation of Design Thinking. This approach resulted in 11 academic articles and 34 web links that were included in the review.

2.1.4 Report on Main Findings

The results section is divided into five sub-sections, each reflecting the findings of a specific sector with notable Design Thinking activities: education, development, private sector, entrepreneurship, and public sector.

2.2 COINING THE ARABIC TERM FOR DESIGN THINKING

A web search utilizing different Arabic translations of "Design Thinking" was done in an attempt to find the first instance of the Arabic term of Design Thinking. Each of the Arabic terms was searched using the Google search engine, with date filters applied, until the first Arabic term "التفكير التصميمي" appeared in 2010. The first introduction of the Arabic term of Design Thinking "التفكير التصميمي" appeared in a translation of Tim Brown's Ted Talk: Designers—think big[2]. Chafic Jaber, a research engineer at Telecom Paris Tech, coined this translation for Design Thinking, although his bio indicates that he has no significant professional or academic involvement with Design Thinking. Designers—think big! has been translated into 22 languages, and it tells the story of the evolution of Design Thinking from the pre-design era in the nineteenth century, when "systems thinkers were reinventing the world", to the era of commercialized design of the twenty-first-century led by a few individuals whom Brown refers to as the "priesthood of folks in black turtlenecks and designer glasses". Brown believes that design must be reclaimed as a tool for redefining global challenges rather than as a tool for producing high-street objects. Brown encourages those who use Design Thinking to "Think Big" and "Start asking the right questions." (Brown, 2009).

[2] Tim Brown is the former CEO of IDEO, a renowned international design and innovation company which roots go back to 1978. Brown has been playing a vital role as an ambassador of Design Thinking all over the world.

Although the translation of Design Thinking into التفكير التصميمي was coined in 2010, there appears to be an ongoing debate on the appropriate translation. One blogger took this up on oktob.io in 2015 and claimed that the term التفكير التصميمي is the accurate translation of "Design Thinking". She rejected the literal translation تصميم التفكير used by some authors and instead advocated for the adoption of التفكير التصميمي as the official translation. She argued that the former term refers to visualizing one's thoughts, which is just one aspect of Design Thinking, whereas the latter encompasses all aspects of the concept (Aldakheel, 2015). Another blogger, Salah Taha (2019), addressed the confusion over the Arabic translation of Design Thinking by emphasizing that the proper translation of the term Design Thinking is التفكير التصميمي and not تصميم التفكير because the intended meaning is the way of thinking and not the design of one's thinking (Taha, 2019). In 2019, The Shoman Cultural Forum, in collaboration with the Ideas Lab, held a lecture on Design Thinking by Tania Amaysi from Stanford University in Amman, Jordan. The host began the event by debating whether or not to use a different term other than التفكير التصميمي to help the audience grasp it better (Shouman Foundation, 2019).

2.3 Early Attempts to Understand Design Thinking in Arabic

Recognizing the scarcity of Arabic content on Design Thinking, an anonymous Arabic-speaking blogger –owner of the blog Arabstarts– decided to tackle the situation. The blogger announced that she/he would address the topic in Arabic through a series of blog articles in an attempt to bridge the apparent knowledge gap. In the first article, the blogger explained the concept of Design Thinking and its function as a management methodology. She/he highlighted the implementation of Design Thinking in the private sector by companies including Apple, Yahoo, and General Electric, all of which used it in management and strategic planning. This was followed by a more detailed investigation, where the blogger attributed Apple's success to CEO Steve Job's adoption of a Design Thinking management style. The

blogger further explained that Design Thinking is a methodology designers use to solve "design" problems. However, evidence has accumulated throughout time, showing that the way designers analyze challenges and develop solutions is potentially transferable to "non-design" fields. This transferability hinges on four main factors: (1) creating a conducive environment for creativity and innovation; (2) focusing on the user experience; (3) continuous testing and learning through trial and error techniques; and (4) incorporating failure as an intrinsic part of the testing process (Arabstarts, 2012). It is worth noting that following this contribution; the blogger did not publish any more pieces.

An online learning platform (Xschool) with a YouTube Channel (64,000 followers), a Facebook page, and a Twitter account were among the other voices from the Arab world that mentioned Design Thinking. The platform's primary goal is to engage the audience through short videos that focus on various issues that concern the general public. However, despite a long list of produced videos, only one video introduced Design Thinking, or what they refer to as تصميم التفكير as a problem-solving approach that relies on perpetual testing to generate the most suitable solutions (Aldawood, 2012).

In 2013, two Saudi academics, Al-Dousary and Al-Robayaa, published a SlideShare presentation on LinkedIn about Design Thinking. The presentation introduces Design Thinking in reference to education. They explained that Design Thinking is a problem-solving approach that relies on exposing students to real-world challenges and allowing them to develop solutions, test them in real life, and learn from their experiences. The researchers refer to Design Thinking as or تصميم التفكير[3] التفكير التصميمي. In addition, they highlight potential applications in the private sector, with a specific focus on technology companies such as Apple. They echoed previous authors in emphasizing that Design Thinking is a methodology formed from how designers think. However, as more people realized the methodology's

[3] This Arabic term is one of the translations that other bloggers objected to due to the literal translation of the term, which they believe does not reflect the true meaning of Design Thinking.

virtues in finding innovative solutions to real-life challenges, it began to extend into other fields. They also explained how using the methodology in "gamification" might help students from preschool through primary school learn more effectively (Al-Dousary & Al-Robayaa, 2013).

2.4 Mapping Design Thinking in the Arab World

2.4.1 Design Thinking and Education

Design Thinking appears to have been widely explored by young students at all levels of the educational system in the Arab World. For example, in 2011, a second-year female graphic design student in Saudi Arabia discovered Gavin Ambrose and Paul Harris' book "Design Thinking Basics 08". She gave a presentation in Arabic on the topic, explaining the concept and phases of the design process.

An architect who attended the session was enticed by what she heard and wrote about it in a blog post for her "Design...Ask" series of design articles (Al Shaddy, 2011). After Jaber coined the Arabic term of Design Thinking in 2010, this blog post is the first piece found on the Internet that mentions Design Thinking in Arabic.

More thorough attempts to apply Design Thinking to the education sector came from the Khalifa University of Science, Technology, and Research (KU) in the United Arab Emirates (UAE). KU's leadership vision was to internationalize and vertically integrate inquiry-based design pedagogy throughout all its undergraduate degree programs in the College of Engineering. Strategic partnerships with institutions such as the Georgia Institute of Technology in the U.S. and Korea Advanced Institute of Science & Technology (KAIST) in South Korea enabled this. The first step in the integration was the creation of a college-wide, "cornerstone"

freshman engineering design experience that addresses the needs and context of KU's diverse international student body and uses effective pedagogical alternatives to lecture-based instruction. A paper titled "Cultivating design-thinking in freshmen: The evolution of the KU freshman design course", published in 2013 by Shadi Balawi et al., describes the research-driven evolution of the freshman design experience at KU from a discipline-specific offering within the departments of aerospace and mechanical engineering, to an interdisciplinary, college-wide Freshman Engineering Design Course (FEDC) (Balawi et al., 2013).

By 2018, Design Thinking flourished in the field of education in the Arab world. Wa'ed Ibrahim (2018) attempted to investigate the presence and possibilities of social design in Arab undergraduate design education and its related courses at a renowned university in the Middle East (the university's identity is withheld). He argued that social design could provide sustainable solutions for numerous social, economic, and environmental challenges, particularly in the Arab world. The key findings suggest a basic current understanding of social design at the university. The research identified some existing courses, studio projects, and other assignments that briefly mention social design principles. However, the findings revealed that the topic has to be better integrated since many design students were unaware of current global challenges and lacked critical thinking skills. This deficiency manifested in an inefficient design process and limited engagement in interdisciplinary collaborative work. Several recommendations were offered to allow a stronger social design presence in the curriculum, including teaching the concepts of participatory design/co-design, Design Thinking, and critical thinking (Ibrahim, 2018).

Ahmed Hammam, an assistant lecturer at Helwan University, Egypt, whose research is focused on applying Design Thinking methodologies to the study of sciences among primary school students, is a firm believer that adopting Design Thinking may revolutionize education in the region. Hammam argues that Design

Thinking has the ability to attract young students to pursue the study of natural sciences, which are still scarce in Egypt (Hammam, 2018).

In 2019, The Ministry of Education in Saudi Arabia organized a Design Thinking workshop at King Fahd University of Petroleum and Minerals. The workshop aimed to introduce Design Thinking to female teachers and training supervisors. The workshop's goal was to help guide learning, develop the students' creative thinking skills, and bridge the gap between theory and practical applications (Ministry of Education News, 2019).

Another initiative in the education sector was carried out by the National Center for Assessment in Saudi Arabia (Saudi Press Agency, 2019), which held a series of workshops on education and society targeting female school superintendents, supervisors, and teachers. One of the workshops was dedicated to Design Thinking. The female educators were introduced to Design Thinking as a concept, its framework, and how it is connected to other fields. Examples and case studies on Design Thinking application in education were also presented.

A group of researchers at Zayed University in the United Arab Emirates (UAE) explored how to co-design an immersive, transformative, and sustainable education system in which students are placed on a change-maker journey for social innovation (Chung-Shin et al., 2018). The research group leveraged community initiatives and Zayed University's institutional support to create INNOCO, a platform for social innovation (Innovation and Co-Design). INNOCO was designed to actively encourage young people who want to improve their abilities to become change-makers. This model aims to challenge the traditional linear educational systems while also addressing the region's demand for a paradigm change in education. Their research design utilized a human-centered and evidence-informed approach called "ME = WE", which aligns with the Panarchy Theory (Allen et al., 2014) in understanding the systemic and symbiotic relationships between self (ME) and society (WE). This framework focuses on "action and reflection" as a means of effecting social change on an individual, communal, and systemic level (ibid.). In

a three-year implementation period (2015–2018), the team developed a research framework that was successfully implemented and had already been modeled for a partner project at Zayed University. The resulting project proved helpful in facilitating a youth engagement program with participants in the UAE and Nepal, as well as documenting program participants' change-maker journeys through quantitative and qualitative narratives. Through these iterative processes, the youth explored methods to connect, collaborate, and contribute to their wider communities.

In 2018, a paper was presented at the Centre for Education and International Development (CEID) conference in London as part of continued attempts to experiment with Design Thinking and education in the Arab world. This paper analyzed the current situation of higher education in the Arab world, as well as the challenges and obstacles faced by students and higher education institutions. It provided a comprehensive examination of the possibilities of digital learning in addressing some of these challenges and recommended a Design Thinking framework as a viable route to examine when redesigning the current learning experiences at Arab institutions. The paper concludes with ideas for supporting and facilitating higher education transition in the Arab countries by employing a Design Thinking paradigm and designing pilot interventions at Arab higher education institutions to test the framework and iteratively develop the learning experiences (Traifeh & Meinel, 2018).

In recent years, a number of Arabic educational MOOCs (Massive Open Online Courses) on Design Thinking have emerged. In 2017, King Khaled University in Saudi Arabia delivered the first free MOOC focused on Design Thinking, which was hosted on the university's MOOC website, kkux.org. The course was taught by Fahad Alahmari and Abdullah Alwalidi, two faculty members who attended a Design Thinking training at Stanford University and wanted to present the concept to Arab students through a MOOC consisting of recorded videos, quizzes, and forum discussions (Design Thinking MOOC, KKUx, 2017). Over the course of nine

weeks, the following subjects were covered: (1) what is Design Thinking? (2) exploring the space of "needs", (3) exploring the space of "solutions", and (4) making a difference in your initiatives. The same course was offered again in 2018 (Design Thinking MOOC, KKUx, 2018).

In 2019, another MOOC provider named Rwaq[4], in collaboration with Monsha'at[5], presented a free Arabic course on Design Thinking taught by Nisreen Alshami (Design Thinking MOOC, Rwaq, 2019). This course employs a self-paced learning method, making it open and accessible to anyone interested in enrolling. It consists of four modules, each of which presents pre-recorded videos, followed by theoretical articles and a quiz. The topics covered are (1) the definition and importance of Design Thinking, (2) the "Understanding" phase, which comprises "Empathy" and "Define", (3) the "Discovery" phase, which covers "Ideation" and "Prototyping", and (4) the "Implementation" phase which consists of "Testing" and "Implementation". The course discussion forum is not particularly active, and most MOOC participants' questions and requests remain unanswered. Despite the small number of posts (n = 20), it is notable that most participants (n = 16) asked how to get a certificate of attendance. Four participants complained about the absence of case studies and resources, how topics were described, the disconnection between the topics presented in videos and the accompanying texts, and the MOOC's content; for example, a participant left a comment saying: "This content is almost an exact translation from English literature. It is not intended for Arabs and combines two translated terms of Design Thinking which are used interchangeably. However, their meanings are distinct and may radically alter the context" (Rwaq, Design Thinking MOOC discussions, 2019). Nevertheless, the MOOC platform had another space, named "the wall", designated for discussion included sixteen posted notes and questions. In this space, seven participants indicated satisfaction

[4] Rwaq is one of the earliest Arabic language educational MOOC platforms that was established in the region. It was launched in 2013 by two Saudi businessmen, Fouad Al-Farhan and Sami El Hassine.
[5] Monsha'at is the Saudi's General Authority for Small and Medium Enterprises, and was established in 2016.

with the content, while the majority of the other participants requested a certificate of attendance (Rwaq, Design Thinking MOOC wall posts, 2019/2020)[6].

2.4.2 Design Thinking in the Development Sector

The MENA Design Research Center, a non-profit organization, established in Lebanon in 2011, is one of the region's few institutions that focuses on design as a multidisciplinary tool for social development and research. The center's early publications and activities emphasized the underlying ideological connection between the Arab Spring's[7] grassroots movements pushing for social, economic, and political change in the region and Design Thinking's bottom-up, participatory problem-solving approaches. The center established and organized the first Beirut Design Week in 2012, marking the beginning of 'design weeks' across the Middle East and North Africa. Later, it extended its efforts to the 'Desmeem' initiative, a combination of the words "Design" and "Tasmeem" (which means "design" in Arabic). In the program, ten design teams were formed, each comprised of three Lebanese designers and one European designer, who collaborated with local non-governmental organizations (NGOs) for three months to develop innovative solutions to challenges that organizations encounter (MENA Design Research Center 2019).

Recognizing the potential of applying Design Thinking to development, Saad and Shoushanian (2013) examined the case of Egypt as a successful application of Design Thinking to conventional design practices. The study performed a comprehensive investigation of the case of Egypt and developed a conceptual framework connecting the components involved in addressing the role of design in socio-cultural practice (Saad & Shoushanian, 2013).

[6] The total number of participants of both MOOCS offered by KKU and Rwaq could not be verified.
[7] The Arab Spring (Arabic: الربيع العربي) was a series of anti-government protests, uprisings, and armed rebellions that spread across much of the Arab world in the early 2010s. https://en.wikipedia.org/wiki/Arab_Spring

The United Nations Development Program (UNDP) adopted major Design Thinking applications in the international development sector as one of its primary focus areas in innovation for development among Arab states. Human-centered design is defined by UNDP as "a creative approach to problem-solving that starts with the needs of the user, emphasizes the importance of diverse perspectives, and encourages solution-seeking among multiple actors" (UNDP, Innovation for the Arab States, 2018). The methodology was implemented in response to the increased need for designing sustainable products, services, and experiences in the Arab states. In 2015, the UNDP established its regional Youth Leadership Program (YLP), focusing on the application of Design Thinking among youth aged 15 to 29 (UNDP, The Arab States, 2022). YLP strives to cultivate a new generation of young leaders, innovators, and agents of change. The program employs innovative approaches, most notably Design Thinking, to support youths in developing practical and sustainable solutions to development challenges.

In its first year, YLP was held in Amman, Jordan, and brought together 40 youths from 18 Arab nations to encourage their creativity, develop their leadership skills and assist them in enhancing their communities. In its second year, under the theme Innovation for Sustainable Development, YLP2 funded nationwide activities for more than 700 young people. Accelerating Innovation for Sustainable Development was the focus of YLP3, which was hosted in Egypt and supported over 2,000 youths with national activities. With the theme Innovating for Sustainable Impact, YPL4 targeted 14 Arab countries, engaged 5,000 youths in national activities, and collaborated with national organizations that work toward youth empowerment and achievement of the Sustainable Development Goals (SDGs). YLP5, with the theme Explore, Experiment, Expand aims to build on lessons learned over the past four years and to expand its reach by exploring new approaches to tackling sustainable development issues, experimenting with potential solutions, and increasing youth knowledge and growing their networks (UNDP, The Arab States, 2022).

In another initiative and in collaboration with the European Commission, the UNDP promoted Design Thinking and lean startup approaches among Iraqi youth in preparation for their participation in the Innovation for Development Forum. Design Thinking was established as an approach to assist youth in designing prototypes and pilot projects for presentation at the Innovation for Development Forum (Hilal, 2016).

Further approaches to applying Design Thinking to the field of development included the concept of Social iDesign proposed by El Aidi (2017). In his paper "The Potential of Design Thinking in Sustaining Development Efforts in Egypt", the author argues that Egypt Vision 2030 (Sustainable Development Strategy) disregards the potential of Design Thinking as a practice for enhancing the quality of life in Egypt. He then proposes Social iDesign, "a concept that aims at improving the quality of people's life in accordance with their cultural values by stimulating their social intelligence". The primary concept of his research is that designers attempt to develop meaningful and sustainable solutions by co-designing conditions and scenarios for more empathic interaction between individuals and society. His study on Social iDesign is "built upon integrating three forms of the cognitive process of design: learning, doing, and reflecting". Therefore, this model offers a comprehensive approach to enhancing the quality of life in Egypt by concurrently developing the three pillars of design, as opposed to focusing on one design component at a time. These pillars are: (1) Design education, (2) Design practice, and (3) Design research (El Aidi, 2017).

Similarly, research on applying Design Thinking principles to local development in Algeria revealed that focusing on citizens as the primary users of local development policies holds considerable potential to support social development. The research emphasized involving citizens in implementing local development projects as a strategy for fostering ownership and supporting sustainable policies (Haroush & Maaroufi, 2017).

In 2018, Owda et al., conducted a study to determine the effect of Design Management Processes on decision-making using Design Thinking. The study focused on decision-makers from 78 local NGOs based in the Gaza strip. The study's findings revealed no apparent connection between design management methods and decision-making. However, according to the analysis of in-depth interviews with senior leadership, Design Thinking seems to have the capacity to mediate the interaction between design management procedures and decision making (Owda et al., 2019).

In social science studies, Osman and Dahlan (2019) used Design Thinking and System Thinking methodologies in solving the problems of Eritrean refugees in Sudan by understanding the users' needs and implementing business modeling tools such as Business Model Canvas and Value Proposition Canvas. The recommended solutions include improving educational skills such as programs teaching technical skills, study materials, literacy programs, and mentorship programs. According to the researchers, the primary contribution of their study is to equip refugees with the knowledge, values, and skills necessary to lead productive, independent lives (Osman & Dahlan, 2019).

In 2019, Sabr, an Arabic business design company based in Turkey, published an Arabic book titled “Design Thinking for Social Innovation”, in which Ghaiath Howari and Kinda Almemaar introduce Design Thinking as an innovation methodology. In addition, the book presents several case studies and strategies for applying Design Thinking to societal issues (Howari & Almemaar, 2019). This book is believed to be the first published book in Arabic that is dedicated to Design Thinking.

2.4.3 Design Thinking in the Private Sector

During the past few years, many private design firms in the Arab region have transformed their business strategies from supplying solely visual design services

to adopting innovative processes and embracing Design Thinking and human-centered approaches in their work. For example, HUED, a design and innovation consultancy that was established in 2013 in Saudi Arabia by a small service design team, expanded and developed its work methods based on principles of Design Thinking such as empathy, building user insights, dealing with ambiguity and uncertainty, and designing and executing solutions based on a human-centered approach. HUED is now regarded as "Saudi Arabia's first and most significant innovation and design firm" (HUED, 2019). They provide services to public and private firms and organizations in the country. They also promote the culture of Design Thinking via the planning and implementation of various training and annual service design and customer experience events.

Another example is ERGO, one of the Arab region's first human-centered innovation and strategy design firms. The company, founded in 2016 in Cairo, Egypt, is dedicated to enhancing the human experience through design and innovation (ERGO Homepage, 2019). Led by a strong belief that design must be rooted in people, culture, and human values, ERGO aims to leverage Design Thinking to bring innovation to one of the most culturally sensitive regions in the world. ERGO conceptualizes and implements solutions to assist the Arab market in creating positive impact and achieving sustainable growth. The company provides various services such as delivering insight-driven products, services, and experiences, designing new impact-driven ventures, and building innovation capacity in corporations, NGOs, businesses, and governments so that they can realize their creative potential and become better innovators (ERGO Homepage, 2019).

In addition to private design companies, Design Thinking and user-centered approaches have been applied in other types of private entities such as private medical clinics. In Egypt, for instance, researchers employed design elements and functions to improve the quality of communication between patients and clinic personnel after recognizing the challenges associated with physician-oriented

systems, such as waiting times and appointments (Heshmat et al., 2017). As a result, the researchers aimed to reduce waiting times and optimize patient and staff schedules. Using an Egyptian private clinic as a case study, the research team created the patient-centric mobile application "Your Clinic" to facilitate online booking and consultation. The application combines six main features: (1) Creating accounts; (2) Clinic search; (3) Patient booking; (4) Nurse scheduling; (5) Doctor scheduling; and (6) Online consultation (Heshmat et al., 2017).

In the same year, 2017, the Innovation Academy at King Abdullah University for Science and Technology (KAUST) launched the REVelate Corporate Innovation Program (CIP), a three-day intensive team-based program designed to foster innovation by organizations in Saudi Arabia (KAUST Innovation, 2017). The program is delivered twice a year at KAUST and is geared toward a wide range of organizations, including medium-to-large businesses, non-profits, and government agencies. CIP is built on Design Thinking, change management, and entrepreneurship as part of REVelate. In addition, CIP combines elements of innovation, establishment of new internal ventures, team building, business model development, and executive education (KAUST Innovation, 2017).

Design Thinking applications in the private sector seem to continue to flourish in the Arab world. With an emphasis on human resources departments and employees' experiences, Ahmad Al-Ghamdi, Vice President of human resources at a large private firm (name withheld), says that this approach may enhance morale and prevent human resource dissatisfactions and causes of demotivation. He believes that “Design Thinking can be used in all human resource processes, starting from attracting talent, identifying potential employees, employing them in specific roles, creating opportunities for their development and transferring them to new roles, and of course, retaining key talent in the facility, developing and turning them into large and important assets for the organization.” (Al-Ghamdi, 2019).

Another example of practical applications of Design Thinking is the rebranding and successive marketing campaign for the British Football Academy in Kuwait.

During a "Value Management Branding Workshop", in which key stakeholders co-designed a new brand for the British Football Academy, Design Thinking was utilized. The workshop yielded two primary outcomes: (1) a clear vision of British Football Academy's brand position in relation to customer experience and (2) a direct indication of how the brand needs to evolve to achieve the goal of expanding its market share. “This cyclic approach (of Design Thinking) utilized visualization as a pragmatic tool, aiding the development of marketing strategies and resulting in innovative solutions, with the launch of the new brand identity and marketing campaign receiving an overwhelmingly positive response from all parties involved.” (Winstanley, 2019).

2.4.4 Design Thinking and Entrepreneurship

Between 2014 and 2015, Design Thinking started to be recognized as a credible tool for aiding businesses in the Arab world and began to generate a buzz in hackathon venues, business incubators, and entrepreneurship hubs. Nahdet El Mahroussa, an Egyptian non-governmental organization, was an early adopter of Design Thinking as an approach to developing small enterprises in North Africa. Nahdet El Mahrousa was among the first in the region to establish systematic Design Thinking workshops for social innovation through its social incubator. The workshops were conducted all over Egypt and aimed at empowering young entrepreneurs to start their own businesses (NM, 2013). BiNA, a non-profit social development and capacity-building organization founded in 2014, is another example of a similar effort that utilizes Design Thinking for social innovation. BiNA's work, which targets Syrian refugees, is focused on assisting Syrians in developing their own community initiatives to solve their most pressing challenges (BiNA, 2017).

Wamda, a platform that empowers entrepreneurs in the Middle East and North Africa, is also another example of the adoption of Design Thinking in entrepreneurship. The Dubai-based team at Wamda aims to provide entrepreneurs

with the support they require through three primary platforms: (1) a media site that provides sources of startup and entrepreneurship news in the region; (2) an early-stage investment fund; and (3) a programs arm, which includes the "Mix N Mentor" event series (Wamda website, 2022). Building awareness of Design Thinking has been a frequent topic in both the articles they publish and the workshops they hold, ranging from the use of Design Thinking in the workplace to the design of a great UX experience to the use of the methodology in aiding students in solving education and transportation challenges (Menon, 2016; Wamda events, 2017; Rahal, 2017).

In 2017, similar initiatives were launched in Saudi Arabia, where the Taqadam Startup Accelerator collaborated with King Abdullah University for Science and Technology (KAUST) to produce a series of articles describing the Design Thinking process and how it could foster agile management for companies (Taqadam Startup Accelerator, 2017). The series consists of five articles; each represents a phase of the Design Thinking process. In the first article "Why Your Company Needs Design Thinking?", Design Thinking, its attributes, and potential benefits for companies were introduced. The second article, "Emphasize: How to Know What Your Customers Really Want?" discusses empathy and how to achieve it in the context of product development and customer relations. "Can You Define Your Startup in One Sentence?" is the third article which addresses the "Define" phase by guiding the readers through defining the problem they need to solve, identifying the point of view (POV) - following the Stanford d.school framework - and developing a problem statement. The fourth article: "What Makes a Good Startup Idea?" discusses the "Ideation" phase, which the authors define as "the transition between identifying the problem and creating the solution." In doing so, the article acknowledges the Stanford d.school's Design Thinking process by focusing on three key components: Starting with the "HMW (How Might We)?"[8] questions, which are designed to spark various brainstorming methods, followed by guiding the reader through the brainstorming process, emphasizing five primary

[8] HMW: "How-Might-We questions are a way to frame your ideation, and often used for launching brainstorms". (https://dschool.stanford.edu/resources/how-might-we-questions, d.school website, 2022)

mindsets: (1) stay focused; (2) defer judgment and criticism; (3) encourage free-thinking; (4) quantity over quality and 5) be visual. The article then concludes by guiding the reader through the idea selection process. The fifth and final article, "Why and How to Use Prototypes?" emphasizes that prototyping is a crucial stage in bringing an idea to life because users can test a tangible prototype to validate the real-world impact of a product or concept. Prototypes can also assist designers in identifying their product's primary flaws before its launch. The writers next highlight the contrast between low-fidelity prototypes and high-fidelity prototypes, as well as the advantages and methods of each (Taqadam Startup Accelerator, 2017).

Other voices continued to emerge on the Internet and social media platforms. Blog posts and magazine articles highlighting the connection between Design Thinking, business success, and entrepreneurship are prominent examples. These include the online journal Entrepreneur Al Arabiya, which was launched in 2014 to provide information sources for Arab entrepreneurs. Among the several topics covered by the magazine articles, some discussed Design Thinking as an innovation tool that entrepreneurs may use to define and address local challenges. In one of these articles, the author Hanan Sulaiman describes a workshop led by Eman Abo El Atta, a Design Thinking expert. The workshop was part of the "Maker Faire" series, an annual event held in Cairo that highlights innovation, creativity, and resourcefulness from around the Arab region. It was designed following the U.S. version, which currently encompasses more than 40 major cities worldwide. The workshop covers the five-step d.school Design Thinking process: Empathize, Define, Ideate, Prototype, and Test (Sulaiman, 2016).

2.4.5 Design Thinking in the Public Sector

Over time, the adoption of Design Thinking by the public sector in the Arab world has increased noticeably. For example, in Saudi Arabia, the Ministry of Health collaborated with King Abdullah Medical City to launch a series of Design

Thinking workshops aimed at training medical professionals in applying Design Thinking to improve the patient experience and enhance the safety of health services (Saudi Press Agency, 2015).

In the UAE, the Government Leadership Program exemplifies the implementation of Design Thinking in the public sector, as it considers Design Thinking methods as important to the formation of UAE's future leaders (UAE Youth Leadership Program, 2017). The UAE Youth Program was one of the initiatives introduced in June 2017 by the UAE Government Leaders Program after the 2014 debut of the Innovative Leaders Program. The initiative is implemented in partnership with the Youth Office and targets UAE youth from the federal, municipal, and private sectors. The eight-month program is designed to train young individuals between the ages of 21 and 35 who are ambitious and self-motivated to use the Design Thinking methodology in fostering innovation, creative thinking, and continuous development and learning. The program's ultimate goal is to realign and redesign work practices in the UAE.

In Egypt, the Ministry of Youth and Sports, together with USAID'S Youth Leadership Program (YLP) launched annual youth training camps to support youth initiatives across the country (Bikir, 2019). The program utilizes the Design Thinking methodology. Youth who participate in the program are expected to apply their newly acquired knowledge into initiatives that will be implemented across the country. In this regard, the methodology is viewed as a means of encouraging young social involvement.

Another significant step toward integrating Design Thinking methods in the public sector was the establishment of the Mohamed Bin Rashid Center for Government Innovation in the UAE. Design Thinking is presented as part of the center's implementation toolkit, highlighting its value in finding creative solutions to "wicked" problems in the public sector. Moreover, the UAE government launched an annual event, "Dubai International Project Management Forum" (DIPM Webpage, 2019) that provides master classes on various project management

topics. Utilizing Design Thinking to foster flexible project management is at the forefront. The UAE Ministry of Finance, for instance, offers its staff comprehensive training in Design Thinking to enhance their problem-solving and analytical skills.

2.5 SUMMARY

This chapter presented the findings of a preliminary exploration of the current state of Design Thinking in the Arab world through a systematic literature review following the guidelines of the PRISMA framework. The review covers the entire year of 2010 (the first time the Arabic translation of Design Thinking "التفكيرالتصميمي" was coined) and extends up to and includes May 2019.

One of the key findings in this part of the study is tracking down the first translation of the term "Design Thinking" into Arabic as "التفكير التصميمي". The term appeared in a translation of Tim Brown's Ted Talk: Designers—think big, in 2010 and was coined by Chafic Jaber, a research engineer at Telecom ParisTech, who voluntarily translated the video. However, there seems to be an ongoing debate about the most accurate Arabic translation of Design Thinking. In addition to التفكير التصميمي, there are three more terms that researchers, designers, or authors in the region are using: تصميم التفكير, الفكر التصميمي, and التصميم المتمحور حول الإنسان. Nonetheless, based on the data collected, it is reasonable to conclude that "التفكير التصميمي" is the most widely adopted Arabic translation of "Design Thinking". The data also shows that Design Thinking is still in its early stages of adoption in the region. However, its popularity appears to have increased in recent years, particularly in the education, development, and entrepreneurial sectors. Saudi Arabia, Egypt, and the UAE seem to have the highest levels of adoption of the methodology among Arab nations.

3 RESEARCH DESIGN AND METHODOLOGY

This chapter describes the details of the research design, including the theoretical background of the selected research methodology, the research procedure, and the rationale behind choosing specific research methods, data collection, and data analysis.

The thesis has been dedicated to investigating the state of Design Thinking in the Arab world and to providing recommendations that aid Design Thinking educators and practitioners in understanding and designing culturally customized activities when running Design Thinking training in the region. First, the literature review of the published articles and research of Design Thinking in Arabic-speaking countries (Chapter 2) revealed a research gap that shows limited empirical research on the topic, and highlights the need for more exploration. In order to do so and to address the research questions identified earlier (Chapter 1), a variety of research methodologies can be employed. Depending on the research problem, the researcher decides to follow a qualitative, a quantitative, or a mixed-methods approach. While qualitative research is defined as "an emergent, inductive, interpretive and naturalistic approach to the study of people, cases, phenomena, social situations, and processes in their natural settings in order to reveal in descriptive terms the meanings that people attach to their experiences of the world" (Yilmaz, 2013, p.312), quantitative research is "a type of empirical research into a social phenomenon or human problem, testing a theory consisting of variables which are measured with numbers and analyzed with statistics in order to determine if the theory explains or predicts phenomena of interest" (Yilmaz, 2013, p.311). On the other hand, mixed methods research is described as a research methodology that

integrates multiple research methods to answer the research questions adequately (Dawadi et al., 2021; Bryman, 2006; Creswell, 2003; Creswell & Plano Clark, 2011). This study adopts a mixed-methods approach in which both quantitative and qualitative research methods are used to gain a broad understanding of the investigated topic. The next section provides the justification for this choice.

3.1 EPISTEMOLOGY (PHILOSOPHY) AND THEORY

Crotty (1998) believes that the terminology used in the research literature is confusing and that epistemologies, theoretical perspectives, methodologies, and methods seem to be "thrown together in grab-bag style as if they were comparable terms" (Crotty, 1998, p.3). Therefore, he proposes a model that puts these four elements in structured hierarchal levels when designing a research study, starting with the epistemology, which will form the research process and inform the use of the selected theoretical stance. The theoretical perspective will then be implied in research questions and dictate the choice of methodology, which in turn informs what research methods to be employed.

Epistemology is defined as “a way of understanding and explaining how we know what we know.” (Crotty, 2003, p. 3). It is also “concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate.” (Maynard, 1994, p. 10). The design of this study follows a pragmatist perspective. Pragmatism, as a research paradigm, is based on the idea that researchers should utilize the philosophical and/or methodological approach that works best for their research problem (Tashakkori & Teddlie, 1998). Several mixed-methods researchers often follow pragmatism since the focus is usually placed on the consequences of the research, and the importance of research questions. Therefore, multiple methods of data collection are used to address the research problem, and the process of collecting data can combine inductive and deductive thinking approaches by mixing

quantitative and qualitative methods (Creswell & Clark, 2017). The following ideas proposed by Cherryholmes (1992) and Murphy (1990), and adapted by Creswell & Poth (2016) guided the selection of pragmatism as a philosophical perspective when conducting this study: (a) researchers are "free" to decide what methods, techniques and research process to use which fulfill their purpose and need, (b) researchers can use different approaches when collecting and analyzing data, (c) researchers consider the "what" and "how" of their research in terms of its intended outcomes and the direction they want to take it, and (d) researchers believe that research takes place in a variety of contexts, including social, historical, political, and other.

In Crotty's (1998) model, the theoretical perspective seems narrower than the philosophical one. The theoretical perspective is defined as "the theoretical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria." (Crotty, 2003, p. 7). According to Creswell & Clark (2017), theory (or a conceptual framework or theoretical rationale) is "a general explanation of what the researcher expects to find in a study" (p. 47). While the researchers use theory deductively in quantitative research to create and test predictions of the results, a theory is often used inductively in qualitative research to explain the study findings (Creswell & Clark, 2017). However, mixed-methods researchers seem to often utilize the social science theory as it can be situated at different stages of the study because it provides a framework from the social sciences that can guide the questions and the answers of the study (Creswell & Clark, 2017). The research reported in this thesis follows symbolic interactionism, a "micro-level theoretical perspective in sociology that addresses the manner in which individuals create and maintain society through face-to-face, repeated, meaningful interactions." (Carter & Fuller, 2015). In symbolic interactionism, interaction happens within a specific cultural and social context in which situations, physical objects, and people are classified according to their meanings. These meanings are developed from interacting with others and society and continue to be built and rebuilt through interpretive processes (Blumer, 1969). Figure 4 shows the research model of this study.

Figure 4 Model of research design, adapted from Crotty (1998)

3.2 METHODOLOGY AND RESEARCH METHODS

According to Crotty (2003), a methodology is defined as "the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of the methods to the desired outcomes." (p. 3). It aims to describe, evaluate and justify the use of particular methods (Wellington, 2000). On the other hand, methods are "the techniques or procedures used to gather and collect data related to some research question or hypothesis" (Crotty, 2003, p. 3). As mentioned earlier, this study follows a mixed-methods methodology in which both quantitative and qualitative research methods are used to investigate and better understand the topic at hand.

3.2.1 Mixed Methods Research

In recent years, mixed-methods research has become increasingly popular in social and health sciences studies (Creswell, 2011b, 2014; Plano Clark, 2010). One of the reasons behind its growing popularity is that it "provides multiple ways to address a research problem" (Creswell & Clark, 2017, p. 2). Over time, several definitions for mixed-methods research have evolved, each incorporating different aspects of methods, research processes, study objectives, and philosophy (e.g., Greene et al., 1989; Tashakkori & Teddlie, 1998; Creswell & Plano Clark, 2007; Creswell &

Clark, 2017). In a comprehensive study conducted by Johnson et al. (2007), the researchers provided an analysis of 19 different definitions provided by 21 well-published mixed methods researchers, mixed-methods research was defined as "the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration." (p. 123). Scholars in this realm have argued that the importance of combining quantitative and qualitative data in one study stems from the fact that neither quantitative nor qualitative methodologies are sufficient in capturing the patterns and specifics of a situation on their own. Quantitative and qualitative methodologies complement each other and provide a more robust study when utilized together, taking advantage of each method's strengths. (Green et al., 1989; Miles & Huberman, 1994; Green & Caracelli, 1997; Tashakkori & Teddlie, 1998). Another expansible definition was proposed by Creswell & Clark (2017), which the researchers developed after reviewing mixed-methods articles for years and defining how academics employ both quantitative and qualitative approaches in their research. Creswell & Clark rely in their definition on core characteristics of mixed-methods research (p. 5) and state that a mixed-methods researcher would, therefore, "**collect and analyze both qualitative and quantitative data** rigorously in response to research questions and hypotheses, **integrate** (or mixes or combines) the two forms of data and their results, **organize** these procedures into specific research designs that provide the logic and procedures for conducting the study, and **frames** these procedures within theory and philosophy" (p. 5). Following Creswell & Clark's (2017) recommendation, and after identifying the research gap in the literature and iterating the research questions to be investigated, the following research methods were used to collect data sequentially in two phases: quantitative research methods (social media analysis and survey) and qualitative research methods (semi-structured interviews and participant observation). Integration was conducted after the quantitative data analyzed in phase one. This approach provides the most

appropriate research design for answering the study questions and organizing the process of collecting and analyzing data.

Despite the strengths of mixed-methods research, which include providing more accurate judgments when qualitative findings and quantitative results complement each other and improving the validity of the research when combined (Doyle et al., 2009), mixed-methods studies also have their weaknesses (Johnson & Onwuegbuzie, 2004, Creswell & Clark, 2017). For example, mixed-methods research takes a longer time to conduct and consumes more resources. There is also the need for the researcher to master other skills that sometimes is challenging for one researcher aiming to perform the whole task (Table 2).

STRENGTHS **Doyle, Brady & Byrne, (2009), Creswell & Clark, (2017)**	**WEAKNESSES** **Johnson & Onwuegbuzie, (2004), Creswell & Clark, (2017)**
• Provide a way for leveraging strengths that compensate for the shortcomings of both quantitative and qualitative research. • Provide more evidence for investigating a research problem than either type by itself. • Enable the researcher to address several research questions in a single study. • Allow to conduct a follow-up qualitative study (e.g., interviews) to explain earlier quantitative survey findings. • Help in answering questions that quantitative or qualitative methods alone cannot answer.	• Challenging for a single researcher to carry out both qualitative and quantitative studies. • The researcher needs to know how and when to mix the methods properly in a single study. • Require more time and resources. • The need to educate others about the value of using mixed-methods because it is a relatively new approach in research design, and it requires others to be more open to using multiple perspectives in research.

Table 2 Strengths & Weakness of mixed methods research, adapted from Doyle, Brady & Byrne (2009); Johnson & Onwuegbuzie (2004); Creswell & Clark, (2017)

3.3 STUDY DESIGN

3.3.1 Explanatory Sequential Design

According to Tashakkori & Teddlie (2003), about forty mixed-methods research designs were reported in the literature. Some designs are more popular than others (e.g., the convergent parallel design; the embedded design, Creswell & Clark, 2017). In this study, an Explanatory Sequential Design was selected to broadly explore, investigate and understand the status of Design Thinking in the Arab world. This research design consists of two phases (Creswell, et al., 2003). It begins with collecting and analyzing quantitative data (phase 1), followed by collecting and analyzing qualitative data (phase 2). Phase 2 is designed based on the results of the first phase to help explain the quantitative results (Creswell & Clark, 2017). This research design has been widely applied in both social and behavioral sciences research (Kinnick & Kempner, 1988; Ceci, 1991; Klassen & Burnaby, 1993; Janz et al., 1996). This type of research design can be used when the researcher wants to use quantitative results to form groups and then follow up with those groups through qualitative research, or when the researcher wants to use quantitative results about participant characteristics to guide purposeful sampling for a qualitative phase (Creswell et al., 2003; Morgan, 1998; Tashakkori & Teddlie, 1998). The rationale for using such an approach is that the findings of the quantitative data provide a general understanding of the research problem, while the qualitative data and analysis clarify and explain the statistical results by diving deeper into the perspectives of the participants (Creswell, 2003; Rossman & Wilson, 1985; Tashakkori & Teddlie, 1998).

The first phase of the design of this study consists of two quantitative methods: social media analysis (Twitter data) and a survey. These are followed by conducting

ten in-depth semi-structured interviews in the qualitative phase, supported by participant observation of seven Design Thinking training events. The design of this study is shown in Figure 5.

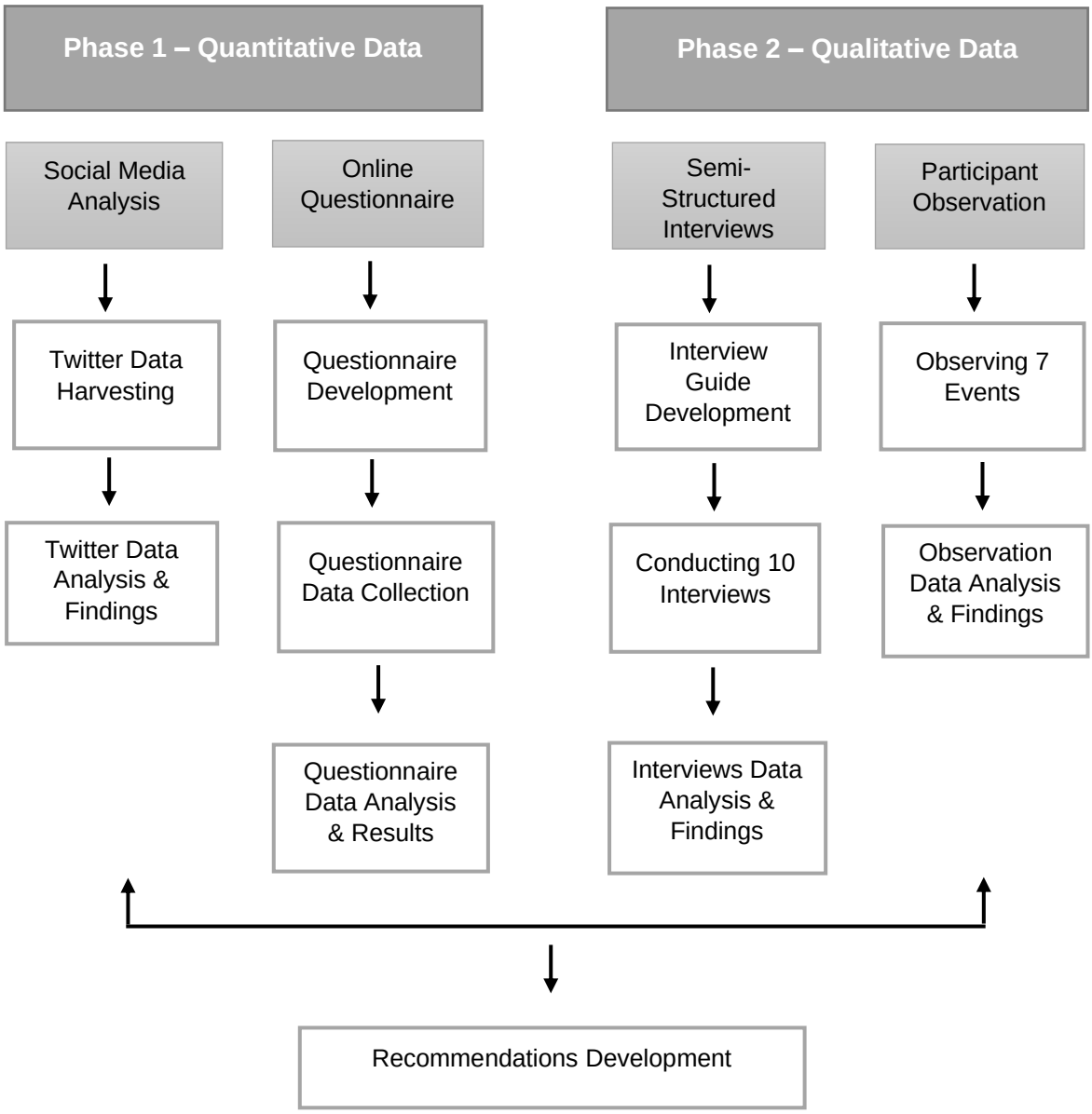

Figure 5 Explanatory sequential mixed method research design

This specific design was chosen because the quantitative phase of the study is intended to establish the foundational understanding of the emergence and application of Design Thinking in Arabic-speaking countries. The results of the

quantitative phase help map out different strands of the adoption of Design Thinking in the region, guide the refinement of the research questions, and support in identifying subjects to be interviewed in the subsequent phase. Therefore, integrating this explanatory sequential study involves connecting the outcomes of the quantitative research to help plan the qualitative data collection phase. The qualitative phase aims to deepen this understanding of where Design Thinking had been adopted more broadly. It also sheds light on the challenges of spreading it further. The findings of both phases will be subsequently integrated to conclude how the qualitative findings explain and extend specific quantitative results (Creswell & Clark, 2017). The conclusions will be leveraged to develop recommendations highlighting what needs to be considered -from a cultural perspective- when running Design Thinking trainings in the region, and what needs to be done in order to support Design Thinking capacity building in the Arab world.

Creswell & Clark (2011) suggest that one strength of this design is that "the final report can be written with a quantitative section followed by a qualitative section, making it straightforward to write and providing a clear delineation for readers" (p. 83). Following this direction, this thesis is designed to present the results and discussion of the quantitative data first (Chapter 4), followed by the findings of the qualitative data and discussion (Chapter 5).

3.4 Quantitative Data Collection and Analysis

This is the first phase of the study in which two quantitative methods were employed: social media analysis (SMA) (Twitter data) and a survey. After conducting and analyzing the data harvested from Twitter, a survey was administrated online to validate the findings of the literature and the social media analysis. It also served as a channel for identifying interviewees for the qualitative phase.

3.4.1 Social Media Analysis

In recent years, social media has significantly grown in popularity. As a result, researchers have become more interested in studying and analyzing the consequences of social media use on individuals' civic and political involvement (Boulianne, 2015), as well as using social media platforms (e.g., Facebook, Twitter, and LinkedIn) as a source of research data to understand certain phenomena. Social media research allows researchers to explore new approaches to addressing novel research questions (Mayr & Weller, 2017).

For this part of the study, Twitter was used as a source of data collection. Analyzing data from Twitter contributed to answering two research questions in particular, and to refining some findings from the literature review. The two research questions that guided data collection are:

1) What is the most widely adopted Arabic term for Design Thinking?

2) What are the commonalities and differences in Design Thinking adoption across various Arabic-speaking countries?

These questions support the general question of what can be learned about Design Thinking in the Arab World, and what needs to be done if Design Thinking is to be further adopted in the region.

The data collected targets the period from March 2006 (when Twitter was launched) to May 2019, when this part of the study was concluded.

3.4.1.1 Choosing Twitter

Twitter is known to have the second-highest penetration rate after Facebook in the Arab world (Mourtada & Salem, 2011; Radcliffe & Abuhmaid, 2020), offering good access to the targeted population. Furthermore, Twitter is regarded as a reliable microblogging tool for news aggregation, dissemination, and knowledge sharing, among other use cases (O'Donovan et al., 2012; Broersma & Graham, 2013). According to some studies, Twitter is also considered to be the preferred channel for "elite" users, who generate about half of all tweets from the Arab region (Mourtada & Salem, 2011). Another reason for choosing Twitter is the feasibility of data harvesting. Unlike Twitter, Facebook regularly updates its Application Programming Interface (API), and in 2014 the company announced that it would stop allowing third-party apps to have access to data on the friends of app users, limiting the flexibility for searching content (Hogan, 2016). By comparison, Twitter's publicly-available tweets that can be accessed and retrieved easily via APIs provide a significant advantage for collecting data for this research.

Additionally, due to the limited character length of tweets, Twitter also provides a relatively homogeneous data corpus for analysis. However, in Design Thinking, such an approach using Twitter data was not found to have been previously reported in the literature. Instead, previous studies into the evolution and history of Design Thinking had looked into structured documents like published and unpublished course materials (e.g., Carleton & Leifer, 2009; von Thienen et al., 2016, 2017b, 2019, 2021; Auernhammer & Roth, 2021) or questionnaires and interviews (e.g., Schmiedgen et al. 2016).

To generate reliable evidence on the status of Design Thinking in the Arab world via Twitter data, a two-phased research methodology was adopted: (1) data harvesting and cleaning followed by (2) data analysis and visualization (which will be covered in more details in Chapter 4).

3.4.1.2 Twitter Data Harvesting and Cleaning

The Twitter data was obtained via Twitter's API using a Python script created specifically for this purpose. A Twitter user account was first created, then used to register as a Twitter developer on https://dev.twitter.com/ (Hill & Scout, 2017). After registering as a developer, a Twitter application was created at https://apps.twitter.com/, containing all the needed information to obtain the Twitter API secret keys (Bernábe et al., 2020). The Pandas library 0.24.1[9] (a software library written for the Python programming language for data manipulation and analysis) was then used in combination with the obtained secret keys to query the Twitter API backend (cf. Beyer, 2012; Bhavsar, 2020; Thorat et al., 2017). Having obtained the Twitter API access authorization, the following steps were conducted for collecting and analyzing data (Figure 6):

- **STEP 1**: Scouting all potential keywords that could be associated with Design Thinking in the Arabic language. Based on literature reviews (Traifeh et al., 2021a), web searches, and an initial search on Twitter, four Arabic translations that refer to the term "Design Thinking" were identified (التفكير التصميمي، الفكر التصميمي، التصميم التفكيري، تصميم التفكير). Two more terms – Creative Thinking and Human-centered Design (التصميم المتمحور حول الإنسان، التفكير الإبداعي) –, which sometimes appeared to refer to Design Thinking, were also included in the keyword search.
- **STEP 2**: All tweets were gathered, including the identified potential translations of "Design Thinking."
- **STEP 3**: All tweets were screened for content relevance to Design Thinking. This resulted in two terms being excluded as a potential translation of Design Thinking. The first term (التفكير الإبداعي) showed unrelated content discussed under this headline, while the second term (تصميم التفكير), which was present in the literature search, did not

[9] https://pandas.pydata.org/pandas-docs/version/0.24.1/

appear in the Twitter data. By contrast, three terms were confirmed as direct translations of Design Thinking in the Arabic language (التفكير التصميمي، الفكر التصميمي، التصميم التفكيري), and one term (التصميم المتمحور حول الإنسان) was confirmed to be associated with Design Thinking topics.

- **STEP 4**: Based on the confirmed translations and relevancy of keywords, an in-depth search was undertaken to collect tweet data regarding Design Thinking through the same API.
- **STEP 5**: The collected tweets were geotagged based on the countries from which they were posted. Geotagging means that "the exact position of where the tweeter was when the tweet was posted is recorded using longitude and latitude measurements" (Sloan & Morgan, 2015). This allows distinguishing between tweets in the Arabic language on Design Thinking that are geotagged as coming from Arab countries vs. tweets in Arabic which geotags indicate that they did not originate from these countries.
- **STEP 6**: The biographies of all non-geotagged users were manually checked to determine their origin location. As a result, some locations were identified and added to the geotagged group, while others remained unidentified.
- **STEP 7**: The next step was to harvest data mentioning Design Thinking in English, posted from Arab countries. Tweets were grouped based on whether the tweet authors provided personal geotags.
- **STEP 8**: The Arabic and English data were compared to show trends, similarities, and/or differences in volume and progression.
- **STEP 9**: The geotagged data was arranged by country to show the progression of Design Thinking from 2009 (when the first mention of Design Thinking appeared on Twitter) to May 2019. Thus, the emergence of Design Thinking in Arabic-speaking countries is tracked along the first decade of Design Thinking adoption.

- **STEP 10**: The data was analyzed country by country to provide an in-depth profile of each Arab country.
- **STEP 11**: General conclusions were drawn from the data analysis.

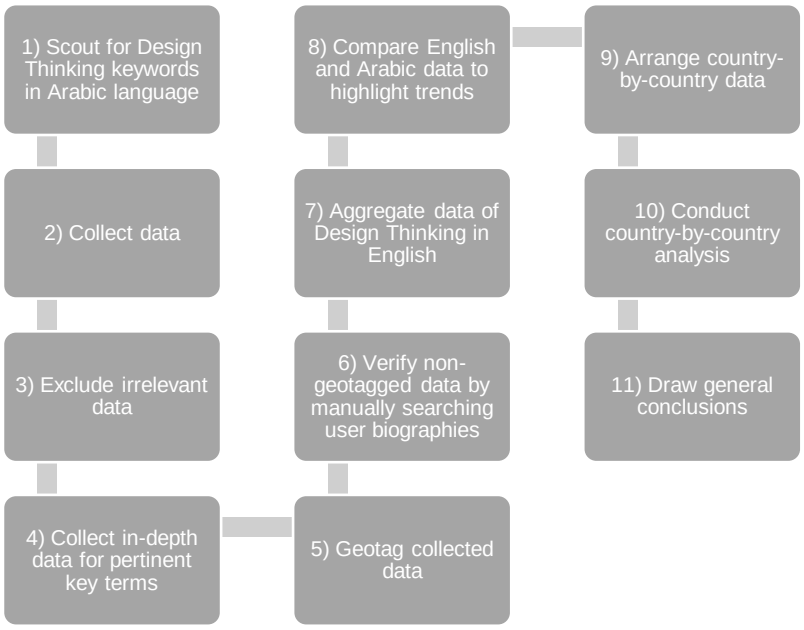

Figure 6 The Procedure of Collecting and Analyzing Twitter Data

3.4.2 Survey

Questionnaires are popular methods for quantitative data collection methods that gather information about people's knowledge, opinions, attitudes, and behaviors (Oppenheim, 1992; Mathers et al., 2007). While questionnaires can be self-administered or can follow an interview-completion approach (Mathers et al., 2007), this part of the study adopted the self-administered approach in which the respondents completed the questionnaire without the presence of an interviewer. Questionnaires that are self-administered can be sent via mail or provided electronically (Rogers et al., 2011; Kazi & Khalid, 2012), and the most common way to administer these surveys nowadays is online (Fife-Schaw, 1995). The survey at hand was circulated via the Internet in order to reach large populations from

different geographic areas (Mathers et al., 2007; Mohamadali & Azizah, 2013). The survey was developed using the SurveyMonkey[10] tool as it supports the Arabic language and was tested by the author before in a previous study (e.g., Traifeh et al., 2019). The survey ran for a period of one month between June and July, 2019, and was distributed through social media outlets, namely Twitter, LinkedIn, and Facebook. No incentives for participation were offered, and all responses were anonymous.

The aim of running the survey was to deepen the exploration of the state of Design Thinking in the Arab world by confirming which Arabic term is adopted the most among researchers and practitioners, how Design Thinking is understood and in which sectors it is applied. It was also important to get the respondents' perspectives about what needs to be done if Design Thinking is to be further adopted in the Arab region. Analyzing the answers contributed to answering the research question: *"What factors need to be considered in order to build the local capacity in Design Thinking in the Arab world?"*

The survey contained a total of 21 questions divided into five main sections (see Appendix A for both Arabic and English versions of the instrument).

1- The first set of questions aimed to show which Arabic term of Design Thinking the participants had previously heard of and how they would define Design Thinking. Respondents were also asked when and where they first heard the term, as well as how they encountered Design Thinking for the first time.

2- The second set of questions aimed at people who had studied Design Thinking or had used it at work. Respondents were asked to indicate where they studied or worked with Design Thinking, as well as the industry in which they experienced it. These who answered the work question were also asked to specify

[10] https://www.surveymonkey.com/

the size of the organization/institution/company they worked for, as well as the relevant industry.

3- The third set consists of two questions: the first question in this part asks about the duration of acting in different roles associated with Design Thinking (e.g., learn, teach, apply, and facilitate Design Thinking), and the second question examines the respondents' understanding of the characteristics of a 'good design thinker' which contributes to the understanding of the Design Thinking mindset.

4- The fourth set contains two open questions that allowed participants to express their thoughts on what could be achieved if Design Thinking was implemented more in their region and if there was something else regarding Design Thinking in their region they would like to highlight. Following these two questions, the participants were asked whether they could recommend a local Design Thinking expert to contact.

5- The fifth set of questions includes demographic questions to collect the participants' gender, age, nationality, academic achievement, and work experiences.

Apart from the two open questions, the survey contained mainly closed questions with the possibility to use open/additional answers for a few questions.

3.5 QUALITATIVE DATA COLLECTION AND ANALYSIS

In this second phase of the study, ten semi-structured interviews were conducted and analyzed. Another qualitative method was used which is participant observation. Notes were taken while observing participants in seven Design Thinking training events between 2019 and 2021 which took place in Egypt (n=1),

Turkey (n=1), and the United Arab Emirates (n=5). Supplementary documents from the events have also been analyzed in support of the observation analysis.

3.5.1 Semi-Structured Interviews

Conducting interviews is known as the most common data-gathering method in qualitative research (Dicicco-Bloom & Crabtree, 2006; Myers & Newman, 2007). When conducting an interview, a conversation is established between the interviewer and the informants to understand the informants' perspectives on a selected topic (Mack, 2005). The in-depth interview can reveal the interviewees' views and personal beliefs, experiences, and motivations regarding that topic (Mack, 2005; Gill et al., 2008). Interviews can be structured, semi-structured, and unstructured (Saunders et al., 2009). The interviews conducted for this study were semi-structured, an approach that combines the benefits of structured and unstructured interviews by asking open-ended questions to elicit complicated details (Alshenqeeti, 2014). In total, ten selected Design Thinking practitioners were interviewed. Three interviewees have been identified through the researcher's network, while the other seven were selected based on suggestions made by the participants in the survey conducted in the first phase. The target audience to identify those informants included: (1) Design Thinking coaches from the Arab region; (2) design business owners/directors/managing partners who are spreading Design Thinking in their organizational culture; and (3) academic staff members who teach Design Thinking at Arab universities. All ten interviews were conducted via the online video conference tool Zoom[11]. This enabled interviewing people based in different geographical places, which are sometimes difficult to reach, and eliminated travel costs. The interviews took place between July 2019 and March

[11] Zoom is a video conferencing platform that allows people to connect online for video conference meetings, webinars, and live chat via a PC desktop or mobile app. https://zoom.us

2021, conducted in English (n=2), a mix of English and Arabic (n=6), Arabic (n=2), and lasted between 30 to 70 minutes each.

The selection of the interviewees was based on their professional experiences with Design Thinking in Arab countries, regardless of their nationality. This was intended to provide broader perspectives and compare whether non-Arab practitioners had different experiences compared to Arabs (Table 3).

Role	Nationality	#
University educators	(Western)	(2) P6,P8
Innovation officer (Large & SMBs)	(Arab)	(5) P1,P2,P3,P5,P7
Innovation officer, NGO	(Arab)	(1) P4
Design center co-founder	(Arab)	(1) P10
Freelance Design Thinking coach	(Arab)	(1) P9

Table 3 Roles of interviewees and their nationalities

All ten interviews were audio-recorded with the permission of the interviewees to ensure accuracy, and were transcribed verbatim by two professional Arabic and English speaking transcribers. Moreover, the ten transcripts were further proofread to ensure that the transcribers understood the context. This led to some corrections of mistaken transcription.

The topics of the semi-structured interviews were developed based on other examples in literature (Meinel et al., 2017) and supported by the themes and patterns that emerged during the first explorative analyses of the quantitative data.

After contacting the identified interview candidates and introducing the purpose of the interview and the study goals, the interviews were scheduled and conducted. The interviews were based on a general guide divided into the following sections (see Appendix B for the interview guide):

- First experience with Design Thinking, whether professional or non-professional
- Perspectives and understanding of Design Thinking
- Applying Design Thinking in the workplace
- Recommendations to those interested in learning more about Design Thinking
- Perception of Design Thinking in the Arab culture, challenges and opportunities

All interviewees were asked the same questions, but the researcher was flexible if an interviewee wanted to elaborate more on a topic or found another irrelevant.

For analyzing the data, a thematic analysis procedure was used to identify patterns and themes in the qualitative data (Maguire & Delahunt, 2017), applying the six-phase guide proposed by Braun and Clarke (2006). This guide provides a clear framework for analyzing the qualitative data as represented in the following steps: (1) become familiar with the data; (2) generate initial codes; (3) look for themes; (4) review emerged themes; (5) define and name themes; and (6) write the report. Figure 7 highlights the procedure of collecting and analyzing this qualitative part of the study.

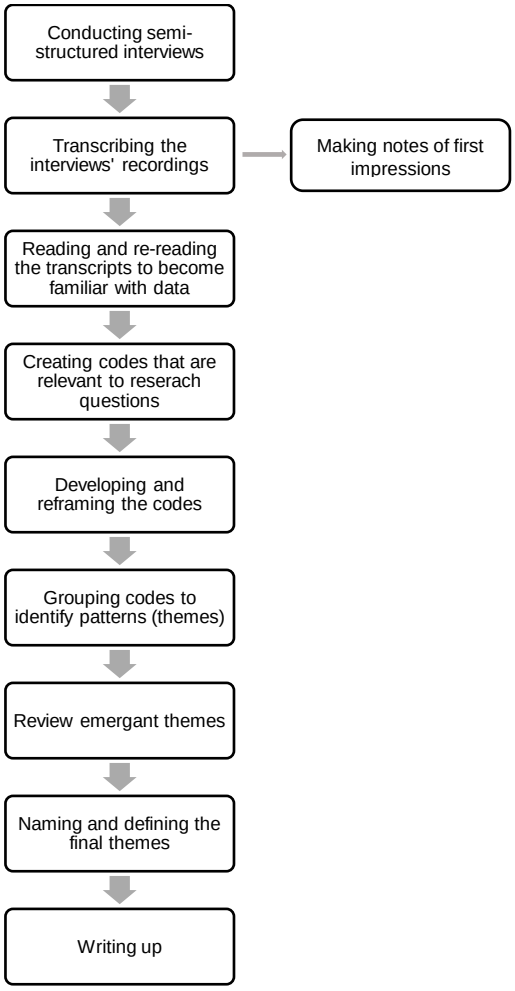

Figure 7 The procedure of collecting and analyzing semi-structured interviews data following Braun and Clarke's framework (2006).

The identified themes and the findings of the analysis are presented in Chapter 4.

3.5.2 Participant Observation

Another modality used in the study was the participant observation notes and photos, which were compared against the responses to the survey questions and the interviewees' answers. Participant observation is the process through which researchers learn about the behavior and activities of the people being studied in their natural environment by observing and engaging in those activities (Kawulich,

2005). For many years, participant observation has been utilized in various fields as a method for gathering data on people, processes, and cultures. It became an essential method for collecting data because it allows researchers to look for nonverbal expressions of feelings, understand how participants communicate with one another and assess how much time is spent on particular activities (Schmuck, 1997). According to Dewalt and Dewalt (2002), the goal of the research design that uses participant observation as a method is "to develop a holistic understanding of the phenomena under study that is as objective and accurate as possible given the limitations of the method" (p.92). Schensul and Lecompte (1999) provide a list of reasons for using participant observation in research. The following reasons justify the researcher's use of this method to support the findings of other parts of the study and to help draw valid recommendations on Design Thinking capacity building in the Arab world:

- Participant observation can assist the researcher in gaining a better understanding of how things are structured and prioritized, how people interact, and what the cultural parameters are.
- Participant observation can help the researcher see what cultural members consider important in terms of manners, social interactions, leadership, politics, and taboos.

One aspect that helped the researcher interact appropriately with the observed participants is her ability to speak Arabic. Bernard (1994) believes that "the most important thing you can do to stop being a freak is to speak the language of the people you are studying—and speak it well" (p.145). Fluency in the native language not only helps in building rapport with participants but also in gaining occasional access to sensitive information (Bernard, 1994).

When it comes to understanding a culture, Wolcott (2001) suggests that the researcher should continually review what they are searching for. However, at the same time, it is important to focus on what is really happening by looking for patterns (or underlying themes) in behavior and action. Therefore, reporting on the

findings should be on the information obtained rather than what the researcher feels should be collected. Wolcott adds that data gathering through observation may also involve informal conversations with participants, which was also considered and documented during the observations.

Seven Design Thinking workshops involving students and/or professionals were observed in this qualitative part of the study over a period of three years. Fifty A5 pages are the total number of reported notes which were analyzed, and supported by 325 photos that were taken during the workshops. Table 4 provides an outline of the workshops information.

	Country	***Location***	***Date***	***Type of event***	***Stakeholders***	***# of participants***
W1	UAE	Event venue - University	February, 2019	3 days workshop	Students	30
W2	UAE	Event venue - University	September, 2019	1 day workshop	Professionals & Students	25
W3	Egypt	Event venue - University	December, 2019	4 days workshop	Students	40
W4	UAE	Event venue - Hotel	December, 2019	3 days workshop	Professionals & Students	60
W5	Turkey (Arab participants)	Event venue - Hotel	January, 2020	3 days workshop	Professionals	25
W6	UAE	Innovation hub - University	February, 2020	3 days workshop	Professionals & Students	35
W7	UAE	Event venue – Exhibition Center	November, 2021	2 days hackathon	Students	100

Table 4 The observed workshops: Location, date, duration, stakeholders involved, and number of participants

The findings of the participant observation data will be provided in detail in Chapter 5, in addition to the identified themes and issues addressed by the participants.

3.6 SUMMARY

This chapter provided details and justification of the research design that was used to address the research questions of this thesis. The introduced research design model has presented 'Pragmatism' as an epistemology, 'Symbolic Interactionism' as a theoretical perspective, and 'Mixed-Methods' as the methodology followed in answering the research questions. The chapter also described the following research methods that were employed in the study: Social media analysis, a questionnaire, semi-structured interviews, and participant observation. The next chapter is devoted to the quantitative results and discussion.

4 QUANTITATIVE RESULTS AND DISCUSSION

This chapter presents the analyzed results of the quantitative data of this study, and it is structured in two parts: The first part reports on findings of how Design Thinking has been adopted in the Arab world, based on the analysis of social media data from Twitter in the period between May 2006 and May 2019. The second part provides a description of the findings of quantitative and partly qualitative outcomes of the questionnaire conducted in 2019. The findings intend to address three research questions in particular:

- What is the most widely adopted Arabic term for Design Thinking, and when did Design Thinking first appear in the region?
- Who are the organizations/people most active in promoting Design Thinking in the Arab world (for-profit or non-profit, government, others)?
- What are the commonalities and differences in Design Thinking adoption across various Arabic-speaking countries?

Nevertheless, the qualitative aspect of the questionnaire contributed to answering the following research question:

- What factors need to be considered to spread Design Thinking further and build the local capacity in Design Thinking in the Arab world?

For an easier read, the findings of each quantitative method are presented individually followed by a summary of the key takeaways.

4.1 Social Media Analysis: Twitter Data Findings

As mentioned in Chapter 3, the first quantitative method in the study was harvesting data from Twitter between March 2006 (when Twitter was launched) and May 2019. From 2006 to 2009, tweets from Arabic-speaking countries, that included the English term “Design Thinking” appeared on Twitter, while tweets with Arabic translations of Design Thinking started to emerge from 2009 onwards.

Given the novelty of Design Thinking research in the Arab region, this part of the study aims to support the findings of the literature review by providing an exploratory overview of developments: Who is involved, where did events occur, and what can be learned about Design Thinking in the Arab world? The following sections will describe the data obtained from Twitter, followed by contextualization, interpretation, and conclusions. Finally, the findings are organized and visualized according to three main aspects: time of occurrence, language, and location. These themes were used to obtain insights into the Arab world's adoption of Design Thinking, both in Arabic and English, and to uncover potential trends across different Arab countries.

4.1.1 What is “Design Thinking” in Arabic?

An initial exploration of all Arabic hashtags associated with Design Thinking confirms the findings of the previous literature search (Traifeh et al., 2021a) that there is no single agreed-upon Arabic term for Design Thinking. However, aggregating all available terms and arranging them by frequency of usage reveals that there is one dominant term in Arabic discussions of Design Thinking, which is “التفكير التصميمي”. This term is used in 91% of all tweets about Design Thinking in Arabic (Figure 8). Establishing “التفكير التصميمي” as the de-facto translation of Design Thinking in Arabic can be an important first step both in mapping the development

of Design Thinking in the Arab region, as well as in the research and practice of Design Thinking in general.

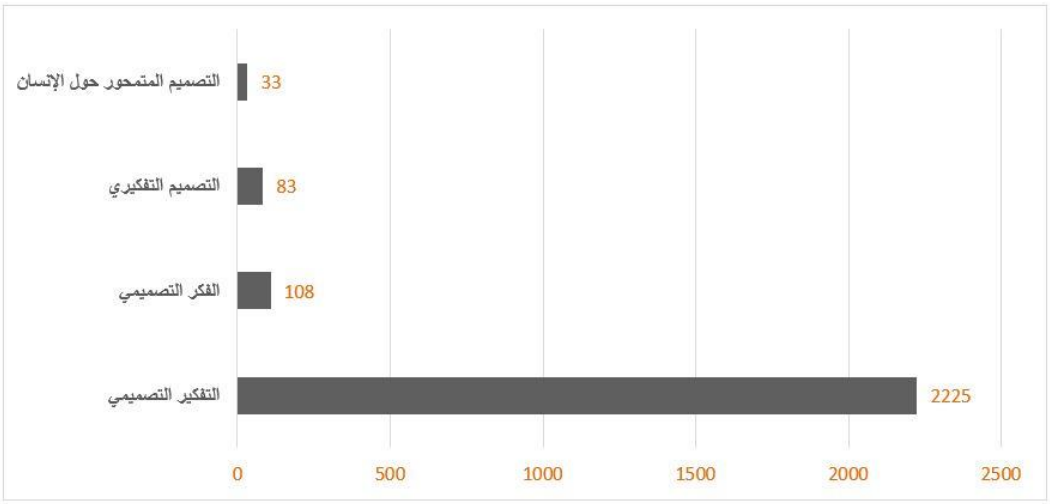

Figure 8 Terms referring to Design Thinking in Arabic, with التفكير التصميمي appearing to be the most frequently used

4.1.2 When Did Design Thinking First Appear in the Arab world, and How Has it Evolved Since Then?

According to the analyzed Twitter data, the Arabic term for Design Thinking first appeared on Twitter in 2009. The data also shows that a high number of tweets on Design Thinking emerged in the two years preceding the "Arab Spring" uprising, with a clear peak in 2011 (Figure 9). This peak is followed by a sharp drop in tweet numbers in 2012. However, there was a gradual increase in Design Thinking mentions again starting in 2013, and this dynamic seems to accelerate from 2016 onwards.

In terms of contextualization, there appears to be a correlation between the Arab Spring uprising and interest in Design Thinking, as reflected in the high numbers of tweets during the same period of time. Content analysis also supports this

presumed correlation. For example, Doreen Toutikian, President and Founding Director of the MENA Design Research Center in Beirut, Lebanon, wrote a blog post in 2011, “Why Design Thinking is Important to the Arab World Now?”, in which she explained the relationship between the rise of Design Thinking and the Arab Spring: “Designers can perhaps help the Arab communities redefine their systems by being the link between politics and the people.” (Toutikian, 2011). Having established the MENA Center in 2011, she emphasizes the connection between the Arab Spring’s grassroots movements calling for social, economic, and political change in the Arab region and Design Thinking’s participatory and bottom-up problem-solving approaches. This, however, does not explain the subsequent drop in mentions in 2012.

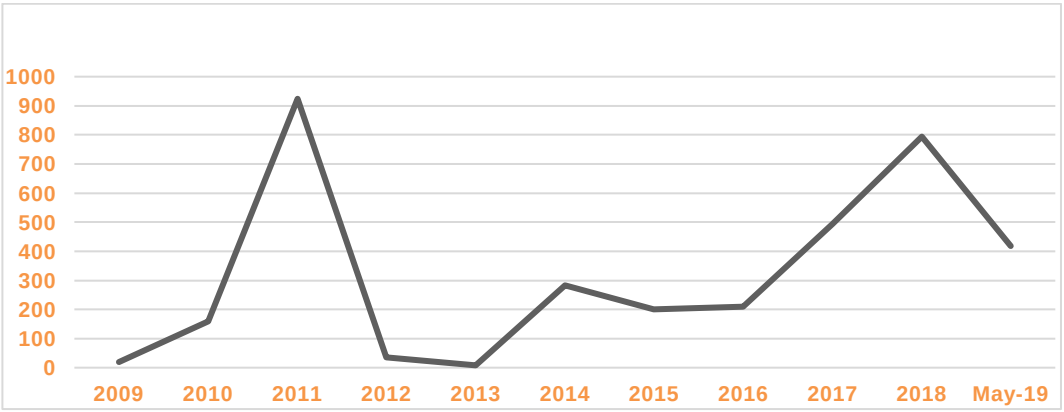

Figure 9 Design Thinking Arabic tweets

Comparing the number of mentions of Design Thinking terms in English versus Arabic shows that the English term precedes the Arabic terminology. As shown in Figure 10, the English term “Design Thinking” first appeared on Twitter in 2006. That was three years before the emergence of early Arabic translations. This is expected, given that the original term is English, and it must have taken some years for the Arab Design Thinking community to develop associated Arabic terminology. Furthermore, some similarities and differences regarding Design Thinking posts in English vs. Arabic can be observed. For example, tweets in English show one peak in 2009 and another in 2011. Afterwards, mentions of

English terms seem to have plateaued. In contrast, tweets in Arabic peaked in 2011, followed by a significant drop in tweet numbers. From 2013 onwards, there seems to be renewed interest, reflected in the rising numbers of Arabic tweets.

Looking at all existing tweets worldwide, the number of tweets on Design Thinking in Arabic remains relatively small at around 1,000. In comparison, during the same period, there were more than 100,000 tweets in English.

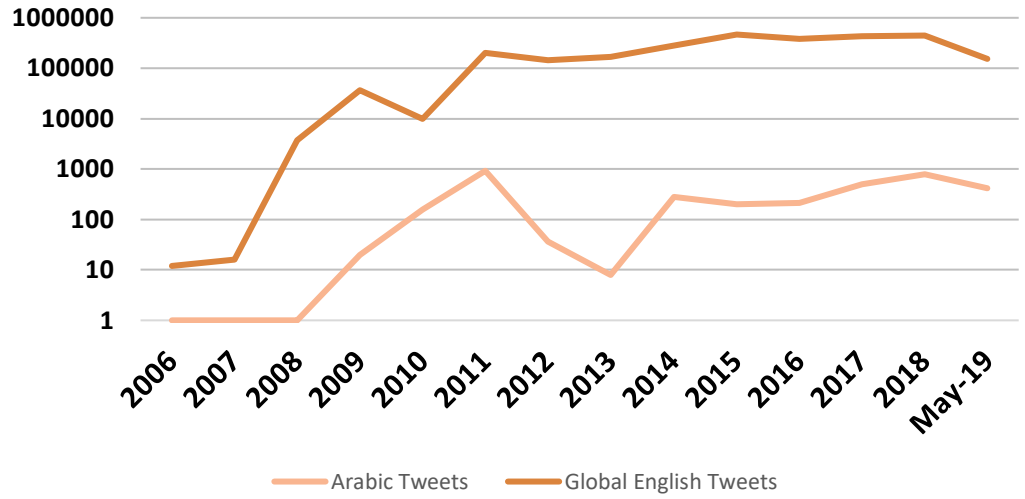

Figure 10 Comparison between English and Arabic Design Thinking tweets over time from across the world

Figure 11 shows a close correlation between the global trend of English tweets and the trend of English tweets coming from the Arab region. Moreover, tweets in English – even those originating from Arab countries – show no drop in the 2011-2013 timeframe after the Arab Spring uprisings. This may indicate that Arabic posts on Design Thinking during that period were connected to political and societal aspirations. In contrast, English conversations may have been more attuned to international strands of debate and concern. Further content analysis of posts in English versus Arabic would be required to test this hypostasis.

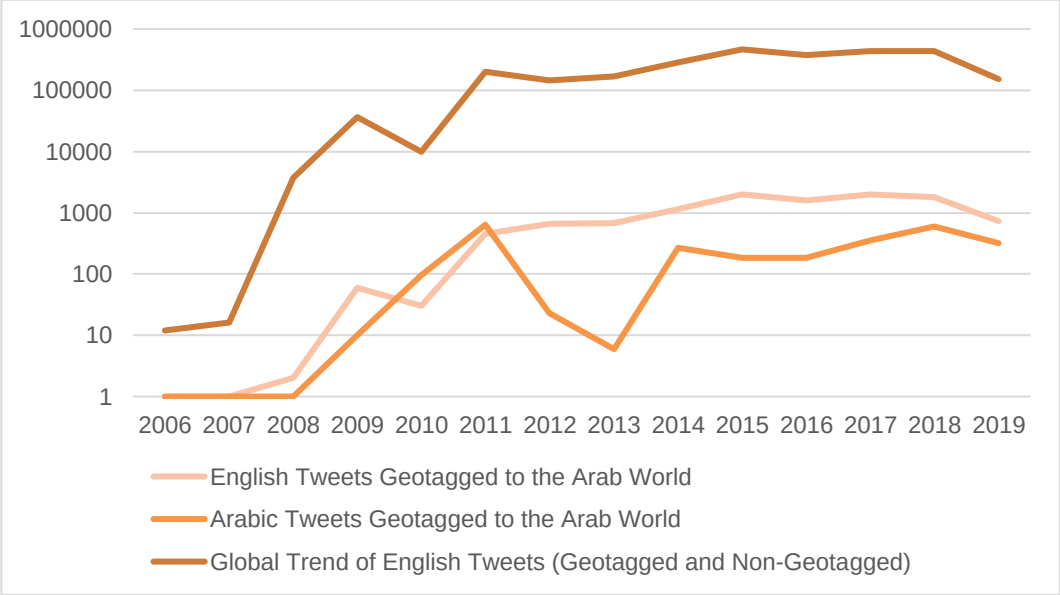

Figure 11 Comparison between English global tweets, and English and Arabic tweets geotagged to the Arab region

4.1.3 Analysis of Arabic Design Thinking Tweets

While Design Thinking is relatively new in the Arab world, the data shows significant differences between countries in the region. The study indicates that 70% of all Design Thinking mentions in Arabic originate from Saudi Arabia, making it the country that is most strongly engaged with Design Thinking among all Arab countries. Kuwait ranks second with 13% of all mentions. Other countries with a considerable number of tweets include the United Arab Emirates, Jordan, and to a lesser degree Oman. Overall, the numbers indicate that Design Thinking is rising in popularity in Arab countries, with the gulf[12] region being the center leading this trend. At the same time, the lower volume of tweets that include the term التفكير التصميمي suggests that the majority of the Arab countries – including Iraq, Syria,

[12] The Gulf region includes the following countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates.

Palestine, Libya, Sudan, Bahrain, Algeria, and Morocco – are still relatively unfamiliar with Design Thinking (Figure 12).

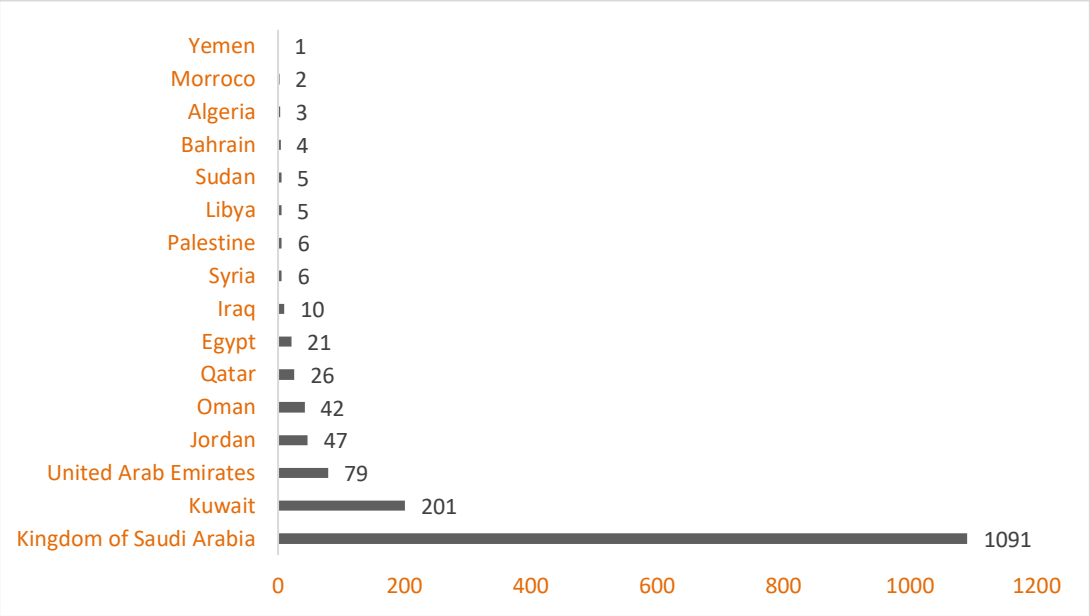

Figure 12 Number of Design Thinking mentions in Arabic (التفكير التصميمي) across Arab countries (2006-2019)

However, during the past three years (2017-2019), the United Arab Emirates seems to have surpassed Saudi Arabia in the number of overall Design Thinking-related tweets, while Kuwait appears to have fallen behind Jordan, Egypt, and Lebanon (Figure 13). The data also shows a growing interest in Design Thinking in countries where no tweets on the subject had previously been posted. This demonstrates a considerable acceleration in the spread of Design Thinking.

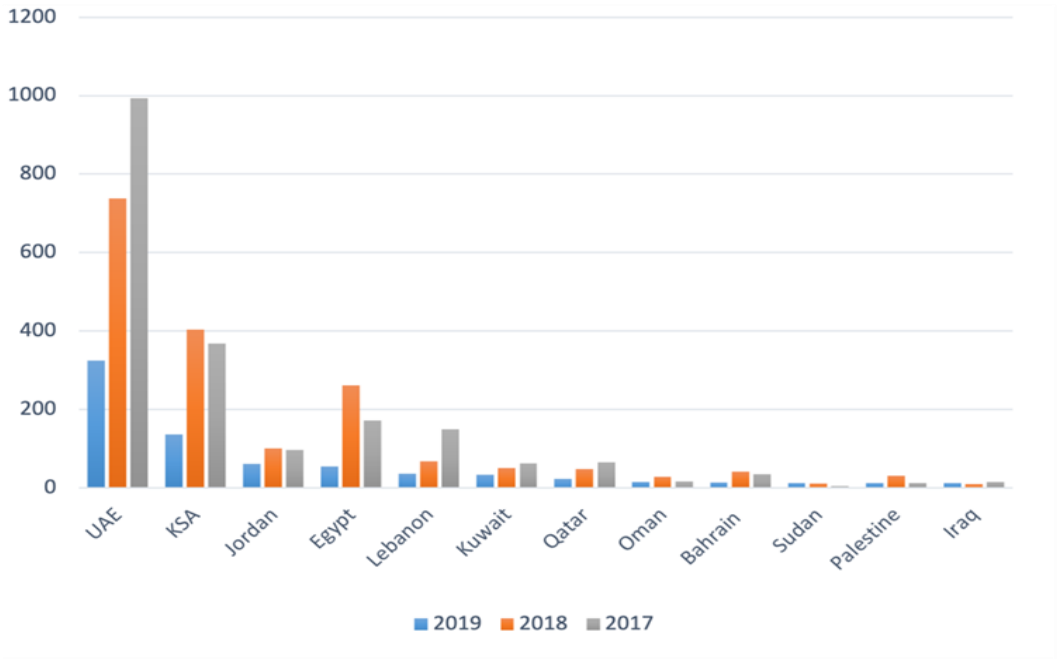

Figure 13 Number of Design Thinking tweets geotagged to Arab countries during 2017-2019 (Arabic and English)

4.1.4 Analysis of English Design Thinking Tweets

The previous analysis focused on the key trends in the evolution of Design Thinking in the Arab world based on the most popular Arabic terms and translation. Analyzing the tweets that included the English term Design Thinking and geotagged to Arab countries paints a reasonably similar picture. The number of these tweets only began to increase in 2010 (Figure 14). The number of tweets from the UAE are particularly high, followed by Saudi Arabia and Egypt, respectively. Overall, the data reflects a rapid increase in interest across the region in Design Thinking around the year 2010.

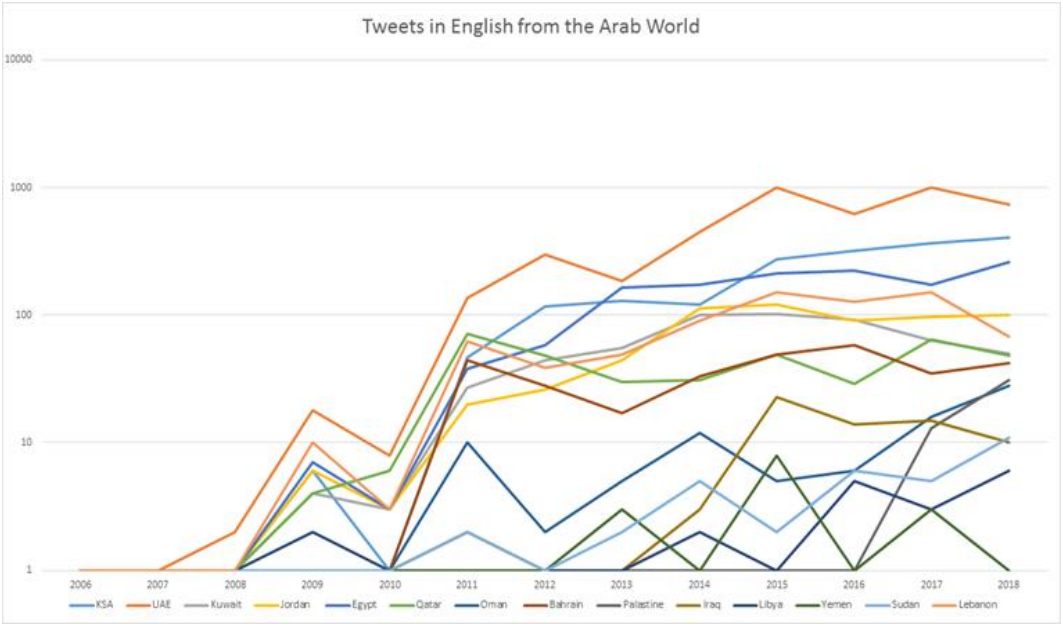

Figure 14 Time series of Design Thinking-related tweets in English from across the Arab World

4.1.5 Country by Country Analysis

This section analyzes the eight Arab nations that had the highest contributions to Design Thinking-related Twitter traffic during the investigated time frame, with the aim to identify significant trends and potential inflection points. The countries are addressed in the order of their number of tweets, only considering English tweets on Design Thinking. For higher relevance, countries with fewer than 100 English Design Thinking tweets between 2006 and 2019 were excluded from this analysis.

The United Arab Emirates (UAE)

With 4.6 million Twitter users (GMI UAE, 2018), the UAE is ranked first for its contribution to the English Design Thinking Tweets and third for Arabic Design Thinking tweets. The unique demographics of the UAE can explain this finding. The UAE has a population of 9.2 million, of whom just 11.4% are Emirati citizens (GMI UAE, 2022). The rest are primarily English-speaking expats. The

introduction of Design Thinking in the UAE began in 2008 and had been steadily increasing since 2010 (Figure 15).

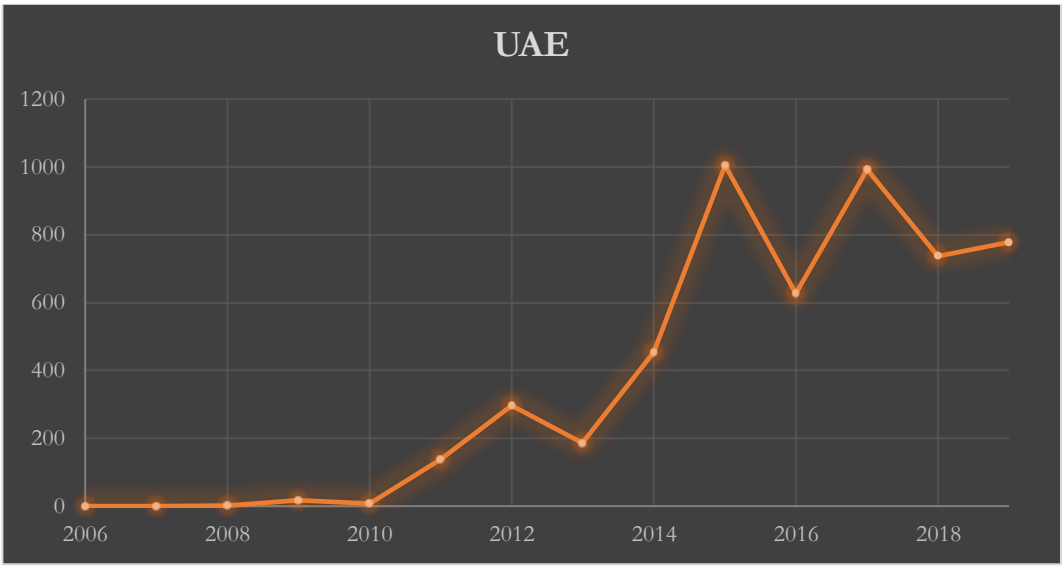

Figure 15 English tweets about Design Thinking geotagged to the UAE

Saudi Arabia (KSA)

As mentioned earlier, Saudi Arabia ranks first in Arabic tweets. The data also shows that it ranks second in English tweets on Design Thinking. This may indicate that Saudi Arabia is likely to be the primary source and consumer of Design Thinking-related information in general. Between 2014 and 2018, there seemed to be a surge in interest in Design Thinking in KSA (Figure 16).

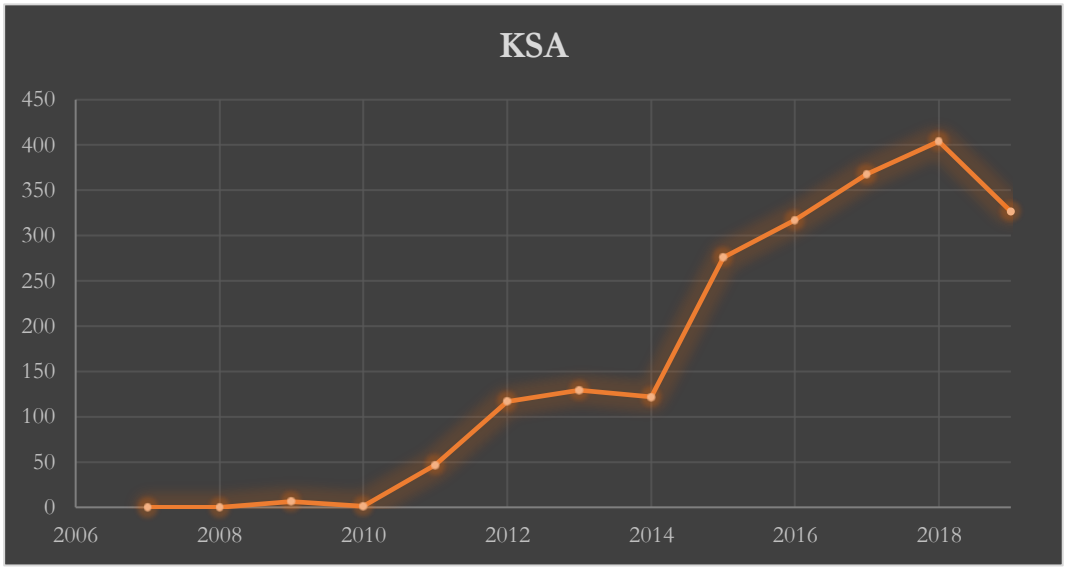

Figure 16 English tweets about Design Thinking geotagged to KSA

Egypt

Ranking 3rd in English tweets on Design Thinking, Egypt shows a noticeable contrast to the relatively small number of Arabic-language tweets with 21 mentions only originating from this country. There appears to be a rise in interest in Design Thinking starting in 2012 (Figure 17). Further analysis is required to determine if Egyptians prefer to tweet in English regardless of topic, or if this tendency is more specifically related to Design Thinking discussions.

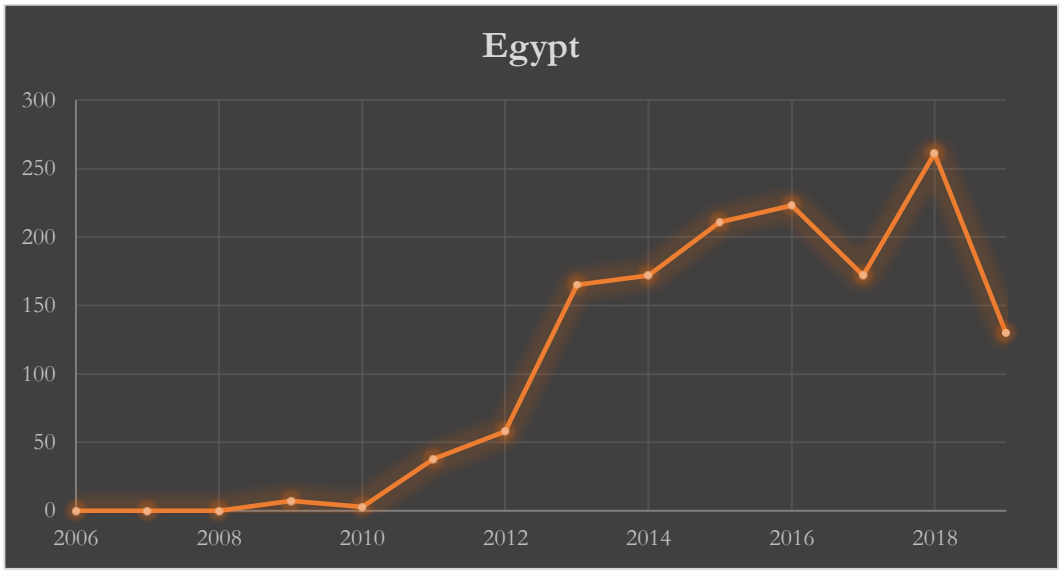

Figure 17 English tweets about Design Thinking geotagged to Egypt

Lebanon

The data shows that Lebanon ranks fourth in its contribution to English Design Thinking tweets from the Arab world. Like Egypt and Saudi Arabia, Lebanon experienced an increase in the number of Design Thinking-related tweets starting from 2012. But these numbers dropped significantly in the year 2017 (Figure 18). In contrast to other Arab countries, Lebanon was not represented in the aggregated data on Arabic tweets. One explanation could be that most Lebanese tweeters probably prefer to tweet in other languages like English and French.

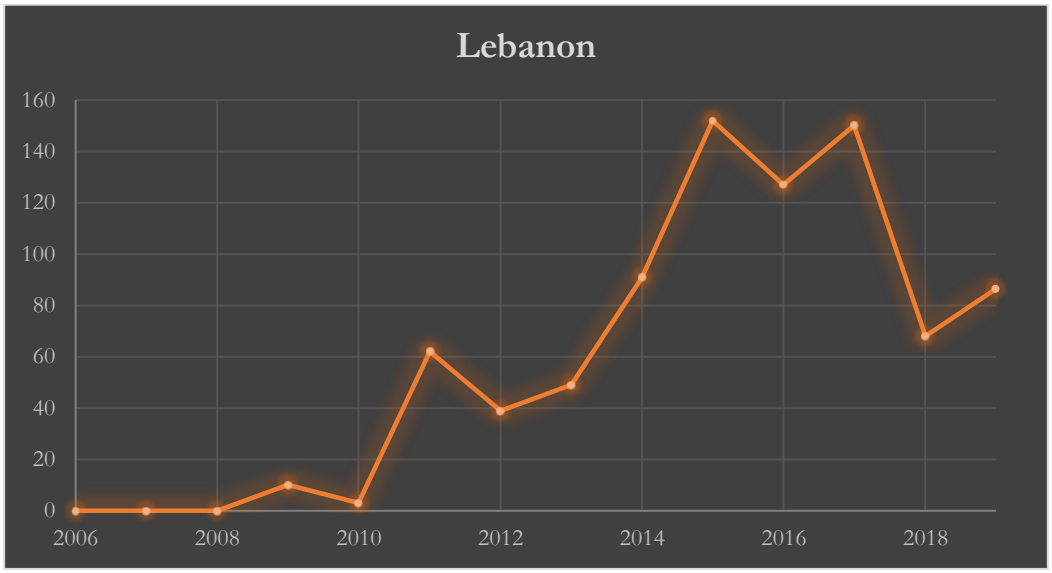

Figure 18 English tweets about Design Thinking geotagged to Lebanon

Jordan

Coming in the fifth place, the number of tweets from Jordan appears to have increased exponentially from 2010 to 2014, with the first tweet appearing in 2009, followed by dynamically shifting numbers of tweets after 2014. It is worth noting that Jordan contributes 3% of all Arabic tweets on Design Thinking; therefore, this country may provide a space for establishing connections between English and Arabic Design Thinking discussions (Figure 19).

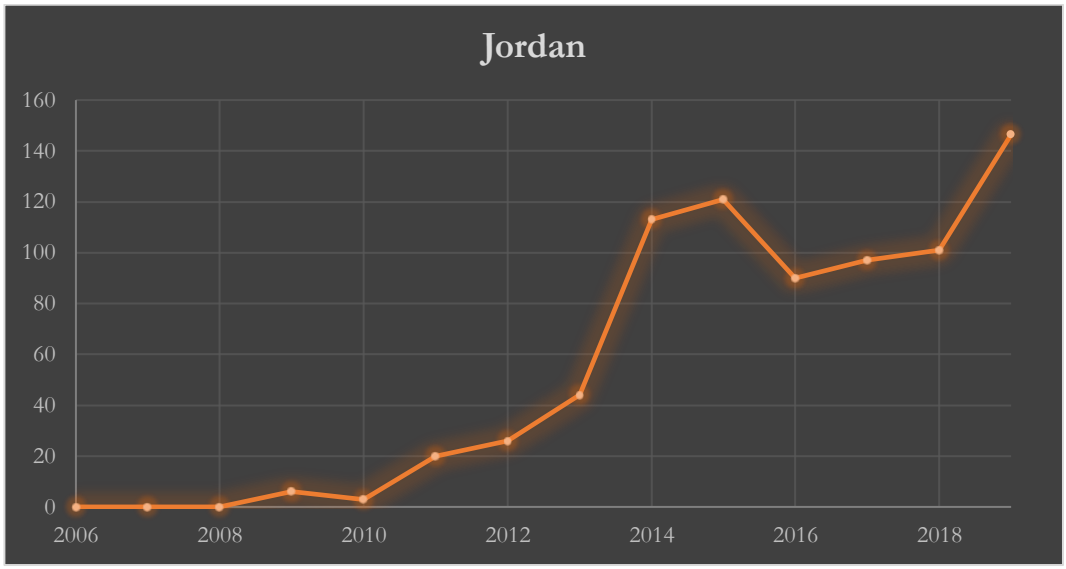

Figure 19 English tweets about Design Thinking geotagged to Jordan

Kuwait

With 574 tweets on Design Thinking in English, Kuwait ranks sixth across Arab countries. In terms of the number of Arabic tweets, however, it ranks second, contributing 13% of all Arabic tweets. This makes Kuwait an important place for advancing Arabic Design Thinking knowledge. Similar to Jordan, Kuwait witnessed a sharp increase in tweet numbers beginning in 2010 (Figure 20).

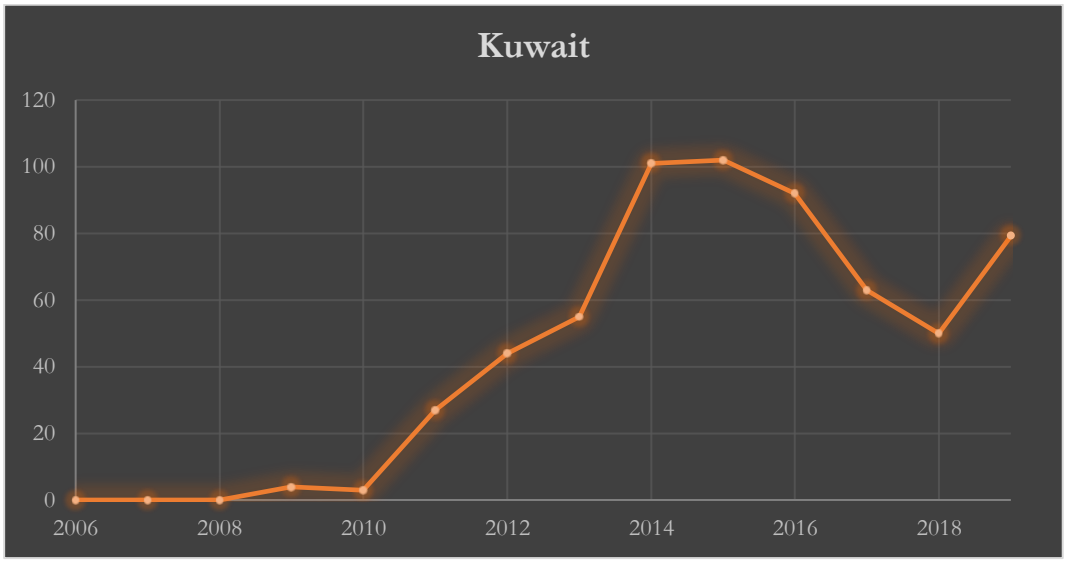

Figure 20 English tweets about Design Thinking geotagged to Kuwait

Qatar

Qatar is considered a small country with a population of 2.9 million (worldmeter Qatar, 2022) yet it ranks 7th in its contribution to English tweets on Design Thinking (Figure 21). Though, only 26 tweets appeared in Arabic originating from Qatar.

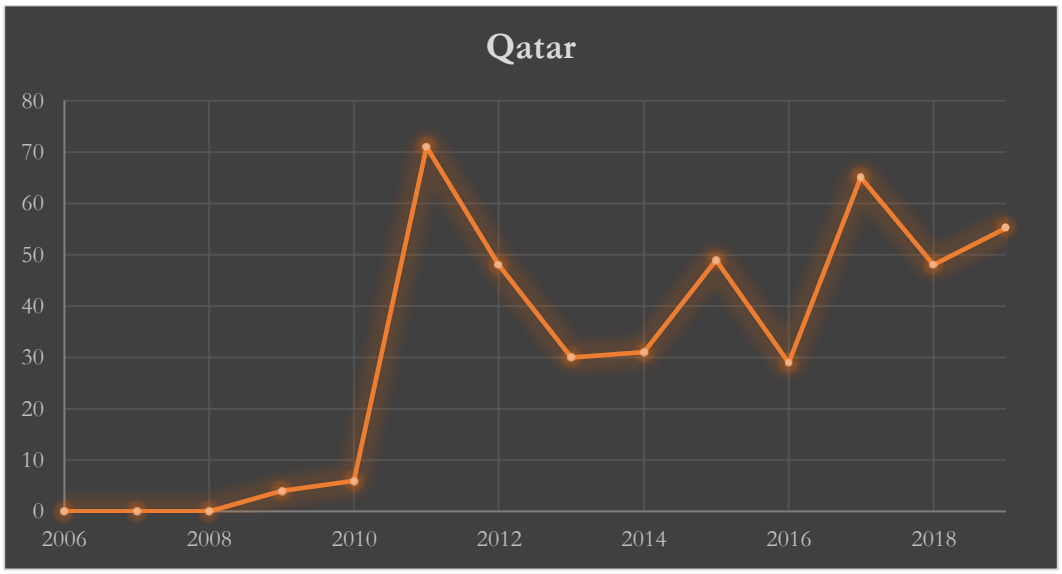

Figure 21 English tweets about Design Thinking geotagged to Qatar

Bahrain

Although Bahrain contributed a relatively small number of only 321 English tweets on Design Thinking in the Arab region, this number is significant when considered within the small population of the country of only 1.8 million (Worldmeter Bahrain, 2022) (Figure 22). With only 4 tweets in Arabic, it almost has no contribution to the Design Thinking knowledge in Arabic.

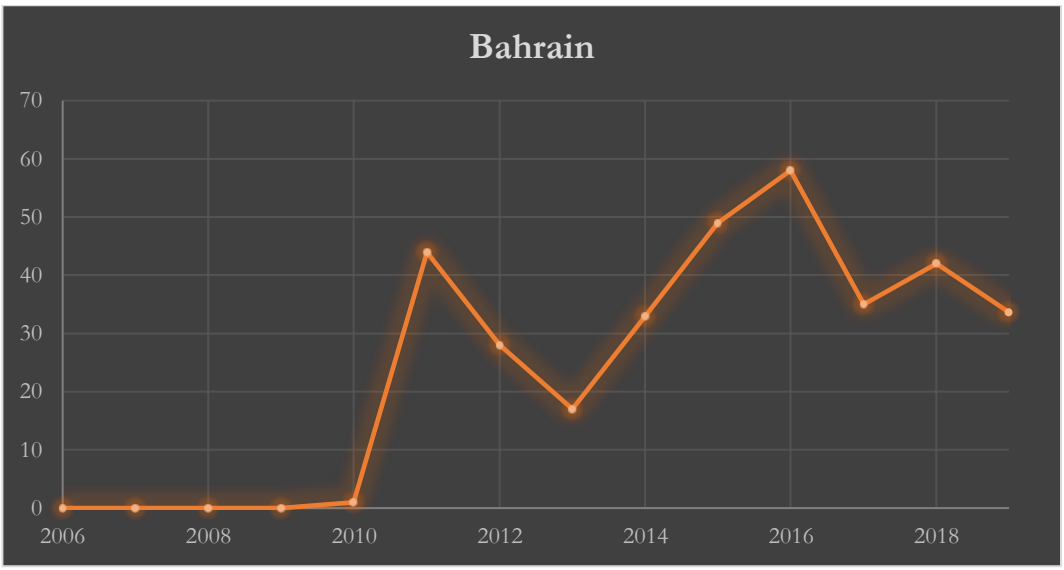

Figure 22 English tweets about Design Thinking geotagged to Bahrain

4.1.6 Summary and Discussion of Social Media Analysis

This part of the study investigated the early stages of adoption of Design Thinking in the Arab world by employing a quantitative research method: social media analysis, which has not been reported before for the purpose of tracking the development of the field of Design Thinking. This method enabled the identification of adoption trends and tracking the developments and emergence of

Design Thinking in Arab countries over time. One key finding is that –despite the lack of responses from the Arab region to the 2016 study (Schmiedgen et al. 2016) – Design Thinking seems to be present in some Arab countries and has witnessed growing adoption over the last decade.

According to the analyzed data, Design Thinking first entered the Arab world in 2006 as evident in the small number of tweets (12 mentions only) in that year. Furthermore, the first posts used the English term "Design Thinking". Arabic terms did not appear until three years later. This is not surprising since the English term is the original designation. In light of these findings, the Arab world seems to be an early adopter of Design Thinking, as the data shows growing and active pursuit of the topic, and Arabic translations were introduced within a relatively short period of time.

Although several Arabic translations for the English term Design Thinking have been identified so far, the data confirms that one Arabic term in particular is used in the majority (91% of all Arabic tweets) of cases. Therefore, this term is recommended to be deemed the de facto Arabic translation of Design Thinking: التفكير التصميمي.

Comparing English and Arabic tweets about Design Thinking from around the Arab world reveals parallel trends. First, there is a sharp increase in the number of tweets (in English: beginning 2007; in Arabic: beginning 2008). Then, the number decreases (in English: 2009-2010; in Arabic: 2011-2013) to rebound again later.

In exploring Arabic tweets geotagged to the Arab region, it appears that Design Thinking posts are correlated with the rise of the "Arab Spring" uprising. Initial content analysis indicates that this is not a coincidence. Some authors referenced Design Thinking as a means of social change as it offers participatory methods and collaborative problem-solving approaches.

It is notable that when comparing the numbers of geotagged tweets to Arab countries, the rank order of countries tweeting in Arabic differs from the rank order of countries tweeting in English. Saudi Arabia contributed the most Design Thinking-related tweets in Arabic within the examined time frame, accounting for 70% of all Design Thinking mentions. Kuwait came in second place with 13% of Arabic tweets. The United Arab Emirates, Jordan, and, to a lesser extent, Oman, all made substantial contributions. In contrast, the United Arab Emirates provides the most English Design Thinking-related tweets geotagged to Arab nations, accounting for 42% of all Design Thinking mentions. Notably, specific countries, such as Lebanon, contribute to Design Thinking tweets in English, whereas their Arabic contributions are statistically insignificant. This suggests a possible disconnect between Design Thinking discussions in English and Arabic, even within Arabic speaking countries.

4.2 Survey Findings

This section presents the results of the survey conducted online between June and July 2019 and was completed by 312 respondents. The purpose of conducting the survey was to broaden the exploration of the state of Design Thinking in the Arab world by identifying the most widely adopted Arabic term, how people in the region understand Design Thinking, and in which sectors they have applied it the most. In addition, the survey was essential to hear the respondents' perspectives about what needs to be done for Design Thinking to grow in adoption in the Arab region.

This part of the chapter will start by describing the participant demographics, followed by a discussion of the findings' four parts: awareness and understanding of Design Thinking, studying and working in Design Thinking, characteristics of a "good design thinker", and applying Design Thinking in Arab countries.

4.2.1 Participant Demographics

The survey targeted Arabic speakers who have access to the Internet. All survey questions were asked in Arabic to ensure that the respondents matched the desired target group. In total, 402 people responded to the survey. However, 90 responses were incomplete and were thus excluded from the analysis, bringing the total number of valid responses to 312. The results had a balanced gender distribution, with 50% male and 50% female response rates. Half of the respondents (50%) fell within the age bracket of 25-35 years. Most of the remaining respondents were between the ages of 35-45 years (23.40%). The others were mainly 18 to 25 years (16.35%). In terms of levels of education, over half (51.9%) of the respondents stated that they hold a bachelor's degree, and around a third (32.69%) said they hold a Master's degree (Figure 23).

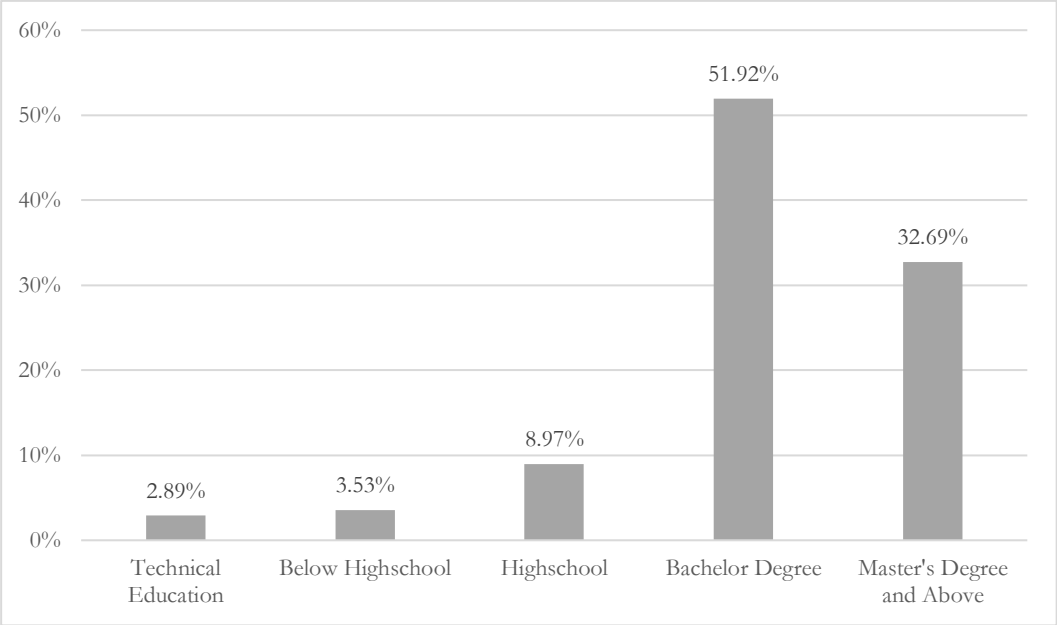

Figure 23 Respondents' level of education

The majority of responses came from Syria (44.55%). The second highest group of responses came from Jordan (28.21%), followed by Saudi Arabia (9.29%). Finally, Egypt and Morocco represented 4.49% and 3.21%, respectively. Table 5 shows the respondents' geographic distribution.

Geographic Distribution of Respondents	
Algeria	2
Bahrain	4
Comoros	0
Djibouti	1
Egypt	14
Iraq	3
Jordan	88
Kuwait	0
Lebanon	1
Libya	0
Mauritania	1
Morocco	10
Oman	0
Palestine	4
Qatar	0
Saudi Arabia	29
Somalia	0
Sudan	0
Syria	139
Tunisia	5
United Arab Emirates	4
Yemen	3
Other	4
Total (N)	312

Table 5 Countries of survey respondents

When asked about their professional backgrounds, the three most common professional backgrounds reported by respondents are education (18.91%), business administration (13.14%), and arts and design (10.58%). The next largest groups included computer science and programming (9.29%) and engineering (9.29%) (Figure 24).

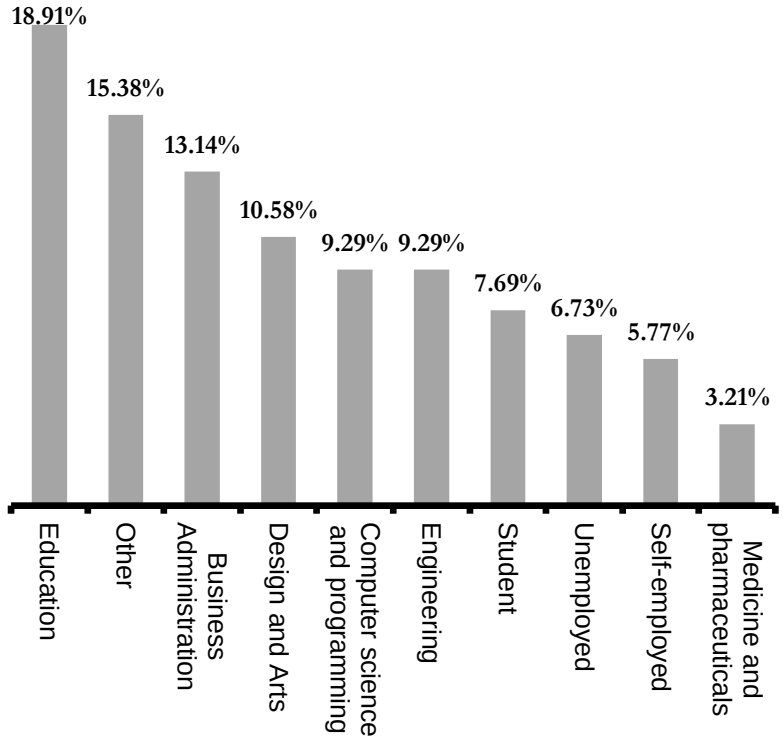

Figure 24 Respondents' professional backgrounds

4.2.2 Awareness and Understanding of Design Thinking

As discussed in Chapter 1, in this thesis, Design Thinking is adopted as a process, a mindset, and a human-centered approach to creativity, collaboration, and innovation. This understanding was introduced and practiced by both Design Thinking Schools at Stanford and Potsdam. These two schools were the first to offer Design Thinking education in the U.S. and Europe and spread it beyond. Therefore,

the survey was designed based on the understanding of Design Thinking tradition in these schools.

However, before exploring the understanding of Arab participants of Design Thinking, it was important to gauge how many of them were familiar with the subject in the first place. Therefore, the first question in the survey asked participants whether they had heard about any of the four Arabic terms (التفكيرالتصميمي، الفكر التصميمي، التصميم التفكيري، التصميم المتمحور حول الإنسان) that were identified in the Twitter data analysis study (Traifeh et al., 2021b). Over half of the respondents (58.33%) reported that they had never heard of any of the mentioned terms before, and 29.49% said that they heard about one particular Arabic term associated with Design Thinking "التفكير التصميمي" which, according to the Twitter study and the literature review (Traifeh et al., 2021a), also seems to be the most popular term of Design Thinking in the Arabic language. Respondents who had never heard of Design Thinking were excluded from the following questions that entirely focused on Design Thinking and were directed to the demographic questions. For those who stated that they are familiar with one or more of the terms, a follow-up question was asked to capture whether the respondents' understanding of Design Thinking is aligned with the concept defined by the Design Thinking Schools at Stanford and Potsdam. For that, respondents had to complete the following sentence: "To me, Design Thinking is primarily about…", and choose one of the following options: (a) creating attractive visual designs; (b) Innovation; and (c) A human-centered problem-solving approach. Options (b) and (c) are considered aligned, while option (a) would be deviant. More than half of the respondents (63.91%) identified the concept of Design Thinking as a human-centered problem-solving approach (option c), and 23.31% of respondents associated it with innovation (option b). On the other hand, 12.78% described it as a way of creating attractive visual designs (option a).

When asked when they had heard the term "Design Thinking" for the first time, 18 out of the 115 respondents who answered this question stated that they had been

first introduced to Design Thinking while pursuing academic degrees at school or university. The second two largest groups (each 14 out of 115) reported hearing about Design Thinking through a friend or through social media channels. 13 out of 115 respondents reported being introduced to Design Thinking by reading a book or an article about the topic in English. An equally represented group (13 out of 115) first learned about Design Thinking at work. Only eight (8) respondents stated that they learned about Design Thinking through an Arabic workshop/training, and two (2) read about it in Arabic (Figure 25).

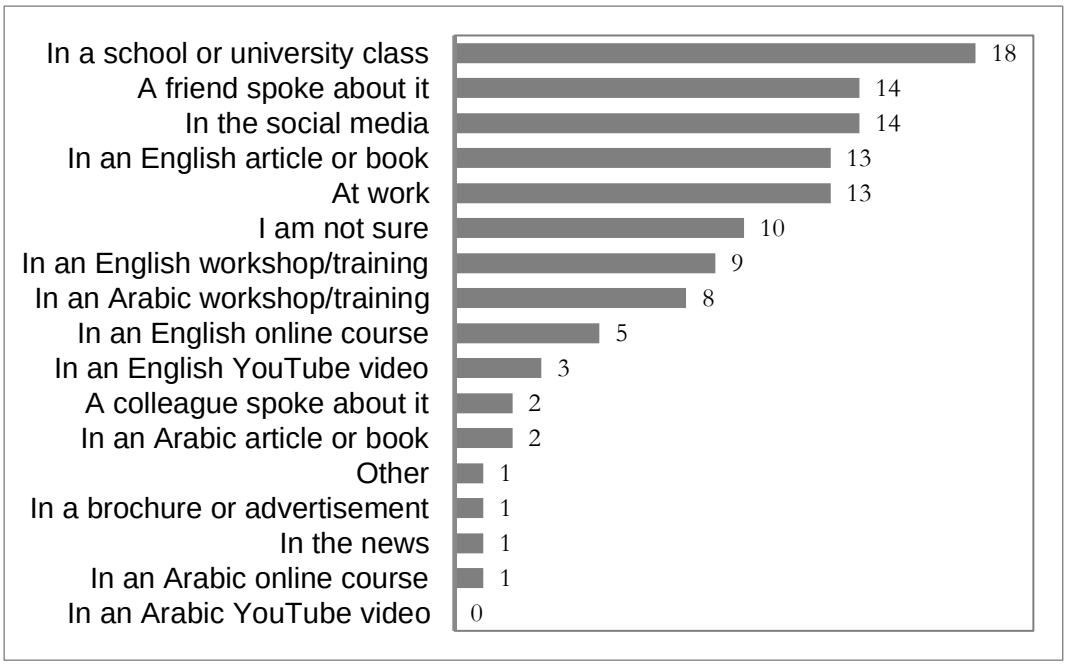

Figure 25 How did people hear about Design Thinking for the first time?

Asking about the time the participants first encountered Design Thinking (whether through reading about it, studying it, or working with it), the responses show that the penetration of Design Thinking knowledge among the participants experienced a surge in 2012, which was followed by a steady increase till 2018 (Figure 26).

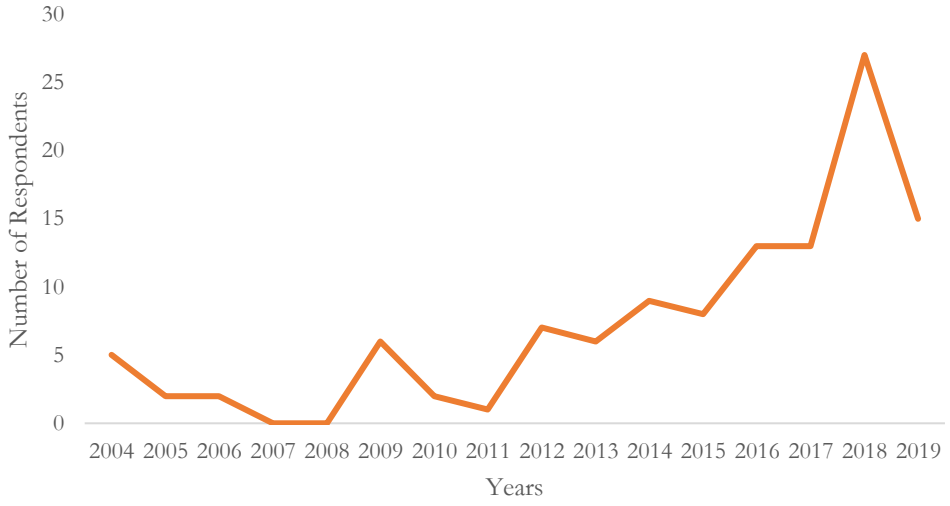

Figure 26 When did the respondent encounter Design Thinking for the first time

4.2.3 Studying and Working in Design Thinking

More than half of the respondents (68.97%) said they had never studied Design Thinking when asked if they had done so before. Nineteen claimed to have received their Design Thinking education by attending a course at university. However, it is worth noting that some participants claimed to have obtained their education at a Western university or through online English-speaking MOOC platforms (Table 6). This may indicate that they first studied Design Thinking in English.

Educational Outlet	
At Arab university	4
At Western university	8
At University (not specified)	7
Online[13]	8
Through a workshop offered by an NGO or a private company[14]	8
Uncategorized[15]	3

Table 6 Educational outlets at which the respondents studied Design Thinking

The survey also gauged the experiences of participants who worked in Design Thinking. The findings reveal that only (34.48%) of the respondents had experienced Design Thinking in a professional setting, which may imply a limited utilization of the approach in the Arab world. Those who work or have worked in Design Thinking come from different industry sectors, including information technology and communication, administrative services, and the non-profit sector, with education dominating all (Figure 27). An additional question revealed that most organizations (77.14%) collated in figure 27 belong to locally/nationally owned companies, whereas the remaining 22.86% are international companies. Respondents highlighted headquarters in Germany and Canada when asked to specify the origins of those international companies. Further questions about the size of the organization showed that the survey responses represented an equal number (30.77%) of large organizations (more than 250 employees) and another 30.77% of small organizations (10 to 49 employees).

[13] Examples of answers given: openIDEAO, Coursera; Udacity, edX, online course
[14] E.g., Sabr Business Design, UNDP, SAP, StartEgypt
[15] Some answered by naming a country such as Canada, UAE

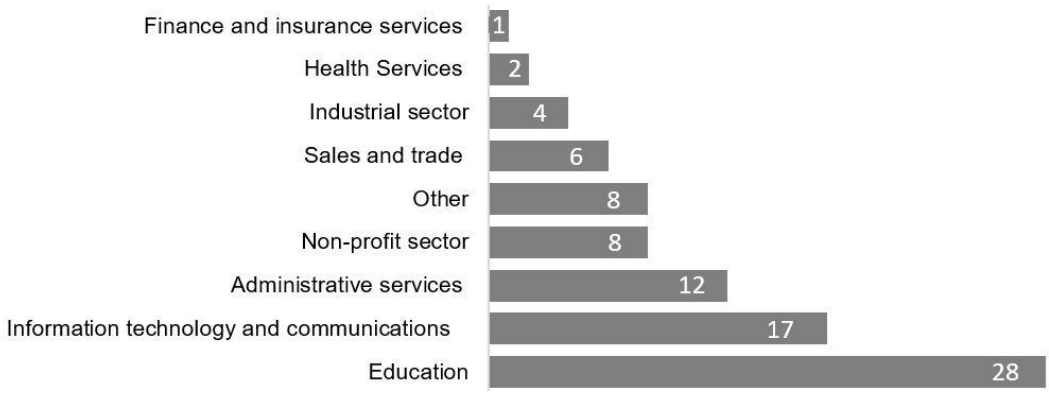

Figure 27 Industries where respondents work/have worked in Design Thinking (Multiple answers possible; n= 40 respondents, with n= 86 answers)

A follow-up question was asked to assess the duration participants have acted in the following different roles that are related to Design Thinking:

- Learn Design Thinking
- Teach Design Thinking
- Apply Design Thinking in a teamwork project
- Apply Design Thinking in single-person work
- Facilitate Design Thinking as a team coach
- Offer consulting services based on Design Thinking
- Establish Design Thinking in an organization
- Conduct research on Design Thinking
- Publish about Design Thinking
- Organize Design Thinking workshops
- Develop Design Thinking curricula
- Develop Design Thinking training materials

Answer options were: Never, for a few hours or days, some weeks or months, and more than a year (Figure 28). Many participants (76) stated that they have never worked in any of these roles. However, although the majority of respondents reported 0 years of experience in Design Thinking, three roles stood out in frequency of mentions with one or more years of experience, namely (1) Applying

Design Thinking in single-person work (26 out of 40 respondents), (2) Learning/studying Design Thinking (23 out of 40 respondents), and (3) Establishing Design Thinking in an organization (19 out of 40 respondents). Upon further analysis of the survey data and correlating the amount of time that respondents reported to have spent with Design Thinking, and indicators of respondents' familiarity with the approach, findings indicate that the respondents' self-reported Design Thinking experience does not necessarily point to high levels of Design Thinking knowledge, or it could be that their understanding of Design Thinking is not aligned with the Stanford-Potsdam views, which have been highly influential around the world. In other words, people who work with Design Thinking in Arabic-speaking countries appear to practice approaches that are not entirely coherent with approaches taught in the U.S. and Europe.

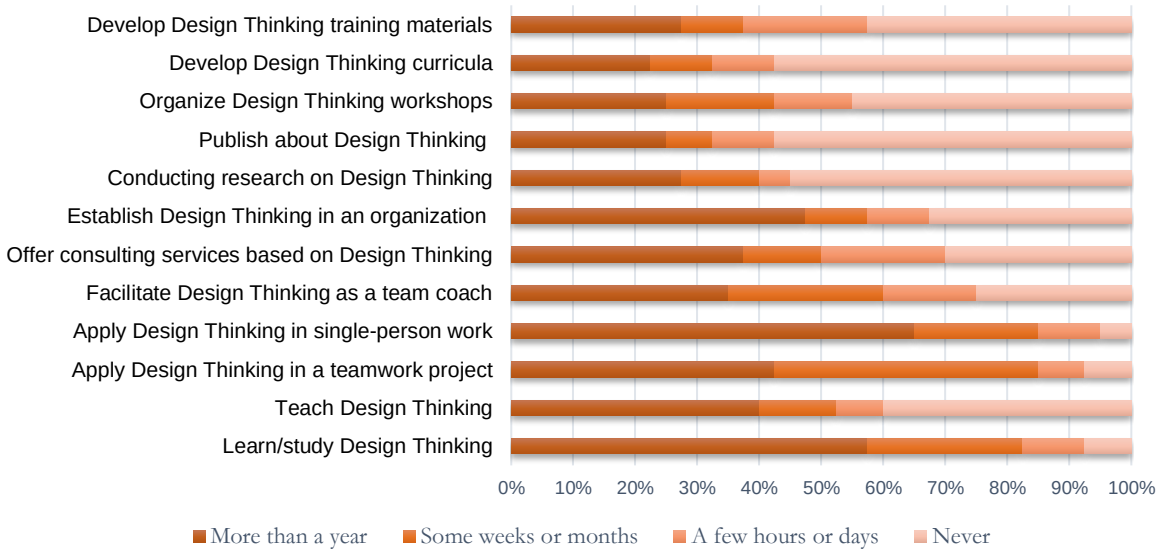

Figure 28 Duration of roles the participants acted in (multiple answers possible; n= 40 respondents with n= 86 answers)

4.2.4 Characteristics of a "Good Design Thinker"

To further understand the respondents' perceptions of Design Thinking, the survey presented 21 attributes that have been utilized in the Stanford-Potsdam Design

Thinking education to describe and train people on Design Thinking and support them in developing a Design Thinking mindset. Stanford University, in particular, has shaped the concept of Design Thinking since the 1950s (von Thienen et al., 2016, 2017b, 2019, 2021; Auernhammer & Roth, 2021) and has been highly influential in communicating its approach and promoting the Design Thinking mindset around the world.

Design Thinking is about creativity and innovation (Arnold, 1959/2016; Plattner et al., 2009; Brown & Katz, 2009; Kelley & Kelley, 2013), and therefore, a good design thinker is skilled in creativity and demonstrates a creative mindset, which includes abilities to think in highly fluent, flexible and diverging ways. This has been reflected in Design Thinking mottos such as "Go for Quantity" (of ideas during ideation sessions) or "Encourage Wild Ideas" (Arnold, 1959/2016; von Thienen et al., 2017, 2019). The mentioned characteristics were represented in the survey by the following attributes: A good design thinker…

- 'Has many ideas'
- 'Has diverse ideas'
- 'Has crazy ideas'
- 'Loves to invent'

Creativity is about pursuing original and effective outcomes (von Thienen et al., 2012a; Runco & Jaeger, 2012; Paul & Kaufman, 2014). This was represented by one attribute: A good design thinker…

- 'Tries new things'

The creative process that guides the application of Design Thinking is a key element in which design thinkers gain extensive training (Plattner et al., 2009). This was represented in the survey by the attribute: A good design thinker…

- 'Is knowledgeable of creative processes'

Another mindset that design thinkers are expected to adopt is "Learn from Failure", which was also included in the presented attributes. Failure is considered a central concept in the process, and good design thinkers are described as people who do not shy away from this experience. On the contrary, they actively seek it and strive to gather important insights from it. A key design thinking motto suggests: "Fail Early and Often" (Brown & Katz, 2009; Kelley & Kelley, 2013; Roth, 2015; von Thienen et al., 2016, 2017a, b).

When it comes to Design Thinking education, action is an essential source of learning as "Learning by Doing" is encouraged throughout the process. Students are encouraged to work with their hands and build tangible prototypes (McKim, 1972; Faste, 1996; Dow et al., 2010, 2011; Edelman & Currano, 2011; von Thienen et al., 2021). To emphasize this, one phase in the process is dedicated to prototyping, regardless of which Design Thinking process models/frameworks the students follow. Therefore, one of the attributes the survey presented was: A good design thinker…

- 'Develops many prototypes'

One of the important goals of Design Thinking education is to unleash creative self-confidence. Hence, a good design thinker is confident in their abilities to tackle challenges and develop valuable, creative solutions (Arnold, 1959/2016; Rauth et al., 2010; Jobst et al., 2012; Royalty et al., 2012; Kelley & Kelley, 2013; Traifeh et al., 2020). This attribute was presented as: A good design thinker…

- 'Is confident'

Design Thinking has been described by Kelley & Kelley (2013) as "a way of finding human needs and creating new solutions" (p. 24). The understanding of innovation that informs Design Thinking in the Stanford-Potsdam tradition is focused on human needs. According to this view, a successful invention helps people address a basic human need that has not been addressed before or was poorly addressed (Arnold 1959/2016; von Thienen et al., 2017, 2021, 2022). Human needs are a vital

concept in Design Thinking, and therefore, breakthrough innovation is expected to emerge based on mindfulness for "human values" (Meinel & Leifer, 2011, p. xiii). Taking this as a starting point in the process, a prominent Design Thinking process framework starts by empathizing with the users in order to identify their real needs. Moreover, methods such as '5 Whys' and 'Why-How-Laddering' are taught in Design Thinking education to support students in gaining a systematic understanding of needs in any domain of interest (ibid.). This is represented by the attribute: A good design thinker…

- 'Is sensitive to people's needs'

Furthermore, Design Thinking is described as an approach that combines two entirely different ways of solving problems (McKim, 1972; von Thienen 2019, 2021). The first is believed to enable deep dives into knowledge or radical innovation by invoking humor, playfulness, and intuitions. The other approach facilitates incremental innovation by imploring rational planning and deep domain expertise. Therefore, good design thinkers are expected to excel in both. This is represented by the attributes: A good design thinker…

- 'Is humorous'
- 'Is playful'
- 'Has personal intuitions of what should be achieved'
- 'Holds or acquires deep domain expertise'
- 'Has strong rational abilities'

Design Thinking in the Stanford-Potsdam tradition also emerges from a belief that art and science should be combined, and that good innovators are both good artists and good scientists (McKim, 1972; Faste, 1996). At Stanford, Design Thinking was introduced as a joint offer of the Engineering-Science and the Art-Design departments ("Joint Program in Design"). This is represented by the attributes: A good design thinker…

- ‘Is a good artist’
- ‘Is a good scientist’

Another motto that informs Design Thinking education is “Be Visual”, which emerged from the earlier concept of visual thinking, which connects ideas through the use of images that become the main component that facilitates thinking which expedites innovation (McKim, 1972; Arnheim, 2004; Huh, 2016; von Thienen et al., 2021; Khongprakob & Petsangsri, 2022). The survey represented this by the attribute: A good design thinker…

- ‘Visualizes his/her thoughts’

“Defer Judgement” is another crucial Design Thinking motto. It is used during brainstorming sessions to help practitioners get into a thinking mode in which ideas flow freely, unconstrained by critical censoring (Arnold, 1959/2016; McKim, 1972; von Thienen et al., 2019). At the same time, design thinkers learn to “assume a beginner's mindset”. This includes procedures and methods similar to ethnographic research: “Do not judge. Just observe and engage users without the influence of value judgments upon their actions, circumstances, decisions, or issues” (d.school method cards, 2010, p. 1). This is represented in the attribute: A good design thinker…

- ‘Observes without judgment’

When it comes to the work environment, Design Thinking spaces are usually set up to be mobile so that students can change the environment easily (Plattner et al., 2009; Leifer & Steinert, 2011; Doorley & Witthoft, 2012; von Thienen et al., 2012; Schwemmle et al., 2021). In Design Thinking education, students are trained to use and change their work environment according to their needs that may change during the process. Research shows that experienced design thinkers change their work environment much more frequently and mindfully than Design Thinking novices (Klooker et al., 2016). The survey captures this by the attribute: A good design thinker…

- ‘Changes his/her environment’

The final attribute presented in the survey was: A good design thinker…

- ‘Is collaborative’

Gronski and Pigg (2000) defined collaboration as “an interactive process among individuals and organizations with diverse expertise and resources, joining together to devise and execute plans for common goals as well as to generate solutions for complex problems” (p. 783). Collaboration is an essential concept in Design Thinking (Davis, 2010; Liedtka, 2017), therefore, a good design thinker must be able to effectively collaborate with his/her multidisciplinary team members. An important motto in the Stanford-Potsdam tradition is “Radical Collaboration” (IDEO, 2013; Scott, 2017; Sense to Solve, 2017) which brings together people from different age groups, and diverse cultural, professional, and educational backgrounds to solve a problem/challenge. Innovation happens when these people collaborate by contributing different skills, knowledge and perspectives to solve that challenge (Bene & McNeilly, 2020).

As mentioned earlier, the 21 attributes presented in the survey have been used in Design Thinking education in the Stanford-Potsdam tradition to describe a design thinker mindset and train people in Design Thinking. If the survey respondents strongly associate with the Stanford-Potsdam views of Design Thinking, in that case, they will mark all or most of the 21 attributes to be characteristics of a good design thinker. If they are only partially familiar with these Design Thinking views or have learned about Design Thinking through other ways than the Stanford-Potsdam tradition, they are likely to select fewer of the 21 attributes as characteristics of a good design thinker. Hence, the attributes selected by participants can convey an impression of what they actively associate with Design Thinking in the Arabic-speaking region. Figure 29 presents the responses received and shows that not all respondents associate a good design thinker with all or most of the presented attributes.

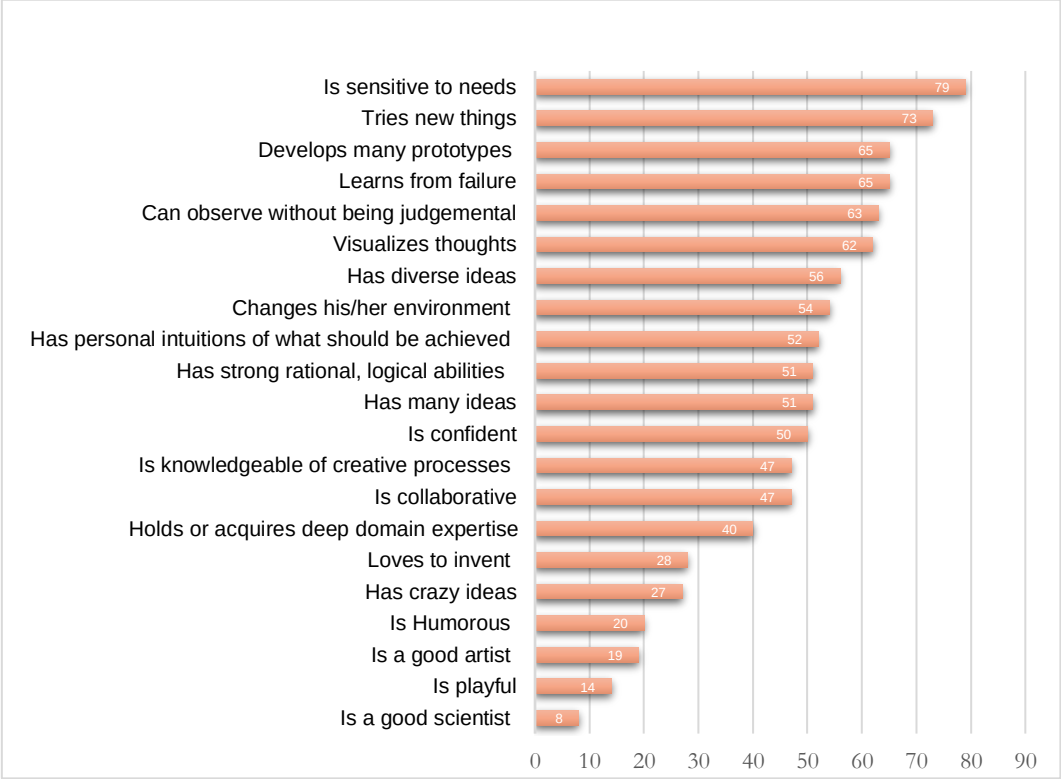

Figure 29 What do you associate with persons who are good design thinkers? (multiple answers possible; n= 116 respondents, with n= 971 answers)

Notably, only a small percentage of the respondents associate a good design thinker with a "good scientist" (6.90% of the responses). Similarly, few respondents stated that a good design thinker "Loves to invent" (24.14% of the responses). This contrasts with Design Thinking education at Stanford and Potsdam, offered by engineering-science departments. The fundamental idea here is that experienced engineer-scientists also need to be good design thinkers (Meinel & von Thienen, 2022). Inventing new and worthwhile technology is a central task in engineering. In the Stanford-Potsdam tradition, the home of Design Thinking is engineering-science in departmental terms. In the Arab world, so far, associations seem to go in different directions. This is somewhat surprising, given that most survey respondents reported that they have learned about Design Thinking at school or at university, and a sizeable proportion of the participants stated having an academic

background in computer science and programming (9.29%) as well as engineering (9.29%). Moreover, “Information Technology and Communications” is the sector that ranked second in the work areas where participants have applied Design Thinking. One possible explanation could be that Design Thinking is not yet highly institutionalized in the Arab region, meaning that people encounter Design Thinking in more accidental ways, some through word-of-mouth, some through a topic coming up in university contexts – but without prominent, large institutional programs that convey a strong connection between Design Thinking and engineering-science.

It also appears that there is some suspicion regarding the wild side of Design Thinking, since only few respondents stated that a good design thinker “Is playful” (12.07%), “Is humorous” (17.24%), or “Has crazy ideas” (23.28%). While this wild side is encouraged in the Stanford-Potsdam tradition as a path to “out-of-the-box” thinking and radical or disruptive innovation, the different cultural values between the Arab world and the U.S. and Europe may lead to different understanding and adoption of Design Thinking. In this sense, it has already been observed that Asian countries associate creativity more with harmony, and projects aiming at “radical” or “disruptive” change appear undesirable in this regard (Ge et al., 2021). Similarly, the Arab region may be more interested in what is perceived to be the “serious” rather than “untrustworthy” aspects of Design Thinking. Once again, it seems that there are not many established Design Thinking programs at engineering-science departments in the Arab world, as these would seem to offer a good opportunity for Design Thinking practices in a “serious” and “respectable” environment.

The findings also show that not many survey respondents associate a good design thinker with the following characteristics: “Holds or acquires deep domain expertise” (34.48 %), “Is knowledgeable of creative processes” (40.52%), and “Is collaborative” (40.52 %). In the Stanford-Potsdam tradition, it is believed that in order to invent, innovate or develop creative ‘products’, you need to excel in three domains: People, Processes, and Places (HPI D-school website, 2022). Therefore,

Design Thinking students at both schools receive dedicated training in these domains. While creative people stand for collaborative multidisciplinary teams, where students learn to endorse a spirit of "radical collaboration" (d.school, 2022) and to work in interdisciplinary ways, the creative process is what stands out the most in Design Thinking education. The process models play an essential role because students are trained on Design Thinking by conducting several creative projects guided by the process model introduced to them. As part of this process, students also learn to build up deep domain expertise in whatever work area their project expects.

When respondents of this survey do not highly consider 'collaboration', 'process knowledge', and 'building up domain expertise' as characteristics of a good design thinker, this likely reflects how people encountered Design Thinking in the Arab region. Once again, it seems that the encounter happens in more accidental and informal ways. Most survey respondents stated that they have not attended official training programs. Furthermore, a high proportion of respondents (26 out of 40) said that their engagement with Design Thinking consisted of applying the approach individually for more than a year. In contrast, only 17 (out of 40) stated that they applied it when working with a team for the same duration. Against this background, it is likely that people will begin to build more robust associations between Design Thinking and process knowledge, domain expertise, and interdisciplinary collaboration when more elaborate and professional Design Thinking education programs become available in the region.

4.2.5 Applying Design Thinking in the Arab World

The survey offered two open questions for participants to share their views and thoughts on (1) what could be accomplished if Design Thinking was more broadly applied in the region, and (2) if there is something else that they would like to mention about Design Thinking in their region. Ninety-seven respondents answered the first question, with a total of 124 answers. The answers were varied, and several

statements were mentioned more than once by different respondents. While some respondents elaborated in detail by giving examples of what could be done if Design Thinking was widely implemented in the region by providing several answers, others shared specific ideas, and a few said: "I do not know" or "too many things could be accomplished". Some respondents also expressed their feelings and wishes about the current situation. For example, one of the respondents said:

> *"I wish Design Thinking was truly implemented in the MENA region, that would have solved so many problems to adapt to our needs rather than using the copycat services from the West and eventually making us adapt to these services. There is no one who would understand what we really need except for people who live among us or are nearby to see what can be truly done. For a Western person, we are just consumers but for someone who is from us, he or she will be enhancing the lives of the people and advancing his or her country."*

Another respondent stated that it is challenging to apply Design Thinking in Arab societies and expressed her disappointment in the educational systems in particular:

> *"Unfortunately, there is a challenge in applying such tools (Design Thinking tools) in our Arab societies because of the weakness of educational curricula which rely on indoctrinating students and not allowing them to do joint projects that help them develop their skills. Also, Design Thinking sometimes requires analytical skills to develop prototypes that can be tested later, and to reach the feasibility of applying them on the ground (which the educational systems do not support)."*

Table 7 summarizes the clustered open-ended answers.

# of mentions	**What do you think could be accomplished if Design Thinking was more broadly applied in your region?**
16	Enhancing services / More targeted services / Higher quality products and systems
14	I do not know / Too many things would change
12	More innovation in all fields
11	More human-centered solutions
10	Improving society
8	Finding innovative solutions to (wicked) problems
8	A paradigm shift (in education/society)
6	Improvement in people's overall standard of living
6	Higher economic development
5	Finding real needs
5	More efficient use of resources
4	More nurturing of people's talents
3	Increased job opportunities
3	Enhancing creativity in all fields
2	Less corruption
2	Faster and more sustainable solutions
2	Better community-based development
2	More practical solutions to old and recurring problems
1	New business models
1	Empathizing with different stakeholders
1	Better cooperation between team members
1	Better world
1	It is hard to implement Design Thinking in Arab societies

Table 7 What do you think could be accomplished if Design Thinking was more broadly applied in your region? (n= 97 respondents, with n= 124 answers)

While some respondents focused on highlighting the fundamentals of Design Thinking, such as ‘enhancing creativity in all fields’, ‘finding real needs’, ‘more human-centered solutions’, and ‘more innovation in all fields’, others have gone deeper in suggesting that applying Design Thinking can support in coming up with ‘new business models’, and would ‘improve society’. These are answers one would expect from people who follow the Stanford-Potsdam tradition. It could be that people in the Arab region are aware of the potential practical value of applying Design Thinking and what impact it could bring to the region, but do not entirely understand how such an application could happen.

When participants were asked to share anything they would like to mention about Design Thinking in their region, 85 responses were recorded. Of these, 40 stated that there is “Nothing to share”, and three stated that “there is no Design Thinking in their regions”. On the other hand, the remaining 42 answers were varied in terms of challenges, descriptions of the current circumstances, and wishes shared by the participants about what they hope to see in their regions. The answers were grouped into nine themes presented in Table 8.

Themes	**Is there something else about Design Thinking in your region that you would like to mention? (selected examples)**
Awareness and spread	• More lectures about Design Thinking are needed to increase awareness about the methodology • Design Thinking curricula should be open source to reach more people • Professors, managers, young students, and even children should be involved (in Design Thinking) to show precise results and inspire other generations
Obstacles and challenges	• Design Thinking should be implemented within the limited resources we have nowadays because of the current political , economic and social challenges in the country • We need to rise in our way of thinking before considering applying Design Thinking, which is impossible in the current political, economic, (etc.) situations. Therefore, the challenge is tough and I am not optimistic. • Expanding the space of Design Thinking requires parallel expansion in personal freedoms (which are not available) to unlock the individual's potential

The need for Arabic content and respect of culture	• There is a need to provide sufficient tools and knowledge in the Arabic language that help to understand the importance of innovation and Design Thinking • Arabic culture and social norms should be taken into consideration when applying Design Thinking in the region
Education	• Design Thinking should be taught in all curricula • Introducing Design Thinking in schools and universities so that students can design solutions to their challenges using a Design Thinking approach, which enhances their innovative mindset • Design Thinking is very important. Therefore, kids should be taught Design Thinking at an early age because it is crucial for their future
Mindset	• People (in the region) should be more open-minded • Working in teams and collaborating with others to develop new ideas is not a prevalent mindset in the region. Individual work and a sense of ego kill the spread of Design Thinking
The need for functional Design	• Waste of space in some areas and inadequate design of space in other areas. Spaces should be designed to accommodate people with special needs as well. The focus on aesthetics and technology is not enough; design should be functional and accommodate the needs of people. That is how innovation happens
Examples and local application	• I heard of some Design Thinking sessions in my country organized by X company • We have in my country many young people who are familiar with Design Thinking from a theoretical perspective, but they are not able to implement it on the ground (to real, local challenges)
Local challenges	• Design Thinking can be applied in my region for the following challenges: Transportation, garbage disposal, recycling, urban planning
Lifestyle	• Design Thinking should become a daily lifestyle

Table 8 Participants sharing their thoughts and wishes regarding Design Thinking in their region.

It is notable that the majority of respondents mentioned the challenging circumstances in the region whether political, economic or social that could limit the spread of Design Thinking. They also expressed that the closed mindset of many people in the Arab countries could prevent boarder adoption of Design Thinking in

their regions. Some are advocating for more awareness and for integrating Design Thinking in education so that future generations may adopt the mindset and apply it onto local challenges. They also highlighted the need for creating Arabic content that is culturally appropriate.

4.2.6 Summary of the Survey Results

The previous section reported the results of a survey conducted to deepen the understanding of the state of Design Thinking in the Arab world by determining which Arabic term is the most commonly used in the region, how Design Thinking is perceived, and in which industries it has been most widely applied. In addition, it was essential to hear the respondents' opinions on what needs to be done if Design Thinking is to spread more in the Arab region.

The study shows that education is the primary driver of awareness and adoption of Design Thinking in the Arab region, with a significant lag behind adoption in the West. The results also show a limited practical application of Design Thinking knowledge and skills in professional settings. This limited application spans several industries, including education, information technology, communication, administrative services, and the non-profit sector. Interestingly, the study uncovers a disconnect between the self-reported experience in Design Thinking and a solid understanding of the Design Thinking concepts popularized by the Stanford-Potsdam tradition. This indicates that the Design Thinking approaches taught and applied in Arabic-speaking countries are not entirely consistent with those taught in the U.S. and Europe.

The study also reveals a rather conservative view in the Arabic-speaking region of what attributes a “good design thinker” should hold. This was reflected with few associations with the “wild side” of Design Thinking, including playfulness, humor, and embracing crazy ideas, all are traits actively encouraged in the Stanford-Potsdam tradition. Additionally, the Arab region seems to adopt a more serious

view of Design Thinking, which might be a limiting factor to realizing the full potential of Design Thinking. Another finding shows that despite the leading role of educational institutions in promoting and developing Design Thinking in the Arab world, most learners and practitioners seem to have acquired their understanding through informal contexts and ad-hoc encounters, indicating an opportunity to develop and institutionalize rigorous and structured educational programs. Educational institutions have a crucial role in capturing this opportunity, including active alignment of these programs with the most widely adopted Design Thinking tradition on a global scale.

Of those who claimed to have worked in Design Thinking, the vast majority did not have a long track record or a high level of expertise in the approach. Correlating the time spent doing Design Thinking roles with the extent of their familiarity with Design Thinking terms showed that respondents' self-reported Design Thinking experiences do not necessarily point to high levels of knowledge in Design Thinking. This mismatch, in turn, calls for enhancing the professional training available for practitioners in Design Thinking roles.

4.3 SUMMARY

This chapter described the findings of this study's two-part quantitative data analysis, namely social media analysis, in which Twitter was used as a data source between May 2006 and May 2019, and a survey conducted online from June to July 2019. The findings are intended to answer the following research questions:

- What is the most widely adopted Arabic term for Design Thinking, and when did Design Thinking first appear in the region?
- Who are the organizations/people most active in promoting Design Thinking in the Arab world (for-profit or non-profit, government, others)?

- What are the commonalities and differences in Design Thinking adoption across various Arabic-speaking countries?
- What factors need to be considered to spread Design Thinking further and build the local capacity in Design Thinking in the Arab world?

The analysis provided plausible answers to the first three questions, and several statements made by the survey respondents offered insights on what factors need to be considered when spreading Design Thinking further and building Design Thinking local capacity in the Arab world. However, these answers were not enough to establish a reliable response to the research question, but along with other findings in the quantitative study, they paved the way to conduct the qualitative semi-structured interviews with new questions added to the interview guide, supported by participant observation.

The quantitative findings allowed the researcher to more deeply understand the phenomenon of this study. Moreover, the proposed questions for the interviews, which come in the following sequence of the study, were initially constructed from the literature but were revised based on the responses submitted by the survey participants. Additionally, the survey responses served in identifying seven informants to be interviewed later.

The next chapter will present the qualitative findings of the interviews' data analysis to validate and explain some of the results revealed by the quantitative data and to deepen the understanding of how people in the Arab world perceive and practice Design Thinking.

5 QUALITATIVE FINDINGS AND DISCUSSION

This chapter is devoted to the findings of the qualitative analysis of this study; which include semi-structured interviews, participant observations and informal group/coaches discussions. The analysis of the interviews was carried out using a thematic analysis approach. The analysis of the observation notes was supported by visual aids (photos taken during the events), reflection sheets that were used during one of the observed Design Thinking workshops, and feedback forms filled out during the workshops. These two sets of documents are used as a base to extract themes and patterns occurring in the observed events.

The first part of the chapter is dedicated to presenting the findings of the interviews followed by a discussion, while the second part is presenting and discussing the participant observation findings.

5.1 SEMI-STRUCTURED INTERVIEWS

The purpose of conducting the interviews was to explore the interviewees' perspectives on how Design Thinking is perceived and practiced in the Arab world, and to learn about their own experiences in applying Design Thinking in Arab countries. The interviewees' input helped explain some points revealed earlier in the study, such as why Design Thinking is highly adopted in the Gulf region, and how Arabs generally perceive Design Thinking. It was important though to check if the interviewees' understanding of the methodology was aligned with that of the Stanford-Potsdam tradition, as this may shed light on the results of the survey

concerning Design Thinking mindset and practice in Arab countries. Therefore, some of the interview questions were designed to address this point, including “how would you explain Design Thinking to a friend or family?”, and “what would you recommend to someone who is interested in Design Thinking?”.

5.1.1 Thematic Analysis

Ten participants took part in the interviews. The qualitative interview data was analyzed using a thematic analysis approach with the support of QDA Miner software. QDA Miner does not fully support the right to left languages, including Arabic. As two interviews were fully conducted in Arabic, and six interviewees used a mix of English and Arabic, this caused a challenge that was overcome by manually translating the Arabic text into English by the researcher whose mother tongue is Arabic.

An inductive thematic analysis method was used in the qualitative analysis following the guidance of Braun and Clarke (2006) (Figure 7). Initially, there were main topics discussed with the interviewees that formed the main themes of a preliminary deductive analysis, which was determined prior to the data coding and analysis. However, once the coding process started, the researcher processed the transcripts and coded data segments line-by-line, and therefore, other codes and sub-codes emerged. These codes were developed based on what was considered meaningful and was adding value to the explored topics following the inductive analysis process (Creswell, 2008). The focus then was on the codes that were most relevant to the research questions. The codes were grouped into themes and sub-themes. The created themes were iteratively refined after reviewing the coded data until satisfactory themes were developed. Themes were then named and defined.

5.1.2 Interview Findings

The following subsections present the details of the interview findings, grouped into seven main themes. Appendix C includes a table of the main themes, their associated sub-themes and codes.

5.1.2.1 Introduction to Design Thinking

After introducing themselves, their backgrounds and where they work, the interviewees were asked about when and how they heard about Design Thinking for the first time, and when they started to interact with it. Findings show that most interviewees first heard about Design Thinking between 2009 and 2016 (Figure 30) through different channels, and interacted with it during the same year or one to two years after. While three interviewees seem to have heard about Design Thinking through a friend or by accidently reading about it, eight interviewees stated that they had been introduced to it via Western institutions (universities/companies/NGOs).

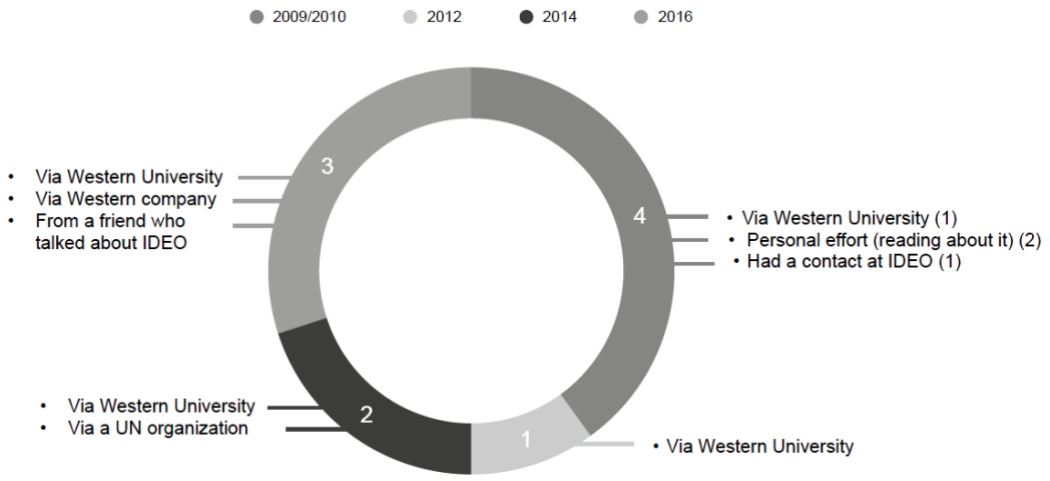

Figure 30 When and how interviewees heard about Design Thinking for the first time

5.1.2.2 Understanding of Design Thinking

The statements made by the interviewees provided different definitions and explanations on how they perceive Design Thinking, such as a process, a method, an approach, a mindset, or a way for innovation that is centered around the users. For example, one interviewee defined Design Thinking as:

> *"A way to come up with creative solutions and it is a way to find the problems that matter and come up with solutions that actually work for the people whom you are solving it for." (P9)*

Other interviewees used a direct, clear connection to the Stanford five phases of Design Thinking by stating that Design Thinking is:

> *"(An) innovative process that allows you in five steps to solve problems with the community or in collaboration with the users." (P8)*

> *"It is a methodology where we have five phases to solve any problem creatively. We start with empathy, then we redefine the problem, and then we go to the ideation, prototyping, and testing, and then we iterate." (P3)*

In addition to this understanding of Design Thinking, the majority of interviewees believe that Design Thinking is also a mindset:

> *"It is an approach; so it is a way how to approach things, how we tackle problems, how we find solutions, focusing on the human aspect but it is also a mindset. And this is also one part, and it is very important for me. It is the mindset of the person who (is) practicing Design Thinking. It is not just the process… It is a way to innovate." (P7)*

> *"It is a problem-solving mindset. It is a set of tools and mindset that you need to embrace and use what is applicable for you in a particular challenge. For me, it is a way of life. It is a mindset before anything else." (P2)*

One of the interviewees elaborated and emphasized on the prototyping phase in particular, and on the 'being curious' characteristic of design thinkers:

> *"It is a method that helps to systematically develop an innovative business idea. I also say that it is a mindset, so it changes how you do things. First be curious about people. Do not be angry about things. It makes me ask why. The second thing is the prototyping stuff. I was a perfectionist and Design Thinking teaching is to just try it." (P6)*

5.1.2.3 Feelings after Tackling the First Design Thinking Challenge

During the discussions, the interviewees were asked to recall the first Design Thinking challenge they worked on and how did they feel right after they went home that evening. Several interviewees expressed enjoyment and positive feelings:

> *"I felt enthusiastic and fulfilled and transformed… I was enjoying the process very much." (P1)*

> *"It was really a good feeling. I was like feeling myself in my own space. I did not even look at the time or anything. So it was really something which I give everything, and felt it is like too natural for me to do this job." (P7)*

For some, they felt sad or expressed disappointment that they did not get to practice Design Thinking before:

> *"I thought it was really tough, but I really like it, I thought, you know, that is really sad I did not have that before." (P8)*

> *"It is an eye opening to say the least! You know, it is like you finish and you say, wait… why? Why have I not been working like this for the whole time?" (P10)*

One interviewee who was introduced to Design Thinking through contacts at IDEO and worked with the company afterwards, happened to interact with Design Thinking for the first time through facilitating a challenge with students; her first thought was:

> *"How sad I was not a participant, how sad I could not have the chance in my studies to experience this." (P6)*

It also seems that the process itself made some interviewees think about how they approach problem solving and the process as a whole:

> *"This was such a striking moment that you can reframe problems as supposed to solutions and that by testing out a solution, you can reframe the problem (again)." (P9)*

> *"What I still remember till today is that whatever challenge that you face, as long as you implement the process, you will come up with something." (P1)*

5.1.2.4 Design Thinking and the Characteristics of Arab Culture

Views on the different aspects of the Arab culture and the Arab mindset and traditions were diverse across interviews. While some interviewees perceived this as an opportunity because they believe that some parts of Design Thinking are deeply rooted in the Arab culture and religious beliefs, others saw it as a challenge in spreading Design Thinking in the region. For example, one interviewee stated that Arabs might not be ready for Design Thinking yet as some Design Thinking mindsets could be puzzling, such as "Learn from Failure". Based on his observation, he claims that fear is holding Arabs and blocking them from starting, which could be because of religious beliefs:

> *"If you are working with someone who is Arab, like someone who is Moroccan (for example), you feel that they have a bit... like... a fear from the beginning, like something which is blocking… They are not as ready, maybe as Germans or maybe as Europeans. And they have this worry too... People are worried about not making things good. In Design Thinking, it is not about being good or bad. It is really about trying and making mistakes, and this is what I could observe in the Arab culture that people… they still want to do a good job because they have this in their culture, they do not want to avoid it, going back to the saying of the Prophet Muhammad (Peace be upon Him): 'May Allah bless who masters whatever he undertakes'. So people have this in their mind, and this gives them like... they want to make it really good; which is sometimes different than in other cultures that people want just to do and deliver, and this is where I could see a bit of difference. This is one element." (P7)*

Moreover, the interviewee expressed his views about creativity in particular:

> *"Another point is the aspect of creativity. So the creativity -I would say- is a bit lower compared to others. So people block themselves with different assumptions or different experiences from their culture or from their religion or from other aspects, or from politics or from different things. People block themselves... They really have good ideas but to express themselves and to bring them to life is a bit of a challenge with… Arab design thinkers or with some students or colleagues. This is a bit different. So this is for me; from my experience, I could say I observed." (P7)*

In contrast, other interviewees believe that Design Thinking has something in common with Islam, such as the concept of empathy. Empathy helps people in the region to connect to and understand Design Thinking:

> *"Empathy, even though, believe it or not, is solving varied barriers in our culture, but we totally forget about it. Empathy is the essence of who we are as Arabs, as Muslims, and everyone in the Middle East. And yet, when people understand it from a Design Thinking perspective, it clicks with them. They say that this is what we are supposed to do in the beginning and then, okay, they embrace it." (P2)*

Another interviewee mentioned the relationship between religion and Arab beliefs and how they see empathy as part of it or as something that is already being practiced:

> *"People in the region always link religion to many things… A participant came to me and said: There is a hadith by Prophet Muhammad who talked about empathy. I said are you sure? He mentioned a hadith of the Prophet and asked: Is not that empathy? I said yes, it is!" (P4)*

However, the same interviewee believes that Arabs do not apply empathy properly when practicing Design Thinking. He said that this is one of the "biggest challenges" he encountered when training Arabs on Design Thinking because the process for them stops at Prototyping. They do not go back to the user to test their prototypes only because they want to avoid receiving any feedback as it might be perceived as criticism:

> *"People do not follow feedback. This is already part of our Arab culture... People believe that they did a good thing. They always find a bright side in what they do, which is why they cannot understand the feedback loop. Therefore, they cannot integrate Design Thinking into their work or daily life; they treat it as a linear process. I tell them the prototype is not built to say I succeeded in reaching phase 4 of the Design Thinking process. The prototype is built for you to learn from it first, and then test with the users. No, they say, we already interviewed our users in the empathy phase; we do not want them to judge or assess our solution now. I say no, this is not an assessment, this is a mindset you should have, and you need to go back and empathize with the users, understand their needs, and observe what they do when interacting with your prototype…. I am sure you know the culture! If people receive feedback, they treat it as criticism! They say this is criticism; this person is criticizing us, and we should not allow him to say negative things about our solution. I say no, this is part of the process; this is called feedback; go back to your users and listen to what they say." (P4)*

Agreeing with that view, another interviewee mentioned that he may still give feedback to the participants, but not too much, as this may prevent them from moving forward. Moreover, Arabs appear to have a heightened sense of competition and of challenging each other:

> *"Maybe one of the things that sometimes you feel in the Arab world is that we are challenging each other too much. Instead of cooperating, it is somehow a challenging environment. So building on the ideas of the others is a big challenge, for example… In the Arab world... we try to challenge the solutions too much. We keep giving feedback, and I would love to give 'feedforward' when I am coaching. I am trying to push people forward instead of giving them too many comments that could prevent them somehow from moving forward. So these are the main things I recall right now; the cooperation and the way we give the feedback. It is different, completely different from the Western culture." (P3)*

Another view regarding people's mindset in the region was expressed by one of the interviewees who, based on interacting with Arab trainees, noted that they have ambitions but they give up on their ideas too quickly if they do not prove helpful:

> *"There is a huge gap between maturity and ambition. People have a lot of ambition, but if it does not work, they move on easily. That is why in the early ideation phases, people tend to envision ambitious things, but when it comes to practically implementing things, the reality does not match up to their ambitions. That continues to be a challenge." (P1)*

Expressing deep belief that Design Thinking as a methodology or a concept connects to the Arab culture, one interviewee reflected positively on the collectivist side of Arab culture, as he trusts this to be relevant to Design Thinking. He stated that it is the designers' responsibility to connect the Arab traditions with design:

> *"I think this kind of methodology (Design Thinking)… and this might sound a little cheesy, but it is really at the core of our culture like we are... We are not individualists, Arabs, Lebanese*

people, Levantine people, Egyptians… We do not live alone; we are always with people. Like, you do not have people going out alone and having dinner; that does not happen. We are always in groups… there are these really tight-knit communities. And I think we should; as designers, we should find a way to communicate or clearly find that link between the types of cultures that we have or traditions we have to design and say: you do this already! Just do it in a different context and a different topic and a different kind of… on a different level that can come up with solutions or create impact, etc. But I do not know how to make that link. I do not know how to. I have not figured it out yet. But as soon as I do, or if you have any ideas, do let me know!" (P10)

5.1.2.5 Adoption of Design Thinking in Arab countries and its Challenges

According to the findings, it seems that Design Thinking is more adopted in some Arab countries than in others. So far, the Arab gulf region is the highest adopter of all, especially Saudi Arabia and the United Arab Emirates. This was mentioned by several interviewees. However, according to one interviewee, this reality does not have much to do with the Arab culture; rather, one should understand the drivers behind it, which come through two mainstreams:

"One is education. To study Design Thinking... mainly in the West, it comes down to who has the sufficient funds to pursue such an education abroad; hence, the focus is on Saudi Arabia and (United Arab) Emirates—then consulting. There is a heavy consulting presence in both countries … all those firms are based in Dubai as it is more suitable for the lifestyle of designers, etc. Many of them then fly to Saudi as the market there is bigger for

consulting. Once you look at it from this point of view, then it is not much about the culture, then you find it about design education and access to that, and then it is about consulting. Naturally, consultancies do more marketing on Design Thinking. If you look at jams[16] etc., you find that they happen in the GCC[17]. I think it is so much about access to education and consulting." (P1)

Another interviewee supports the idea that Design Thinking is widely present in the gulf countries while it is still in its infancy in other countries, such as Lebanon. However, he finds the spread of Design Thinking to be inconsistent across the region despite some demands for Design Thinking training. He explains:

"It is still for me that Lebanon... we are still in the infancy of this Design Thinking wave. But if you compare 2012 to now, we have come such a long way. Like, it is, yeah, it is really encouraging. But at the same time, we are like, okay, it took us seven years to get here. Do we need another seven years to see companies hiring service designers or, say, companies saying, I want to have an innovation team in-house, so they can really think about what we are doing, or they can really have a different perspective on our methodologies or our processes… Outside of Lebanon, there has been a lot of demand. I have given Design Thinking workshops in Saudi and Bahrain, and Amman… they are like, super on it. But yeah, in the little bubbles, you know, that you see it happen for a couple of months, there is this big hype around, and then it just dies. And then another year, something else happens somewhere

[16] Design Thinking, service design, and innovation jam sessions are 48 hours events in which hundreds of participants join, along with experts and mentors who guide them to work on real projects and create innovative solutions. These jams have become popular in the past few years in Saudi Arabia in particular.
[17] GCC is Co-operation Council for the Arab States of the Gulf and includes the following countries: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates.

> *else. We do not have that consistency to build enough momentum for people to say, oh, wait, I have been seeing this for a few years now, and it must be really beneficial. So why do I not look into it? Why do I not bring it to my own company or organization?" (P10)*

When talking about the Arab North African region, it appears that Design Thinking is not highly adopted, although its demand seems to be increasing by local as well as Western companies that have branches in the region, but no significant capabilities are available to support this demand:

> *"Today, if you look at the Design Thinking community in the Arab world, at least in the North African region, it is very limited. I could tell you that I receive many calls from companies requesting me to support them on some projects on Design Thinking, like French companies in Arab North African countries or some local companies or agencies who are in need. Then you see that there is a need for that from the business aspect, but there are not many capabilities or not many people doing that. It is something which is still new for people." (P7)*

The interviewee believes that Design Thinking might not be widely adopted in Arab North African countries in particular, but also in the Arab region in general because:

> *"The people in the region who have the power or the capabilities do not yet invest in Design Thinking." (P7)*

The lack of capabilities, investment or resources have also been mentioned in other sectors, such as education. According to one interviewee who was teaching a class on Design Thinking at a university based in UAE, she did not get financial support for her class and she had to find some workarounds:

> *"Basically in my class I do whatever I want as long as I was not spending money. For example, for prototyping materials I would ask for things and they were like Oh no you cannot have more than 2 scissors… Are you kidding me? I have 40 students! So basically I started every month to take one pair of scissors like that they have time to forget that I already ordered one so I could save my scissors or save my glue. And then I had to recycle to have cardboard or paper or you know biscuit boxes, these kind of things, so I have been recycling to have the prototyping material, because the university did not want to pay anything." (P8)*

Besides the inconsistency in practicing Design Thinking and the somehow limited practice in the Arab countries due to low investment and lack of capabilities, and despite its more robust presence in the gulf region due to the "heavy consulting presence" (P1), it seems that people and companies in the gulf that are investing in bringing in international consultants are causing cultural issues in terms of misalignment with the local culture and proper understanding of local needs:

> *"In the Arab world, particularly in the Gulf region, they have a real problem which is their preference to work with foreign experts or Western people, I mean, it is true that most ideas and concepts came out and were developed in the West, but their applications differ. I sensed this when I was translating the IDEO field guide into Arabic. The challenges mentioned in their case studies are completely different, absolutely completely different… even when they go to Africa, to India, so... It is completely different from the challenges that we have as Arabs... Culture, religion, and way of thinking, it is all different (….) I have a 'Lead' certificate from Stanford; I mean, even what I learned at Stanford, I cannot pass it on as is to the Arab world; it is challenging! It needs adaptation; it needs customization... How*

> *can you understand the culture of a person from another religion, another language, other beliefs, or another culture unless you speak their language? I believe that the differences between cultures have a significant impact. Innovation is not about bringing a ready-made solution imported from the West. Innovation is a method to design a solution… Design Thinking is a process that supports designing innovative solutions. If you want to apply empathy, you need to work with someone who can empathize with Arabs, understand them, and find out their real needs. I believe that to do that; you should be close to or even immersed in the Arab culture so that you could apply the process properly." (P5)*

Another interviewee stated that Arabs should not take the West as a reference as they do have their failures as well:

> *"(Design Thinking) is one of the hardest things to do in our culture...; our references or company references are clearly the West. So if the West is doing it, then it must be good; we should do it, which has its, you know, failures as well. It has its problems as well..." (P10)*

Furthermore, he reflects on an educational program he was involved in developing at a local Lebanese university, which they copied from a French university but then realized that they needed to adapt to fit the local context. He believes that Western experts do not understand the culture because they do not speak the same language:

> *"I was on the board of the curriculum committee, so we made a first major shift in 2015. We changed the types of courses that we are offering. We wanted to make it a lot more contextual, let us say a lot more relevant to the Lebanese context, because a lot of these new schools, when they start a new program, they have*

either an expert or an advisor or an evaluator from abroad who has done this for a while and they come in and say, okay, guys, this is how you want to do it, or you should do it without really thinking about the (local) context and whether or not the context fits what they are talking about. So we realized that no, they do not really (understand)… it is not the same; we are not speaking the same language." (P10)

Similarly, an interviewee mentioned that Arabs should be working on local challenges as the context is different from that of the West's, and emphasized that sometimes Westerners do not fully understand the Arab culture, and that the case studies presented to Arabs should be local and respectful of their beliefs and culture:

"I had a chance to talk to many people from the U.S. during my Design Thinking education; they do not seem to know anything about us (Arabs). They are also not familiar with the sort of challenges we have in the region. For example, sometimes they are shocked to hear that most countries do not welcome Syrians, even Arab countries, and it is not easy for a Syrian (person) who fled the country to settle in another. They get shocked when they hear that some cities in Arab countries have had no electricity for days. We have different challenges than other parts of the world…. I was translating a Design Thinking case study about sexual relationships awareness and how to make safe sex and prevent AIDS. Such a challenge or case study means nothing to Arabs! We need to focus on challenges like how students can study while living in a war. How to manage your daily life without electricity. Do you know what I mean? These are our challenges; they are different. We can definitely apply the Design Thinking process to such challenges, but I believe that the people who will work on solving these challenges should be Arabs, so they would

> *immerse properly or at least understand the language if you need to explain anything to them." (P5)*

The lack of local case studies seems to be connected to the limited availability of Arabic content as well, which was reported as one of the biggest challenges for spreading Design Thinking in Arab countries. Several interviewees expressed this to be a big obstacle. One interviewee who was approached by a group of people who wanted to learn more about Design Thinking expressed this point by saying:

> *"I asked them first if they know English; if their answer was no, I say go learn English first and then we can talk about Design Thinking. No Arabic content for Design Thinking at the moment." (P4)*

Another interviewee supported this view by saying:

> *"You know there is no Arabic content, and this is a big challenge here. Books are not translated.… So, books are not available, and this is a big challenge. Aligned content is not available. So - always- the barrier that I have been witnessing with many of the people I meet is the language." (P2)*

To emphasize the need for local case studies as well, he noted that:

> *"There is a need not only for Arabic content but also for local Arabic stories and case studies (…) even when we work in Arabic, we only tell Western stories... No one is telling local success stories. No one showing... Okay, I understand now what is Design Thinking, How can I use it? Do you use it in the region? Give a local success story! Give me something! Show me a picture from my street, my neighborhood, not from the States, not from Europe." (P2)*

Another interviewee stated that even when delivering Design Thinking training in English in the region, the need for local stories persists. To overcome not having local stories to tell, she tries to bring stories from around the world to show that Design Thinking works:

> *"Many people's first reaction is like, sure, that stuff works in the U.S. but not really here (in Arab countries), so, I resort to examples from around the world (...) (I tell them) If we had Design Thinking (in the region) then it would have worked like this. We should be mindful of how people (Arabs) think it works in the U.S., where people are privileged, but not here (in Arab countries)." (P9)*

5.1.2.6 Design Thinking Practice and Challenges in Organizations

Two of the interviewed experts were working at universities, while the other eight were all practicing Design Thinking in corporate entities during the time of conducting the interviews. When asked if Design Thinking had an impact on their organizations, all interviewees expressed that the impact was positive in general. For example, P7 stated that their organization believes in the methodology now and therefore they initiated a mandatory training for their employees to introduce them to Design Thinking as a core approach to their work. At the company where P5 works, they prototype any new project ideas before proceeding further in development. P3, similarly, noted that Design Thinking had a great impact on some departments by shifting their mindset into more openness which resulted in exploring new business opportunities. However, some of the interviewed experts addressed a few challenges they encountered in different organizations while practicing or applying Design Thinking. For instance, one of the interviewees was

hired by a big Arab national airline company to establish an innovation unit. During the few years he worked there, he stated that he tried to educate employees about creativity, innovation, and Design Thinking, which seems to have worked well after some time but apparently, he encountered some challenges in the company itself. He said:

> *"Trying to spread this culture of Design Thinking in a large corporation was not easy. I've seen the transition in people but not in products and services." (P2)*

He stressed that when working directly with decision-makers, things tend to have a bigger impact:

> *"At my next job, and because we are directly working with executives, with decision-makers, we were witnessing the change. Over the past 3 years, we have done a huge amount of work in the government and private sectors… So spreading the culture, (and) changing the mindset is always the big challenge and this takes time. I think we are already there to understand the topic, but it was not like that five or six or seven years ago." (P2)*

Another interviewee pointed out that he and his team who were implementing a Design Thinking project at a "gigantic organization" (P1) faced resistance in the beginning, despite having the support of higher management. The situation seems to have resolved afterwards, though they needed more time to overcome the challenges:

> *"We had sort of a child who no one wanted to have; this was the lab, and I remember our business owner… he wanted this to succeed, he wanted to make it (Design Thinking) more neutral so it can be accepted by all, but they refused to take it. After it was constructed, everyone wanted to take ownership. Luckily after we*

> *finished the project, there was a mandate for Design Thinking to be embedded in the organization. I think there were a few challenges that we went through in the process. It had more to do with how to onboard people much faster and how we could practice Design Thinking with everything in it among such gigantic organizations. There was a lot of wards that need to be built and a lot of preparations to be made." (P1)*

In a similar situation, an interviewee stated that the resistance came from the old generation in management. They were, however, able to see the positive impact Design Thinking created afterwards:

> *"The change was really felt and everyone has felt it, from top to bottom. So it was really something which we could say now: yes we need and we have to keep because in the beginning there was some doubt from some people especially the old generation of managers and top managers and the leadership, where they had some resistance because it seems to be too different in the moment while we do business. So it seems like to be too playful, too lousy, not too serious and hard for them, and this is why it was a bit like okay, let us maybe try and see." (P7)*

Moreover, when it comes to consulting work, embedding Design Thinking in organizations can be challenging for different reasons. Some reasons are caused by internal resistance from within the company or by the traditional way of how things have been done in the past. An interviewee explained:

> *"Our work is mostly in the consulting arena and our implementation modality is about having a client. This is the first problem, in traditional consulting, we should be doing the work, and they don't expect themselves to have to work. We hear that all the time. It's not the type of work they are used to. They don't*

> *allocate time to it. They allocate funds but not effort and time. This is probably the best way to do things, but they try to make it work but their workload does not permit it. Others just say: no no you work it out and then you come back to me." (P1)*

He added that the traditional Design Thinking process cannot be fully followed or applied in such work circumstances. Hence, the process should be modified. He gave an example on prototyping:

> *"There is a big change in how prototyping works. In the traditional approach, the more prototyping you do, the more feedback you get. Here, this isn't the case, the more finished the prototypes, the more feedback you get. If the prototypes are still raw, the people say okay, we will come back later. Maybe this is something to do with the consulting modality; clients expect finished products. This is why we also trimmed a lot of the process in order to get to finished products faster. Basically, you want the feedback, the interaction." (P1)*

When asked if he thinks that Arabs do not support the idea of prototyping, he said:

> *"It depends on what you explain as prototyping. For example, if you think about digital, a prototype is actually the product. But our internal team members, they developed this new term... they say I really like your lo-fi(s)[18] as much as your hi-fi(s) but you should call them mid-fi(s). I mean what we produce is still a prototype but it is more finished than the other." (P1)*

Furthermore, he states that in the business world:

[18] Lo-fi: Low-fidelity prototype, hi-fi: high-fidelity prototype

> *"The client is not interested in design. They are interested in the final solution that is rolled out. From beginning to end, they are thinking about whether they should go through the process with you, see the end result or go through a ready-made system that is much faster to roll out. How can you justify research, how can you justify funding, etc. When we look at this from our design point of view, we zoom in on the design. But if we practice empathy then we find that we need to see things from the point of view of the business owners. When you see it like this, you end up being pragmatic and try to get there as fast as possible." (P1)*

Another challenge that was mentioned during the interviews is hierarchy. One interviewee who studied at Stanford University, did her Design Thinking training at the d.school, and ran several workshops in the U.S., pointed out that running trainings in Arab countries is different due to power dynamics. She mentioned Egyptian corporates as an example when comparing to the U.S.:

> *"When you learn Design Thinking at the d.school, there is a huge vibe of music, fun, etc. It sort of like let us be silly and let us be open, creative and put ourselves out there.... In the U.S. I ran a workshop with senior citizens who you would expect to be skeptics, but they ended up embracing it. In Egypt with corporates, it is much harder to get them to do certain types (of) things. I think they are still open to take themselves out of their comfort zones but the power dynamics of being authority figures not called by their first name makes it much harder to just have that 'let us be silly approach'." (P9)*

She said that she always had to find ways to break this hierarchy in the group in order to introduce specific mindsets of Design Thinking. Another interviewee (P10) also talked about hierarchy and its prominence in the Arab culture, which makes it difficult for Design Thinking to be applied in "business".

5.1.2.7 How to Spread Design Thinking in the Arab World?

The interviewed experts shared their views on what should be done to further spread Design Thinking in the region. One topic mentioned several times is the Design Thinking mindset and how it can be fostered. One interviewee emphasized that for Design Thinking to spread in the Arab countries, the start should be by shifting people's mindsets. However, this needs time, and therefore, spreading Design Thinking should happen slowly:

> *"Mindset cannot change overnight. We need to work on shifting people's mindsets over a long period of time, especially in our region. People should practice this slowly." (P4)*

Another interviewee believes that:

> *"It is hard for people to understand how a shift in mindset can make a difference." (P9)*

And, in order to begin this shift, she sees an ample opportunity to engage Arabs in social work:

> *"I have seen it (social work) being done in Egypt; the UNDP was doing a lot of things with Design Thinking. It is just more exciting as people in the Arab world are very excited about civic engagement, and so it is a great place to start from (for practicing Design Thinking and shifting mindsets)." (P9)*

Emphasizing the mindset, an interviewee opined that instilling the Design Thinking mindset in people is more important than applying the process itself, as people need to embrace ambiguity, experiment, and take risks:

> *"I believe that we need to enhance the mindset of Design Thinking more and more. Maybe it is more important than the process*

itself. We need to let people start thinking more about the user. Maybe they need to embrace ambiguity. In my opinion, they need to start experimenting, taking risks, prototyping, and then the methodology (process) is the easiest part. We need to help them embrace this mindset." (P3)

Another interviewee supported the same view of embracing ambiguity, and that Arabs should adopt Design Thinking as a mindset, but she also expressed that this would take a long time to achieve:

"People should learn how to deal with ambiguity and the ongoing change in circumstances, especially in the Arab world. Things are in constant change in our region. Uncertainty is on the rise! No one can predict what might happen in a year or two. That is why I believe we should all adopt Design Thinking as a mindset, as it helps us to tackle ambiguity and change. However, because we have done much training in the gulf region, it was obvious that Arabs are struggling to get the idea behind Design Thinking. It is still a long way to go. We need to work harder on this (….) It is tough to work on spreading a new culture that did not exist before." (P5)

However, she adds that since Design Thinking is essentially a mindset, it should be integrated into the educational curricula to help learners fully absorb it:

"It might seem that Design Thinking is a trend now, and as (with) any other trend, its spark might dim. However, I believe that Design Thinking is different. It is a mindset. It is a way of living. Schools and universities should integrate it into their curricula to become a mindset for students." (P5)

The importance of academic institutions in supporting the adoption of Design Thinking was also highlighted by another interviewee:

> *"To spread Design Thinking in the region, there should be an advocacy campaign, and academic institutions should take this responsibility. There was a trend some years ago in the region when many pieces of training were promoted about NLP[19], healing with energy, human development, etc., all of which are believed to be commercial. Anything not promoted by universities or educational institutions will be treated as such. Many trainers here claim to be Design Thinking trainers; I get frustrated when I hear that because most of them attended one workshop and claimed to be trainers in the field afterward. They did not practice the methodology; they did not follow any concrete process, so how did they become Design Thinking trainers? I do not know!" (P4)*

Furthermore, some interviewees believe that investing in education is very important so that Design Thinking may become a "way of life" for the new generations:

> *"Investing heavily in education, integrating Design in the schooling system… I believe it should be there from grade... pre-school... It will evolve as a way of life. I hope that after 20 years, we can find doctors, teachers, engineers, and programmers, who are design thinkers and practice that within every aspect of their daily lives. And the only way this will be achieved is through education."(P2)*

[19] Neuro-Linguistic Programming

Similarly, other interviewees also stressed the crucial role of Design Thinking in the educational sector. For example, an interviewee believes that the Arab education system is still traditional, and Design Thinking can contribute to its improvement:

> *"For me, it is clear, we have to include Design Thinking in our education to really change it, not really on a big scale, but I would say at least to some part of it. (...) In Arabic schools, it is still a classical way. The teacher comes and gives the presentation and asks the students to do some exercises, and that is it. So here you could see that part of the education we are missing something." (P7)*

In the context of education, an interviewee stated that what helped her to get the word out about her Design Thinking class and get students engaged, was explaining the process in more detail, and giving clear instructions for each step:

> *"What I found that worked well is to explain why we do this, this is half of the challenge." (P8)*

In addition to the role of education, using the Arabic language in training and teaching, and creating local content are also critical when it comes to spreading Design Thinking in the region:

> *"If you want to spread the (Design Thinking) culture in the Arab region, we need to educate people in their language. So, we need to invest heavily in creating local content (and) local success stories and make it realistic for people. They need to see with their eyes that the value fit." (P2)*

Furthermore, that interviewee believes that Arab people are driven to improve their lives and contribute to a better world using Design Thinking, but they lack the tools. (P2)

One possible channel for creating content could be a guide and a toolkit in Arabic. According to one of the interviewees, and based on his own experience, he claims that Arabs like to use toolkits:

> *"It would help to have a guideline in Arabic, especially for start-ups or people who want to solve social problems or work in social design, which explains 'how to implement Design Thinking in your work'. Our organization has a 'project cycle'; we use templates and tools that help us understand some concepts in collecting or analyzing data or predicting results. They provide us with a 'hacker toolkit' with all those templates and cards designed to drive discussions. Moreover, since we use Design Thinking, we try to adapt many concepts from the toolkit to fit with Design Thinking and close our project cycle. It would be useful to have a toolkit for Design Thinking in Arabic. Even if people do not believe in the mindset yet, following a guide or using a toolkit will force them to apply things differently. In the Arab culture, people like toolkits and brag about applying a specific toolkit." (P4)*

Another interviewee supported the same view when he cited examples from other languages, and mentioned that even though Design Thinking might be practiced in Arabic in the gulf region, it would still be important to create a rich toolbox in Arabic:

> *"... to have really a very rich toolbox and methods to apply and to have them also available in different languages because today, everything is almost too much available in English or German. I know from French colleagues that they are doing a big project to do that, making a lot of efforts, and also evolving Design Thinking in the French context. In Arabic, I never have seen something which is really on that level. I am following some colleagues from*

the Middle East who are a bit much stronger on that, especially when you talk about Emirates or Qatar or Saudi Arabia, you see some more activities on Design Thinking really in Arabic, which is quite good because we have a lot of innovation labs there and capabilities compared to Arab North African countries. But I would say this is one of the challenges; is to really give Design Thinking a place in the Arab system, either in the companies, in the social system or in education." (P7)

5.1.3 Discussion of the Interviews' Findings

The interviews aimed at deepening the understanding of how Design Thinking is being applied and practiced in Arab countries, what challenges it is facing, and what needs to be considered to spread it further. As mentioned earlier, there were plenty of codes and themes that emerged from the analysis, but the focus in the findings is on those that are most relevant to the research questions. The interview findings correspond with some of the earlier study results presented in the previous chapters, such as the higher levels of adoption for Design Thinking in the gulf region compared to other Arab countries.

In general, and despite certain challenges that Design Thinking practitioners faced or are still facing in the Arab world, it became apparent during the interviews that all interviewees did not just practice Design Thinking as a career choice, but were also believers in the methodology and wanted it to succeed in the Arab world. Their feelings after interacting with Design Thinking for the first time were all positive. Some of the interviewees expressed their wish to have had the opportunity to learn and practice Design Thinking earlier, and all of them said clearly that they would keep pushing forward in spreading the Design Thinking culture and mindset.

According to the qualitative analysis, it seems that the interviewees' understanding of Design Thinking is aligned with that of the Stanford-Potsdam tradition, as all of

the interviewed experts defined Design Thinking as a process, a method, an approach, a mindset or a way to innovation that is centered around the users. Some have defined Design Thinking as a five steps process in a direct reference to the Stanford model. Others have made a clear reflection on some phases such as 'Empathy' and 'Prototyping' while discussing certain incidents that happened with them. It could be because of their exposure to Western education or working at Western NGOs and companies that they were introduced to this process in particular. A few interviewees mentioned during the conversation that their studies followed this framework. Two of them were trained at the d.school. Two others had a direct connection with IDEO or heard about IDEO through a friend which got them to follow the IDEO process that is developed by David Kelly, who besides founding IDEO, also established the d.school at Stanford (Tischler, 2009) and used the same Design Thinking framework in both entities.

Some interviewees mentioned the relationship between religion, mainly Islam, and its influence on certain behaviors and the mindset of Arabs. This aligns with what Nydell (2018) presented in his book "Understanding Arabs: A contemporary guide to Arab society" when he dedicated a chapter on "Religion and Society" in which he explained the strong impact of religion on different aspects of social life in Arab societies. He claims that Arabs, Muslims, and Christians alike always reference the will of God in their conversations and that "the constant use of Arabic religious expressions acts as a formal acknowledgement of the importance of religious faith in Arab society" (p. 76). Furthermore, he stressed the influence of Islam in particular as the majority of Arabs are Muslims and how Ramadan, the holy month, brings families and friends together, and how charity and empathizing with others constitute a significant part of the Arab identity. This was reflected in some conversations when the interviewees talked about empathy in particular.

Regarding feedback, and based on observing Arabs, it has been reported in literature that Arabs in general may not welcome feedback, especially if expressed directly, and sometimes constructive criticism can be taken as an insult (NO, 2006).

It is believed that Arabs use indirect speech as a way of communication (Nydell, 2018), which could make it harder to give or receive feedback. This may explain the view of some interviewees when they stated that Arab participants in Design Thinking training may not go forward to validate their prototype ideas as they are not willing to receive feedback. Arabs are known to "expect regular praise when they have done good work, and are more hurt by criticism than Westerners" (Lewis, 2006, p. 401).

Another possibility is that Arabs usually belong to a high context culture in which collectivism shapes their communication style and behaviors (Al-Omari, 2008). In such cultures, politeness, good manners and gentleness are mandatory (Lewis, 2006), which may therefore, push people to avoid any confrontation or refrain from giving honest, direct feedback about anything. According to Hofstede's Individualism-Collectivism (IDV) dimension of culture, this dimension measures the "relationship between the individual and the collectivity which prevails in a given society" (Hofstede, 1980, p. 148), and the degree to which individuals are integrated into groups. Countries with a low IDV -such as Arab countries[20] - "are societies in which people [...] are integrated into strong, cohesive groups, which continue protecting them in exchange for unquestioning loyalty" (Hofstede, 1994, p. 51). Therefore, the interests, views and decisions of the group weigh over those of the individual. One of the interviewees stressed this fact and its connection to Design Thinking by expressing that Arabs can effectively work together, empathize with each other and solve problems. In their study "The Impact of Cultural Differences in Design Thinking Education", Thoring et al. (2014) identified Design Thinking criteria and mapped them to five cultural dimensions defined by Hofstede. The study shows that cultures with a low IDV, such as the Arab culture, might be better able to deal with teamwork in general and will most likely feel empathy for the users during research. However, they are less likely to do well in brainstorming and encouraging wild ideas, which may explain why some interviewees felt that

[20] According to 'hofstede-insights.com', Saudi Arabia has a score of 48, UAE a score of 37, and Egypt has a score of 36. All are considered low scores on the IDV dimension which makes them collective societies.

there is something blocking the participants' creativity from the beginning, and also may justify why not too many respondents of the survey (Chapter 4) associate a good design thinker with characteristics that target creativity such as 'Has crazy ideas', 'Loves to invent', and 'Has many ideas'.

It is also believed that in most collective cultures change happens by "evolution rather than revolution" (Al-Omari, 2008, p. 39) which means that it takes a long time for initiating and implementing change. Collective cultures are traditional cultures in which traditions are very well respected and people would resist sudden change. This supports what has been highlighted in the interviews that change brings resistance and in order for Design Thinking to spread in the Arab region and for people to accept it, change should happen slowly.

With respect to the challenges of applying Design Thinking in organizations, the interviewees highlighted several issues they encountered while working on projects or trying to change the organization's culture, such as management resistance or internal resistance, especially at the beginning of the change. They also talked about a mindset shift and how people may resist this as well. Although this topic has been presented within the context of Arab countries, the literature shows that similar challenges have been observed in other countries around the world (Abildgaard et al., 2017; Schmiedgen et al., 2015; Gerken et al., 2022). Particularly, spreading the Design Thinking mindset throughout a company is one of the persisting challenges that are faced by those who are taking the initiative of doing so (Gerken et al., 2022). Also, applying Design Thinking in large companies takes a long time since these companies are less adaptable than SMEs (ibid.), which supports the experiences shared by some interviewees.

Hierarchy was also mentioned as a challenge when it comes to applying and practicing Design Thinking. In the Arab world, it is known that power dynamics play a great role in decision-making as well as in the whole setup of any group interaction (Al-Omari, 2008). When hierarchy is at the core of a culture, it shapes many aspects of how people interact with each other, and how business is done in

general. In most events and occasions, even seating will be assigned according to hierarchy (Lewis, 2010). Some interviewees saw this as a challenge that may impact the application of Design Thinking. An interviewee mentioned that she always tries to find ways to break this hierarchy. She did not explain how, but based on the observation data that will be discussed in the next sections, and on some conversations that were carried out with other Arab Design Thinking coaches, breaking hierarchy seems a little risky in a culture that is built on hierarchy. In another similar cultural context in Asia, it has been reported that these environments are difficult for Design Thinking implementation due to the power of hierarchy and authority (Wolf, 2019). Therefore, it was suggested not to include participants from different hierarchical levels together in the same workshop or training (ibid.).

Finally, one of the objectives of interviewing Western experts who practiced Design Thinking in the Arab region was to compare their perspectives on the explored topic to those expressed by Arab experts. However, it was clear during the conversations that the statements made by Western interviewees did not differ much from those made by Arab interviewees. When asked about incidents or challenges when they were teaching Arab participants, the answers were no different from the other answers made by Arab trainers or from the reported observation notes.

5.2 PARTICIPANT OBSERVATION

5.2.1 Purpose and Organizational Context

To gain a broader understanding of the practice of Design Thinking in the Arab region, particularly how people are trained to solve real-life challenges by applying Design Thinking, participants were observed in seven events between 2019 and 2022. In order to understand a phenomenon, it is important to see this phenomenon through the eyes of the subjects being studied by paying careful attention to the social context in which the studied phenomenon exists (Bryman, 2012). Therefore,

notes were taken on how participants worked in teams, what the informal discussions they had were about, how they dealt with the Design Thinking process, what mindset they exhibited, what questions they asked, and what incidents caught the author's attention. The seven events consisted of six workshops and one hackathon (Table 4): One of a 1-day workshop (W2), four of 3-days workshop (W1, W4, W5, W6), one of 4-days workshops (W3), and one of a two-day entrepreneurship hackathon (W7). While three workshops (W1, W3, and W5) were designed to introduce participants to Design Thinking by following the Design Thinking process and applying different tools and methods in solving a challenge, Design Thinking was used in the other events as a methodology and a process to facilitate the learning experience by solving a challenge and presenting the final ideas. For example, the hackathon (W7) targeted youth who were interested in developing their entrepreneurial skills through solving a real challenge in a competition style. The three winning teams received support from the organizers to develop their ideas further into an actual product/service. The hackathon's purpose was not to introduce Design Thinking, but rather to support young entrepreneurs. Participants in the hackathon were coached by following the Design Thinking process in unpacking the challenge, generating innovative ideas for potential solutions, and prototyping these ideas.

Supplementary data was also gathered by asking questions to the organizers on different topics that emerged or were deemed to be worth following up on during the observation (i.e., the venue selection decision, the physical set-up of the space, the expected outcome of the training(s), the certificates offered, participants time commitment). Some of the observed points were also discussed and verified with other coaches who designed or/and delivered the trainings.

All of the trainings were designed and delivered by coaches who are exposed to the Design Thinking education at the Potsdam D-School and have coached there for several years. Therefore, the process that the participants followed was the D-School's model (Figure 31). A few other supporting coaches, however, who were

involved in facilitating teams in W5 and W7 had never coached at the D-School or followed a formal education there, but had been involved in coaching Design Thinking before and were introduced to the D-School framework during the 'coaches preparation day' that preceded the training. Hence, they guided the participants accordingly.

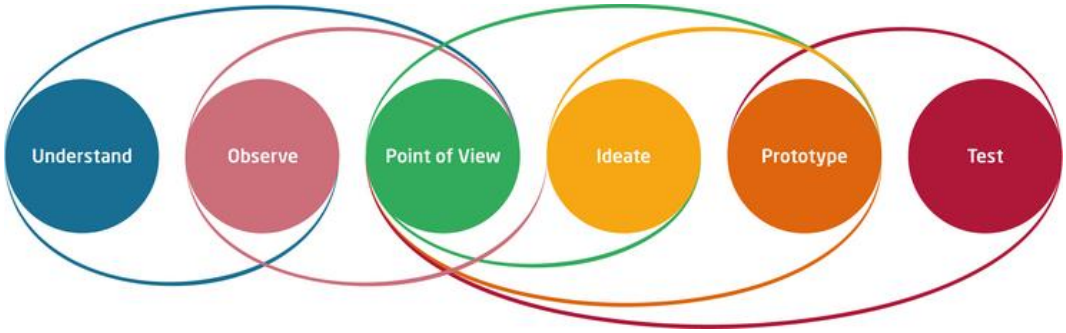

Figure 31 HPI D-School Design Thinking Model

Besides the observation notes and the informal discussions with the training organizers and coaches, other notes were taken from the final feedback sessions, which were conducted in W1, W3, and W5 and followed the Design Thinking feedback method 'I Like, I Wish' (Plattner et al., 2010). W5 had more supplementary materials as the author designed a reflection sheet for each phase of the Design Thinking process. A printed copy of each sheet was provided to the participants to be filled out right after finishing the phase (Figure 32). The aim was to capture the participants' views, feelings, struggles, and suggestions for each phase so that the design of future workshops would be iterated to meet the needs of Arab participants. It was agreed upon with the workshop organizers that the participants would fill out these reflection sheets, and the initial plan was to test the sheets in two subsequent workshops planned to take place after a few months. However, because of the Covid-19 pandemic, the organizer canceled the workshops due to mandatory lockdowns in the country. Despite having collected feedback from one workshop only, the feedback statements supported what has been observed in almost all other workshops. They complemented the 'I Like, I Wish'

feedback from other workshops and the overall observation. Therefore, the feedback statements were clustered into themes according to emerged patterns and will be discussed in the following sections.

As the observation setup may have an impact on the data collection outcome due to the interaction of the researcher with the observed participants, respondents may change their behavior in response to the researcher's presence. Therefore, and in order to observe as natural an environment as possible during the workshops, the researcher assumed an observer-as-participant role (Gold, 1958).

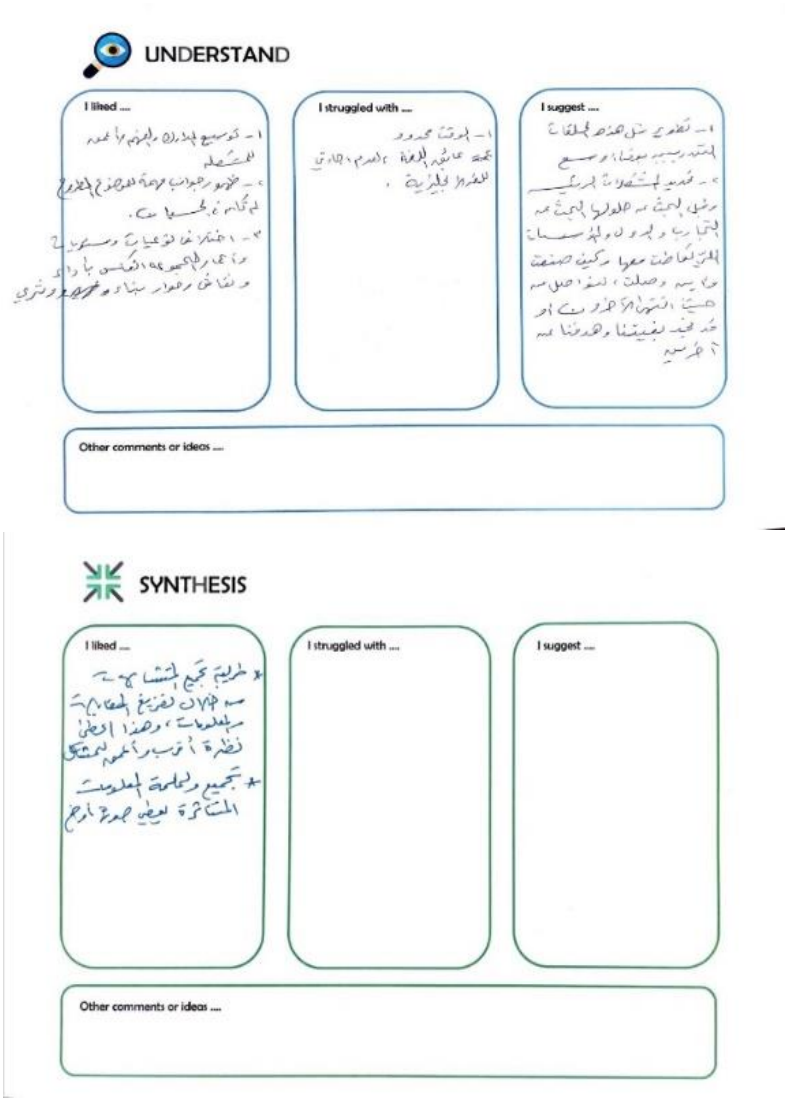

Figure 32 Examples of reflection sheets provided to the participants of W5

5.2.2 Findings of Participant Observations

As mentioned in Chapter 4, there are three core elements to the Design Thinking mindset in the Stanford-Potsdam Design Thinking tradition: People, Place, and Process (HPI D-school website, 2022). These three elements are collectively referred to as the 3Ps model of Design Thinking (Figure 33). ‘People’ stands for multidisciplinary teams where people from different age groups and cultural and educational backgrounds work together in one team. This “enables ideas that go far beyond the individual subject boundaries” (HPI D-school website, 2022), and fosters a culture of collaboration. ‘Process’ is the D-School model of Design Thinking, which has six iterative phases: Understand, Observe, Define Point of View, Ideate, Prototype, and Test. The model is what guides the projects (challenges) being introduced to the students (or professionals) to work on. ‘Place’ refers to variable spaces where the key is to provide an open space for students to use, equipped with movable furniture, whiteboards, and prototyping materials. The 3Ps model will be used as a framework to discuss the findings of the observation study. While ‘Place’ will be discussed in a separate section, ‘People’ and ‘Process’ will be combined as some of the findings may relate to both pillars since the ‘Process’ may have impacted the way the participants (‘People’) worked, and affected or caused some challenges or positive surprises in terms of mindset change or behavior.

Figure 33 The 3Ps model, HPI D-School (2022)

5.2.2.1 Place

Along with ‘People’ and ‘Process’, ‘Place’ is considered one of the underlying factors of Design Thinking that encourages human-centered innovation. The power of innovation spaces and how to transfer them into places that unleash creativity and support people in applying the process of Design Thinking is a topic that has been investigated by many researchers (e.g., von Thienen et al., 2012b; Doorley & Witthoft, 2012b; Schwemmle et al., 2018).

Design Thinking places are designed to be flexible so that furniture, prototyping materials, and other objects in the workspace can be moved easily and rearranged according to the changing needs of their users. Schwemmle et al. (2018) discussed in detail the conceptualizing of Design Thinking places and analyzed a real example: the D-school in Potsdam, where furniture was co-designed by the manufacturers together with the D-School to include high tables and whiteboards on wheels to facilitate movement. These pieces were surrounded by writable

surfaces on every wall in the working space, which proved to support ‘collaboration’ among students, as well as to foster team-communication and conflict resolution (von Thienen, 2010).

Many organizations around the world have realized the importance of place in fostering innovation and have started to dedicate new spaces at their workplace to innovation projects. However, when it comes to the observed workshops/events, it was clear that ‘Place’ had not been given that importance or was not reflected as a sought-after factor in promoting creativity and innovation. Except for W6 which took place at an innovation hub at a university, all other workshops were facilitated at different ‘traditional’ venues which were booked for the events. The venues had tables and chairs with no wheels, and they were arranged by the coaches in a way that each team can have their own space. There were no whiteboards or writable walls. The coaches asked for flip charts, which were not that convenient to work with but that was the best possible alternative. The participants were encouraged to use the surrounding walls to stick their post-it notes or to hang paper sheets with their sketches and ideas. W1 and W3 took place in university rooms, so the organizers were able to provide a few pin boards, nevertheless, the rooms had no writable surfaces, so they were also not that convenient. The coaches had to hang large paper sheets on the walls. Although W6 happened at an innovation hub, the place also lacked writable spaces, whiteboards, and movable furniture, and hence, the same workarounds by the coaches were performed there too. Figure 34 shows the difference between the D-School space (on the right) and one of the workshop’s spaces that was run at an Arab university (on the left).

Figure 34 Left: Design Thinking space at an Arab university venue, right: Design Thinking space at the D-School

It was also noticed that Arab participants tend to stay sitting on the chairs, even after the coaches encourage them -and sometimes push them- to stand up and get close to the flip charts or the wall. They prefer to run discussions while they are seated, and they did not feel very comfortable in other settings. At one of the workshops, the coaches of one team took all the chairs out during the lunch break so when the participants came back to their workstations, they found no chairs to sit down on. The participants were clearly annoyed, but the coaches explained that their energy level would be better if they move around the table and work free of chairs. They did so, but only for a few minutes when one participant grabbed a chair and brought it to the team space and sat on it. Everyone else quickly followed. This pattern of behavior has been observed in the majority of teams across all events, and it is not clear if this is a result of not providing appropriate furniture or because of the participants' familiarity with the traditional spaces set up in study halls, seminar rooms, classrooms or even event venues where everybody sits down no matter what they are doing.

5.2.2.2 People & Process

Taking the feedback gathered from participants after each phase of W5 as a starting point (Table 9), this feedback reflects to a large degree the observation notes that were reported in the other events, as well as the informal-side conversations that the researcher witnessed or was involved in. A few points, which were observed

but not reported in the feedback table will be discussed later. These points are: “Dealing with Ambiguity”, “Teamwork”, “Certificate of Attendance”, “Warm-ups”, “Gender”, and “Hierarchy”.

Table 9 shows that many participants were generally happy about the new methods and tools they got to learn about and try during the six phases of the Design Thinking process. For example, participants liked the new brainstorming methods they were introduced to. They liked the idea behind the HMW questions. They also reported positive views on the concept of prototyping and how ideas can be realized into a tangible product (prototype) by using simple materials. However, and despite receiving positive feedback on Design Thinking and its tools, it is clear that three major points stood out as struggles the participants faced or that they expressed as suggestions for improvement for the training itself. These three points are: time, the English language as a barrier, and the need for clear instructions. These points were voiced across all phases of the process and were also supported by the observation notes.

	What participants liked	**What they struggled with**	**Their suggestions**
Understand (#23)	Discussions among team members	English language was a barrier	More time
	Having people from different age groups and backgrounds	There was no clear instructions on how to do the activity	Providing the content and all materials in Arabic
	Sharing different experiences		Having a guide in Arabic on how to do the activity step-by-step with micro timing
Observe (#20)	Teamwork	Time	More time

	Different experiences in the team contributed to asking different questions and enriched the discussion	Conducting interviews	Arabic inputs would have been better
	Direct contact with the real user and engaging with different stakeholders (educators/students)		
Synthesis (#11)	Being able to define a real problem		More time
Ideate (#21)	Group brainstorming	Time	English terms are not helping. More Arabic is needed
	The different methods of brainstorming I was not aware of		More time
	The idea behind using HMW questions to generate potential solutions to the problem		Provide written instructions on how to run brainstorming sessions
	No idea is really stupid		
Prototype (#10)	Prototyping helps in explaining the idea	Visualizing the concept of our product	More time
	How prototyping can make ideas tangible		More variety in prototyping material
	How innovation can evolve through using simple materials		
	It was easy to rebuild a new prototype after it failed because no much money was invested		

Test (#21)	Testing was a new concept and I enjoyed the process	It was sometimes difficult to convince the team to agree on an unfinished solution	More time
	How feedback can greatly improve the prototype/idea		All inputs and materials should be in Arabic
	Iterating the product to fulfil the user's needs		

Table 9 Feedback gathered from W5 after each phase of the Design Thinking process

a) The Concept of Time in the Arab Culture

The feedback shows that participants wished for more time during the workshop. This is understandable due to the intense nature of running such fast-paced workshops. This feedback was shared by many participants in most trainings that were run even at the D-School in the past, regardless of the participants' cultural background. However, despite the sense for needing more time to finish activities[21], this did not hold back some (Arab) participants from spending longer time during breaks than what was allocated. Some participants would even arrive late to the workshop or suddenly leave before the end of the day by saying that they need to meet a family member, for example.

Moreover, throughout all seven observed events, there was rarely a case when participants would start on time. Some participants, however, were willing to continue working on their ideas in the evening after they went home, but during the workshop the concept of adherence to schedule was more on the flexible side rather than on the strict manner typical in the West. According to Lewis Model's Dimensions of Behavior (Lewis, 2006), there are three cultural categories: linear-active, multi-active, and reactive. "Linear-actives (e.g., Germans) are task-oriented,

[21] Activities mean the time participants spent in their teams working on a phase after giving an input (the theoretical part)

highly-organized planners, who complete action chains by doing one thing at a time, in accordance with a linear agenda. Multi-actives (e.g., Latinos) are emotional, loquacious and impulsive people who attach great importance to family, feelings, and relationships. They like to do several things at the same time and are poor followers of agendas. Reactives (e.g., Asians) are good listeners who rarely initiate action or discussion, preferring to listen and establish the other's position before reacting (Lewis, 2019). Arabs belong to the multi-active cultures (Lewis, 2006) which explains why it is difficult for them to follow an agenda, and time is "a subjective commodity which can be manipulated, molded, stretched, or dispensed with, irrespective of what the clock says. "I have to rush", says the American, "my time is up". The Spaniard or Arab, scornful of this submissive attitude to schedules, would only use this expression if death were imminent." (p. 57). This aligns with MacGregor and Godfrey's observations about Arab culture when they stated that one of the most common observations is "its lack of attention to what in the West we refer to as punctuality" (2011).

Nydell (2012) also claims that when it comes to Arabs, "time is not as fixed and rigidly segmented as it tends to be among Westerners […] appointments need not have fixed beginnings or endings. Arabs are thus much more relaxed about the timing of events than they are about other aspects of their lives" (p. 49), although the attitudes of some Arabs have begun to change due to the demands of economic and technological development and modernization, and therefore, some are careful to arrive on time.

The Arab culture has also been described as "polychronic" (Al-Omari, 2008, p.33), which means that people from such cultures do many things at once and manage several tasks simultaneously. Their concept of time has no fixed meaning; it usually flows freely and changes depending on the situation. It is common that distractions and interruptions happen and they see them as a natural part of life. In their paper "Everything is about Time: Does it Have the Same Meaning All Over the World?", Duranti and Di Prata (2009) discuss the concept of polychronic time and

monochronic time, the opposite approach to polychronism. Understanding the two different approaches will help explain why Arabs behave in certain ways, not only regarding time, but also in other aspects of attitude and behavior (Table 10).

Polychronic People	Monochronic People
Do many things at once	Do one thing at a time
Are highly distractible and subject to interruptions	Concentrate on the job
Consider time commitments an objective to be achieved if possible	Take time commitments (deadline, schedules) seriously
Are committed to people and human relationships	Are committed to the job
Change plans often and easily	Adhere rigorously to the plan
Are more concerned with those who are closely related (family, friends, close business associates) than with privacy	Are concerned about not disturbing others, follow rules of privacy and consideration
Borrow or lend things often and easily	Show great respect for private property, seldom borrow or lend
Have strong tendency to build lifetime relationships	Are accustomed to short-term relationships

Table 10 Characteristics of Polychronic vs. Monochronic People. Adapted from Duranti and Di Prata (2009)

b) The English Language as a Barrier

The second point was concerning the English language as a barrier and the need for Arabic language, whether as a means of communication or as a content that should have been provided. All the observed trainings were requested to be delivered in English. The participants were aware of that and being proficient in English was a

prerequisite for signing up to the training. However, many participants struggled with English and found it a barrier to understanding the inputs (the theoretical part), and were expecting a full explanation in Arabic, as well as Arabic communication to be dominant during the training since most of the participants were Arabs. In the majority of the trainings (W1, W2, W5, W6 & W7), the lead coach sometimes repeated what he or she was saying in English and Arabic. Most of the participants used the provided English templates and feedback sheets, but they filled them out in Arabic (Figure 32 is an example). In a study that was conducted in a different context, Taheri (2021) highlighted not only the importance of using local language(s) in Design Thinking training, but also customizing the used language into words or phrases the locals understand that might be different to the English (American) terms.

c) The Need for Clear Instructions

Another point the participants in W5 mentioned was the need for clear instructions and a step-by-step guidance on how to perform activities (some participants called them exercises). This has also been observed and noted in other workshops through the type of questions the participants sometimes asked after being introduced to a Design Thinking phase and requested to go to work in their teams. Examples of these questions: “Is there a printed sheet of instructions?”, or “Can you tell us again how to do this exercise step by step?”. One possible explanation of why Arab people need clear instructions could be the way they are educated in schools and universities, where -despite the recent reforms in a few Arab countries-, educational systems continue to rely on outdated pedagogical techniques such as rote memorization, and teaching is highly didactic and teacher-directed (Traifeh et al., 2019). The current curricula and teaching methods are practiced in a way that discourages critical and creative thinking and encourages instead a “submissive attitude towards higher authority” (Arab Human Development Report, UNDP, 2016, p. 55). Students in these traditional educational systems are recipients of knowledge and expect the teachers to tell them what to do in detail, unlike Design

Thinking where teachers are supposed to be facilitators of the learning experience and to encourage students to explore and work on the subject on their own. The lead coach at W5 was surprised to hear that the participants needed more instructions as she felt the instructions were clear enough. The participants seemed to expect printed materials with the content (slides and extra readings) and the activities (guidelines).

d) Dealing with Ambiguity (Uncertainty)

Besides requesting clear instructions for activities, most participants struggled with the idea that they do not know what the 'final' outcome will be. Trusting the process, and dealing with ambiguity or uncertainty were real challenges for them. Many participants asked questions such as: "How would the final product look like?", and "What do you expect from our idea?", despite communicating several times that the main idea of going through the 'problem space' of the process is to fully understand the challenge first and define it, before moving to the solution space and exploring potential ideas (and outcomes) to solve that problem.

Taheri (2021) argues that despite the pedagogical practices of Design Thinking as a student-centered approach that borrows concepts from project-based learning and experiential learning philosophy, these practices might not be appropriate in other educational systems in which pedagogy is designed to be teacher-centered. Other studies show that students who were educated following a teacher-centered approach faced difficulty in coping with the student-centered approach that was brought from other curricula (Taheri, 2021; Briguglio, 2000; Castle & Kelly, 2004; Heffernan et al., 2010).

Although the educational aspect could have an impact on why 'Arabs' are not fully comfortable with uncertainty, the cultural aspect also plays an important role, which in return influences the structure of the educational system itself. According to Hofstede's model (Hofstede et al., 2010) that categorizes six primary dimensions

to assist in differentiating the characteristics of cultures, the Arab world ranks high on the 'Uncertainty Avoidance' dimension index with a score of 68. This dimension focuses on the level of tolerance for uncertainty and ambiguity within a society. In other words, this dimension emphasizes how likely someone in a culture is to avoid specific situations where the outcome is unclear. This means that the higher the index is, the lower the tolerance of people from such a society for ambiguity and unstructured situations. Unstructured situations are those that are novel, surprising and somehow different from typical situations. Countries demonstrating high Uncertainty Avoidance usually uphold strict belief and behavior, and therefore, there is "an emotional need for rules" (Hofstede Insights, 2022). As a result, and because security comes as an important factor in motivating oneself, innovation may be restricted. Students in this regard are more comfortable in structured learning situations and are usually concerned with the right answers, and teachers are supposed to know all answers.

It is worth mentioning that the Uncertainty Avoidance score for the Arab world that was provided by Hofstede (score of 68) was based on surveying only seven Arab countries[22] and treated the region as one cluster (Hofstede, 2001). Therefore, when comparing individual countries, the results vary. For example, the index for Kuwait, Saudi Arabia, UAE , and Syria shows scores of 80, 64, 66, 60 respectively, which are considered to be high, compared to Egypt's score of 55 (Hofstede insights, 2022). This may explain why the participants of the observed workshop that ran in Egypt (W3) felt slightly more comfortable with the Design Thinking process, compared to participants of other workshops, the majority of which came from the UAE (W1, W2, W4, W6, W7), and W5 where the majority of participants were Saudis and Syrians.

[22] Kuwait, United Arab Emirates (UAE), Kingdom of Saudi Arabia (KSA), Egypt, Iraq, Libya, and Lebanon.

e) The Teamwork Experience

As reported in Table 9, the participants seemed to have enjoyed and valued the 'teamwork' experience. They claim that having multidisciplinary team members added to the depth of the conversations they had in their teams and to the breadth of the experiences they brought. This also was expressed in the last feedback session at the end of the training which is a typical feedback session usually run in Design Thinking training at both Design Thinking schools in Potsdam and Stanford. It takes the form of 'I like, I wish' where participants state what they liked about the workshop and what they wish would have happened differently so that designers/coaches may iterate in the next training to improve their work. Table 11 Shows the feedback received from three workshops, W1, W3, and W5. This feedback has also been recorded in other observed workshops where participants appreciated the multidisciplinarity of their teams.

# of responses	I Like	# of responses	I Wish
64	Very interactive	40	The workshop was run fully in Arabic
50	Joyful atmosphere	42	More details about each step should be provided
46	Design Thinking is a great methodology	36	Printed materials of the inputs and exercises
34	Working in a team		
22	My first time working with people from different age groups and professional backgrounds. Some were even from different nationalities		
17	The variety of solutions that emerged		

Table 11 'I Like, I Wish' feedback from W1, W3, and W5

Although the reported feedback shows that the participants enjoyed teamwork and exchanging experiences, it was observed that in brainstorming sessions in particular they faced a certain challenge: some participants would not share their ideas, and therefore, would not actively participate in the session. They even asked several times about patenting and what if another person steals their idea. It was not easy for these participants to immerse in the team experience and build on others' ideas. It was also noticed that many participants were concerned when they saw other people from other teams come close to their workstation. It seemed they feared that the other team would steal their ideas. This -again- could be because of the way schools in the region educate students based on competitive individual achievements in curricula that do not necessarily support or encourage group or teamwork among students. Another reason could be -what has been discussed in the interview findings- that people from collectivist cultures are less likely to do well in brainstorming and in encouraging wild ideas, while on the other hand they manage a good teamwork.

f) Certificate of Attendance

Another point that was revealed by the observation and could also be an outcome of the educational system is the participant's request of certificates after the end of the workshop. Except for W4 where this point was not verified, the organizers in all other trainings either provided or asked beforehand that the coaches would issue a certificate of attendance for all participants. Part of promoting the training and recruiting participants was announcing that all participants would receive a certificate of attendance. Some of the participants asked about when they would get the certificate the minute they arrived on day 1 to register. As a result, the organizing entity made it a condition that participants would record their attendance every day of the workshop, otherwise they would not quality for a certificate.

g) Warm-ups

Warm-ups are fast, short, and enjoyable exercises that usually happen before the start of a learning or work session with the aim to break the ice among participants as well as to put the participants in a collaborative team mode and prepare them for their work session. Warm-ups have been used in Design Thinking sessions whether the sessions took place physically or online (von Schmieden & Meinel, 2019). Tschepe (2018) claims that warm-ups "go very well with Design Thinking because they support many of its attributes, such as being curious and having an open mindset as well as being mindful of and collaborating with other people". He adds that a Design Thinking workshop or project can benefit greatly from a 'well-chosen' warm-up, but it can also have the opposite effect if the warm-up was 'poorly' chosen, leaving participants feeling confused and uncomfortable. The warm-ups that were run in the observed trainings were selected by the coaching team with a full awareness of the cultural context in a region where Islam is a dominate religion and males and females might not feel fully comfortable interacting with each other when they are physically close. Therefore, the 'regular' warm-ups that are usually run with students in Stanford and Potsdam were adapted to suit the Arab culture. One example is the warm-up 'the water story', which comes from the book 'The Life of Pi'. A coach would be reading a script in which the word 'water' would appear many times, the participants should touch the finger of the person next to them every time they hear the word 'water'. In one of the workshops, the participants were split into two groups, female and male groups and played the warm-up. In another workshop, the coaches formed a big circle of the mixed group; the participants were students of a university that is based in an Arab country but follows Western curricula and teaching/learning style. The students there seemed not to be too conservative, but yet, the female coaches who had no problem touching the opposite sex acted as connecter between males and females in the group (Figure 35). A similar approach to adapting this warm-up has been reported in the d.school of Genovasi in Malaysia where Islam is also the main religion in the country (Taheri, 2021).

Figure 35 'The water story' warm-up at W3

Another example was a warm-up in W6 where each participant had to pair with another and build a paper plane by using one hand only and collaborating with the other person to accomplish the mission. The participants automatically paired with their same sex partners (Figure 36).

Figure 36 'Build a paper plane' warm-up at W6

It is worth mentioning that coaches sometimes could not run any warm-ups in some trainings due to timing issues or because of the nature of the training itself. For example, in W5, where the participants were professionals, the coach started day 1

of the workshop with a warm-up but the energy was extremely low, and not everyone participated, which created a sense of discomfort for both the coaches and the participants. The lead coach decided to skip the big group warm-ups on the following days and focused more on 'team' warm-ups where warm-ups are run within each team and the participants seemed to be more engaged in smaller groups.

h) Gender

Following up on the 'gender' topic, and beside the observation of the overall atmosphere and how males and females tend to interact with each other, two incidents caught the researcher's attention. At W7 which was dedicated for students, there was a team that had eight females and two males on day 1. One of the males seemed to be shy and needed a push to participate in the team discussions that were facilitated by their coach. On the next day, one of the males did not show up and the shy male did not join the team right away. He was waiting at the venue entrance to see if the other male would show up. The coach noticed that and she talked to him. He expressed that he would not feel comfortable joining the team if he was the only male, but at the same time, he expressed that he was interested in finishing the hackathon and in developing the idea his team had started to work on. It took the coach some effort to convince him to overcome his shyness and anxiety being the only male in the team; and in the end, he returned to his team and worked with them until the end of the hackathon, although the other male had dropped out. However, on the last day of the training when the organizers asked a photographer to take team pictures for each team, he refused to be included in his team picture.

This incident is similar to another when a male participant realized that his team had only females. He approached a coach and asked her to be moved to another team that had male participants. He said that he had never talked to females before, he does not know how to communicate with them, and he would not feel comfortable working with them. The coach, who was a female, encouraged him to

stay and try working with the opposite sex by saying: “You are talking to a female right now so you can do it, just try and if after few hours you still feel uncomfortable, come back to me and we can discuss this again”. The female coach checked on him again in few hours and he seemed to be happy in his team. On the last day, he was one of his team’s representatives to pitch their ideas to the audience.

In the Arab world, the separation between sexes is still common across most countries, especially in more conservative societies. Although the situation at workplaces has changed in many Arab countries over the past years where men and women work together, segregation can still be witnessed in the educational systems in schools and universities, and in some countries (Al-Omari, 2008). There is variation in the degree of segregation, but generally speaking, in most Arab countries, men and women do not tend to interact socially outside of the extended family unit (Hammad et al., 1999). This could explain the incidents above, and why sometimes it was not easy for males to interact with females. On the other hand, females seemed to be working well together and with the opposite sex and they were accommodating to their male teammates in the trainings with the majority of participants being females.

i) Hierarchy

In W2, W4, and W6, professionals and students were working together in teams. The professionals represented faculty and staff members at the same university where the students are studying. It was clear in these workshops that the team dynamics in groups that had students only was totally different to those when professionals were involved. Student groups were more comfortable to work together whereas groups with mixed participants were mainly controlled by those who are at a higher level in the hierarchy.

One notable incident was when a student complained about the lack of a certain service at her university. A professor who was in the same team became defensive, slightly raised her voice and started blaming that student (and other students) for not committing to the university programs or checking the newsletters, which the professor claimed that this service already exists. It is possible that the student was not aware of the service because she was not following the university news, or the university did not use proper channels to reach out to students. Nevertheless, the way how her superior handled the situation resulted in shutting down all participating students in that team and preventing them from sharing their ideas and experiences freely.

When this incident was mentioned in an informal discussion with another coach, he said that he witnessed a similar situation in a workshop he was running in another Arab country, but it had been less aggressive than this. He had a female team, most of whom were wearing niqabs[23]. They were engaged and everyone was speaking freely until one of the covered women realized that another covered woman is one of her university instructors. That is when the student stopped talking and sharing her ideas, and started to simply follow what the instructor and others said.

Another incident was witnessed at one of the observed workshops when four university staff members who arrived together to the workshop were asked to write their names on a piece of colorful tape and stick it on their shirts. One of the staff members did not accept that and felt offended when asked to do so. A coach explained to him that this is a way that makes it easier for everyone to read each other's name, but the offended staff member started yelling at the coach and said that this is a childish behavior and he is not in a kindergarten to put a colorful tape on his shirt. His colleagues agreed with him and the four of them left the workshop and did not attend. In two separate incidents, it was observed that if a group includes two or more professionals when one of them is superior to others, they wait until

[23] A niqab is a garment that covers the face, worn by many Muslim women as a part of an interpretation of hijab. (Wikipedia)

their superior answers a question or expresses an idea and they would just agree with him/her. Those who are lower in the hierarchy would feel anxious in the presence of their superiors and would not feel comfortable expressing their opinions openly. They would, instead, try to impress their superiors or show them that they are working hard on their projects.

It is not surprising to witness such incidents in a region that scores 80 compared to a world average score of 55 on the Power Distance index (PDI), which is one of the cultural dimensions that was measured by Hofstede (Geert Hofstede™ Cultural Dimensions, 2022). Power Distance is defined as "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally." (Hofstede insights, 2022). In such cultural contexts, the differences exist according to the status of the person. Companies and organizations are centralized and therefore, people accept a hierarchical order and are not allowed to express their opinions. Communication is usually formal, and bureaucracy does exist with complex systems and procedures. At a family level, the parental authority continues, and there is always a need to depend on seniors. On the other hand, students in such cultures respect teachers and see them as superiors. Al-Omari (2008) believes that the Arab culture "demonstrates all the key features of high power distance cultures where bureaucracies are plagued with numerous layers and power brokers and where exclusive privileges and perks are expected for those at the top." (p. 33).

5.3 SUMMARY

This chapter presented the qualitative data findings from ten semi-structured interviews, and participant observation conducted in seven Design Thinking training events. A thematic analysis approach was conducted to analyze the data. The findings allowed the researcher to deepen the understanding of the phenomenon of the study. Moreover, the findings came to confirm or explain some

of the quantitative results presented in Chapter 4. The data also provided new findings that emerged from the analysis.

6 SUMMARY, RECOMMENDATIONS, LIMITATIONS AND FURTHER WORK

This chapter presents a summary of the research questions and findings, and provides recommendations for spreading Design Thinking and building local capacity in Arab Countries. The chapter also discusses the implication of the research findings, the limitations encountered, and suggests future research directions.

6.1 SUMMARY OF RESEARCH QUESTIONS AND FINDINGS

The main goal of this thesis was to address the gap identified in the literature explaining how Design Thinking emerged, perceived and was adopted and practiced in the Arab world, and to provide recommendations that support spreading Design Thinking further in the region as well as aiding Design Thinking educators and practitioners in understanding and designing culturally customized activities when running Design Thinking trainings in Arabic-speaking countries.

The research questions that guided the study are the following:

1- What is the most widely adopted Arabic term for Design Thinking, when did it first appear, and who coined it?

2- Who are the organizations/people most active in promoting Design Thinking in the Arab world (for-profit or non-profit, government, others)?

3- Which industries/sectors are the first adopters of Design Thinking in the Arab world?

4- What are the commonalities and differences in Design Thinking adoption across various Arabic-speaking countries?

5- What factors need to be considered to spread Design Thinking further and build the local capacity in Design Thinking in the Arab world?

In order to answer the research questions, and after conducting a thorough literature review on the state of Design Thinking in the Arab world, a mixed-methods research approach was followed in which both quantitative and qualitative methods were employed. First, two methods were used in the quantitative phase: a social media analysis using Twitter as a source of data, and an online questionnaire. The results and analysis of the quantitative data impacted the design of the qualitative phase in which two methods were employed: the analysis of ten semi-structured interviews, and participant observation of seven Design Thinking training events.

The reported analysis of the data shows that despite Design Thinking's long-standing tradition in other countries around the world, especially in the U.S. and Europe, it seems that it is still at an early stage of adoption in the Arab region. In the field of Design Thinking, 'social media analysis' as a quantitative research method has not been reported before in tracking the development of this field. When employed in this study, several patterns of Design Thinking adoption in the Arab region were detected, and insights into how the spread of Design Thinking varies across Arab countries were revealed.

According to the analyzed data, Design Thinking entered the Arab world in 2006 with only 12 mentions on Twitter, all of which used the English term "Design Thinking". The Arabic terms did not appear until three years later. This is not surprising since the English term is the original designation. On the other hand,

some survey respondents stated that they first encountered Design Thinking (whether by reading, studying, or working with it) as early as 2004-2005. Although it cannot be confirmed that their encounter was aligned with the globally popular understanding of Design Thinking, the data shows that more people came across Design Thinking in the years to follow. Based on these findings, the Arab world appears to have had an early, though weak and slow adoption of Design Thinking. A growing adoption, however, has been witnessed over the last decade.

Another key finding revealed by the study is the confirmation of "التفكير التصميمي" as the Arabic term to be most widely adopted in the region to refer to "Design Thinking". Although several Arabic translations for the English term "Design Thinking" appeared in the literature review and on Twitter, both findings showed that one Arabic term in particular is used in the majority of articles and tweets: "التفكير التصميمي". No evidence was found to indicate how this term was coined on Twitter in particular. However, the literature review showed that this term was coined by Chafic Jaber, a research engineer at Telecon ParisTech, who voluntarily translated Tim Brown's Ted Talk: designers—think big in 2010. The survey results reaffirmed that this Arabic term was used the most as 29.49% of the survey respondents, out of 41.67% who have heard about Design Thinking before, stated that this is the term they usually hear associated with Design Thinking in Arabic. Therefore, this term is recommended to be deemed the de facto Arabic translation of Design Thinking: "التفكير التصميمي".

When it comes to countries where Design Thinking was frequently mentioned, it was clear that some countries preferred to tweet about it mainly in English, not Arabic. UAE comes first in ranking as it contributed 42% of all English Design Thinking-related tweets geotagged to Arab countries, followed by Saudi Arabia and Egypt. On the other hand, Saudi Arabia accounted for 70% of all Arabic Design Thinking-related tweets. With a good contribution in English tweets, too, Saudi Arabia is likely to be the primary source of Design Thinking-related information in general, and the most active adopter of Design Thinking in the Arab region. Overall,

the data analysis in this study shows that some countries are becoming strong adopters of Design Thinking like the gulf region (UAE, Saudi Arabia, Bahrain and Kuwait) and Egypt. Other countries are on the rise, including Syria and Lebanon, due to efforts by NGOs and UN organizations as Design Thinking seems to be a methodology that is widely adopted and practiced by NGOs in the region, especially in the area of development and social design.

The results also show that despite its limited spread, Design Thinking has been practiced the most in education, information technology and communication, administrative services, and the non-profit sectors. The way it is being practiced, though, is not fully aligned with how it is being practiced and taught in the U.S. and Europe, as most people in the region do not necessarily believe in all mindset attributes introduced by the Stanford-Potsdam education. They also seem to shy away from the 'wild side' of Design Thinking in particular, and do not fully appreciate the connection between art-design, and science-engineering. This questions the role of the educational institutions in the region since -according to the findings- they appear to be leading the movement in promoting and developing Design Thinking in the Arab world. It is possible that Arab learners, educators and practitioners may have acquired their understanding of Design Thinking through informal contexts rather than through structured and formal educational programs at universities. However, it seems that even when the framework of Stanford-Potsdam is followed, people in the region perceive it differently, and do not necessarily apply the phases as they are usually applied in their original context due to differences in the Arab culture compared to the Western culture. Nonetheless, it is notable that people are somehow aware of the positive impact of applying Design Thinking in the region, and its potential to bring meaningful transformation. However, they are also concerned about the current cultural, social, political, and economic challenges that may stop this transformation. At the same time, they ask for more awareness and demand to create Arabic, culturally appropriate programs to respond to the local needs. On another note, the lack of Arabic content and local case studies on Design Thinking have been identified by several interviewees and

were also confirmed by the participant observation as major challenges that are slowing down the spread of Design Thinking or sometimes hampering capacity building in the region. Other challenges that were revealed by the study are: changing the mindset of people, the lack of dedicated Design Thinking spaces, and the need for clear instructions on how to apply Design Thinking methods and activities. The concept of time and how Arabs deal with it, gender management during trainings, as well as hierarchy and power dynamics amongst training participants are also among the identified challenges. The following section provides some recommendations on how to overcome these challenges as well as what factors need to be considered when designing and running Design Thinking training in the Arab region.

6.2 RECOMMENDATIONS FOR SPREADING DESIGN THINKING AND BUILDING LOCAL CAPACITY IN ARAB COUNTRIES

As the Arab world consists of 22 countries, it must be stressed that there is no "one" Arab culture, identity, or society because each country might have its own national culture and diverse communities and groups, which create some differences even within one country. However, many researchers acknowledge the fact that despite the variation at a country level, there are general patterns of norms, behaviors and attitudes that occur throughout the Arab world (NO, 2006; Al-Omari, 2008). Therefore, the recommendations provided in this section are general recommendations which, hopefully, can be applied in all Arab countries.

In the previous chapters of the thesis, some challenges that may limit the spread of Design Thinking in the Arab world have been identified. Since Design Thinking is becoming more popular in the region, and more individuals as well as institutions in the educational, public and private sectors are becoming more interested in learning and practicing Design Thinking, it is clear that there is an urgent need to

build capacity in this regard. Based on the analyzed data and the overall current understanding of the state of Design Thinking in the Arab world, four sets of suggestions on how to overcome the most pressing challenges and support in Design Thinking capacity building in the region are provided in the following sections.

6.2.1 Arabic Content

In the past two decades, English as a second language in the Arab region has been on the rise. Most private sectors hire people who speak English, and many Western universities have opened in the Arab countries whose official teaching language is English. A few Arab national universities also switched to English for teaching and learning (Lindsey, 2015; Al-Kahtany et al., 2016); therefore, they welcome students to study in English from all around the world. However, Arabic is still the official (and universal) language that is taught in all Arab countries and employed in the government organizations throughout the region (Nydell, 2018). Hence, providing Design Thinking training in Arabic and producing more Arabic content are important steps in building capacity on all fronts. After all, in all of the observed events, and despite the agreement that all training components (e.g., materials, inputs, communication language) would have been delivered in English, Arabic was the dominant language and even students who are studying in English, had difficulty grasping some concepts in English and preferred to communicate in Arabic. In this light, a few steps are recommended to advance Arabic content in Design Thinking:

- Produce Arabic digital content and make it accessible for free to everyone in the region. Encourage Arab Design Thinking experts to write and publish their experiences online to share them with Arab audience.
- Translate important books on Design Thinking into Arabic and make them available in the Arab market. Arab publishers are also

encouraged to produce and publish Arabic books about Design Thinking since there is an obvious need for that.

- Develop Arabic-taught Design Thinking modules at universities and encourage students to register. To support this, students could be introduced to Design Thinking through short workshops run on campus. Offering certificates of attendance will increase the possibility that students will attend.
- Encourage firms who already use Design Thinking and hire Western consultants to translate the material offered by consultants into Arabic and make this available to their staff.
- Arabic MOOC platforms are encouraged to produce more courses on Design Thinking. Up until the time of concluding this thesis, only two MOOCs on Design Thinking had been released in Arabic.
- Develop a Design Thinking toolkit offered by a government entity or a recognized university and make it available for online download. This will encourage interested individuals (and groups) to learn and try Design Thinking.
- Collect local Design Thinking stories and case studies and make them available for those interested in learning more about the application of Design Thinking. Theses case studies will also be available for practitioners to use in their workshops and training sessions. Creating an open online platform dedicated to Design Thinking in Arabic could be a channel for submitting and reading about these local stories.

6.2.2 Time Management

In the Stanford-Potsdam Design Thinking education tradition, when running workshops or trainings on Design Thinking, it is known that conforming to the planned agenda and time slots allocated for each session is a rule. Using a timer on

each table to warn the team that time is up or about to finish is very common. One of the team members is even assigned to be a ‘time keeper’ and her/his mission is to watch the time and try to keep the team on track. Despite the fact that some teams could fall behind in time and will not finish the given task within the allotted time period, they would still stick to the timer and try to speed up in the next session to finish the task from the session before as well as the current task. As discussed earlier, this concept might be challenging when running Design Thinking trainings in the Arab region, not only because of the polychronic nature of Arabs, but also because of their social nature which sometimes leads to conversations away from the task at hand. Despite the efforts made by the coaches to control this, it is better to allow these side conversations as they strengthen the sense of community which has a positive influence on the participants and may encourage some members to work on their project after they go home. In this case, and to better control the situation, the training designer should be able to design the agenda in a way that leaves buffer time in between sessions. If a session requires 45 minutes practical time, it is advised to book it on the agenda for a 50-60 minute slot. At the same time, the coaches should also be more flexible and try not to be extremely firm if the team does not finish their task on time. By creating a friendly atmosphere, the coaches may easily push the participants to work harder in the following session or give them ‘a homework’ that they need to finish before they return the next day. Most of the time, participants of the observed trainings asked if they have homework, which indicates their willingness to work later.

Regarding time with respect to planning a training, it is important to keep in mind not to plan for anything during Ramadan, the Muslim holy month of fasting, and the Eids, the two major Muslim festivals, as most likely the planned events will not take place. Also, plans may change if discussed a long time before the event because “Arab culture and the concept of fatalism are not conducive to long range planning and require at least a confirmation in the week prior to the planned event.” (NO, 2006, p. 26).

6.2.3 Tackling Ambiguity and Minimizing Unstructured Situations

Many participants expressed the need for highly structured guidance, and also seemed not to be comfortable in ambiguous processes. The following recommendations might be helpful in tackling ambiguity:

- In a training set-up, provide each team with a printed copy of the slides presented about each phase. They will use this as a reference to the knowledge offered in case they missed a point during the presentation or they want to check it again.
- Provide clear instructions for each activity/exercise and go through all details with the participants before they start the activity. A hard copy of the steps of the activity is suggested to be distributed among teams.
- Collect local case studies and use them as examples in the theoretical part to educate the audience. This will make the participants feel more connected to the topic, rather than hearing about cases that happened in the U.S., India or Europe, which may create some sense of uncertainty about the applicability of this methodology in the Arab region.

6.2.4 Warm-ups

Despite the successful integration of warm-ups in Design Thinking trainings that are run in the West, it is always advisable to select warm-ups and other methods and activities that suit the target group. Tschepe (2018) emphasizes knowing the audience and the people involved before starting any activity. All observed trainings in this study happened to be facilitated mostly by coaches who are originally born and raised in the Arab region, despite being affiliated with a ‘Western’ entity. Therefore, the warm-ups they chose were mostly appropriate. In

one workshop, there were coaches from the West who proposed a few warm-ups that were deemed inappropriate to the cultural context so they were excluded from the list. If these coaches were not accompanied by Arab colleagues, problems with the participants (and the training organizers) might have happened. As Design Thinking is currently on the rise in the Arab region, especially in the gulf area, where many Western Design Thinking consultants and practitioners tend to work, it is always necessary to check with local colleagues on what is appropriate and what is not in terms of gender interaction and established values and norms in the region. For Arab practitioners, there is a large list of warm-ups that are available by the d.school and other institutions, therefore, appropriate warm-ups can be selected and others can be adapted to suit the Arab culture. However, it is also recommended to design other warm-ups that are inspired by the culture and will be accepted and enjoyed by all participants. A compiled, accessible list of warm-ups for Arab audiences (in Arabic and English) could prove handy to all practitioners.

6.3 Implications of Research Findings

Based on the thorough literature review conducted as part of this study, it was revealed that there is no published study, which investigates the state of Design Thinking in the Arab world, and how it has emerged, has been perceived and practiced by people in the region. Therefore, this work is one of the first novel studies that contributes to the existing knowledge of the history and emergence of Design Thinking in general, with a focus on one non-Western cultural context in particular: The Arab world. Non-Western contexts are often under-researched (Taheri, 2021) and more research is encouraged to be conducted in different regions in the world so that a better understanding of the emergence and spread of Design Thinking around the world can be achieved. This study also provides actionable recommendations to equip local, as well as international Design Thinking educators, practitioners and facilitators, with the needed insights and advice on how to design and deliver successful training programs in the region.

This study provides the following main contributions:

- Establishing a knowledge foundation on the state and practice of Design Thinking in the Arab world that could be the starting point for future researchers.
- Providing validated questionnaire and interview guides that can be adapted for future research to continue the investigation over the coming years and to explore if and how the situation will evolve. The mentioned instruments can also be used by other researchers who choose to explore a similar topic in different cultural contexts.
- Providing a list of recommendations for educators and practitioners to be considered when designing and delivering Design Thinking programs and trainings in the Arab region or in any other cultural context that is similar to that of the Arab culture.

6.4 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study has been very extensive in its scope and intended outcomes. Though, similar to all research studies, it encountered some limitations that can be summarized as follows:

- When conducting the literature review, "Arab" and "Arabic" were the only two English keywords identified to perform a web search focusing on Arabic-speaking countries. The Arab world, however, consists of 22 countries. Hence, a country by country filtration may yield more articles and expand the understanding of the state of Design Thinking in the region. Moreover, a few Arab countries primarily communicate in French, including Morocco, Tunisia, and Algeria. This analysis does not include French-language

publications and events in the Arab region. Therefore, further research that explores a country by country situation as well as further investigates articles and papers published in French is highly recommended to give an expanded understanding of the topic.

- Most of the collected data in the literature consists of news reports, blogs, and online articles whose web links may change over time. Hence, it is possible that some of the events that happened earlier when Design Thinking started to emerge in the region might have been missed.
- Additionally, two methodological limitations were encountered when conducting and analyzing the social media analysis part of the study, and future research may assist in resolving these concerns. First, in the data-gathering phase, it was challenging to identify the respective country from which around 24% of Arabic tweets originated, as some tweets were posted without a geotagged location. This constraint was mitigated by manually examining user profiles to determine their country of origin and/or country of residence, which was successful for around 10% of tweets without geotag information. These tweets were included in the geo-located data set, while the remaining tweets for which an originating country could not be identified were reported as non-geotagged.

  Secondly, this study did not cover tweets in the French language, as the primary objective of this first initiative was to compare English (the language in which Design Thinking was initially conceived) with Arabic discussions. However, similar to the literature review concern, excluding French will likely result in an underrepresentation of Arab North African Twitter users, most of whom tweet in French. This is most likely to affect Tunisia, Algeria, Morocco, and, to a lesser extent, Lebanon. There may have been tweets on Design Thinking from these countries that were not

harvested in this data set as a result of the exclusion of French tweets.

- Although the questionnaire was distributed via social media channels with the hope of reaching as many people in the Arab region as possible, some Arab countries did not have any representation in the responses. These countries are Comoros, Kuwait, Libya, Oman, Qatar, Somalia, and Sudan. Also, other countries did not have a strong representation in the survey, although they rank among the highest contributors to Design Thinking knowledge on Twitter. Replicating the questionnaire and finding other channels of distribution might increase the response rate in all Arab countries, which will enable the extraction of deeper insights of the researched problem.
- All of the observed trainings happened during a short time period as each training ran over 1-3 days. Despite the fact that many important findings were revealed, further findings could potentially be uncovered by observing a full academic Design Thinking program that runs for a longer period of time. Although Design Thinking was reported to be mainly practiced in the education sector, not many programs exist at the moment. There were only four programs the researcher was aware of. One of the programs that was mentioned by one interviewee seems to be implemented in several universities in the UAE. The researcher reached out to one of the UAE universities and spoke to two educators who were part of the cohort trained by Stanford and worked on designing that program. The researcher was informed that the program was applied at their university for one semester only but then stopped as the management did not believe in its value. An attempt was made by the researcher to contact the educators at Stanford University who designed the program, to hear their views on the design process and their interaction with Arab audiences, as well as their experience in

designing for the Arab culture. The researcher did not receive any response, and could not gather additional information on this program.

Another program running in Lebanon was mentioned by one interviewee has also not been verified in terms of what modules the students are studying and what their views are about Design Thinking as the interviewee stated that they were still working on customizing the program to fit the local context as it was copied from a French university. The third program, however, was a module that runs at a female-only Saudi university as part of an MA program in entrepreneurship, whereas no further information was provided on the other modules. Finally, the fourth program was revealed by the literature review and after further investigation, it doesn't seem to be still running. Future research that focuses on the educational sector and investigates the mentioned programs, as well as explores if other universities in the region are currently offering programs in Design Thinking is highly important and recommended for future observation and investigation.

Besides the section of recommendations on what factors need to be considered to build the local capacity in Design Thinking in the Arab world and further spread Design Thinking in the region, future researchers are encouraged to think about and pursue the following ideas and suggested questions:

Design Thinking awareness and bridging the gap between Design Thinking and decision makers

- HMW establish awareness of Design Thinking among decision makers?
- HMW advance the Design Thinking movement that already started in the gulf region and support new movements in other Arab countries?

Customization, adaptation and development of Design Thinking

- HMW design new tools and tailor Design Thinking trainings to respect and better fit the Arab culture?

- HMW create new warm-ups, tools and methods to use Design Thinking in non-Western contexts such as the Arab world?

- HMW adapt existing Design Thinking tools and methods to suit the Arab culture?

Introducing and Integrating Design Thinking in Education

- HMW design new programs that fulfil the needs of future generation?
- HMW integrate Design Thinking into existing curricula and foster project-based and experiential learning to support students in developing 21st century skills?

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APPENDICES

This section contains the following appendices:

- Appendix A: Survey Questions
- Appendix B: Interview Guide
- Appendix C: Interviews Themes, Subthemes and Codes

APPENDIX A: SURVEY QUESTIONS

Dear brothers and sisters,

We invite you to participate in this survey, which is part of a scientific research aimed at investigating the state of "Design Thinking" in the Arab world.

Kindly take part in the survey even if you have not heard of this term before.

The duration of the survey is about 8-10 minutes. Your answers will be treated anonymously and confidentially.

If you have any questions, please contact…

إخواننا وأخواتنا،

ندعوكم للمشاركة في هذا الاستبيان الذي يشكل جزءاً من بحث علمي يهدف إلى تقييم واقع "التفكير التصميمي" في الوطن العربي.

الرجاء المشاركة في الاستبيان حتى إن لم تكن قد سمعت بهذا المصطلح من قبل.

تستغرق مدة الاستبيان حوالي ٨ - ١٠ دقائق. سيتم الاحتفاظ ببيانات الاستبيان بأسلوب لا يحدد هوية المشاركين.

اذا كان لديكم أية أسئلة الرجاء التواصل مع…

1- Have you heard the following terms before (i.e. before you learned about this survey)?
هل سمعت بهذه المصطلحات من قبل؟ (قبل مشاركتك في هذه الدراسة؟)

- o التفكير التصميمي
- o التصميم المتمحور حول الإنسان
- o الفكر التصميمي
- o التصميم التفكيري
- o لم أسمع بأي من هذه المصطلحات قبل اليوم (haven't heard this term before)

[If their answer was "haven't heard this term before", they move to Q 16]

For easier flow of the survey, we will use the term (التفكير التصميمي) from now on
لمواصلة الاستبيان بشكل أسهل، سنستخدم مصطلح "التفكير التصميمي" من الآن فصاعداً

2- Please complete the following sentence [multiple answers permitted]:
الرجاء أكمل الجملة التالية:

"To me, Design Thinking is primarily about…
بالنسبة لي، التفكير التصميمي هو

a) Creating attractive visual designs التصميم البصري الجذاب أو الأعمال الفنية كالرسم مثلاً
b) Innovation الإبتكار
c) Human-centred problem solving إيجاد حلول للمشاكل النابعة من حاجات إنسانية

[If their answer was "Creating attractive visual designs", they move to Q 16]

3- Where have you heard about the term "Design Thinking" for the first time?
أين سمعت بالتفكير التصميمي لأول مرة؟

☐ I am not sure لست متاكداً
☐ In an Arabic online course من خلال مقرر (كورس) باللغة العربية على الإنترنت
☐ In an English online course من خلال مقرر (كورس) باللغة الإنكليزية على الإنترنت
☐ In a school or university class في المدرسة أو الجامعة
☐ At work في مكان عملي
☐ In the social media عن طريق شبكات التواصل الإجتماعي
☐ In the news في نشرات إخبارية
☐ In a brochure or advertisement في كتيّب أو ملصق إعلاني
☐ In an Arabic article or book من خلال كتاب أو مقالة قرأتها باللغة العربية
☐ In an English article or book من خلال كتاب أو مقالة قرأتها باللغة الإنكليزية
☐ In an Arabic YouTube video من خلال فيديو باللغة العربية شاهدته على اليوتيوب
☐ In an English YouTube video من خلال فيديو باللغة اللإنكليزية شاهدته على اليوتيوب
☐ In an Arabic workshop/training من خلال ورشة عمل أو تدريب التحقت فيه قُدّم باللغة العربية
☐ In an English workshop/training من خلال ورشة عمل أو تدريب التحقت فيه قُدّم باللغة الإنكليزية
☐ A friend spoke about it عن طريق صديق
☐ A colleague spoke about it عن طريق زميل لي في العمل
☐ Other: _____ من مصدر آخر (الرجاء ذكره)

4- Think of the first time when you got in touch with Design Thinking (whether you read about it, studied it or worked with it). In which year was this? _____

متى كانت المرة الأولى التي تواصلت فيها مع التفكير التصميمي (سواء بالقراءة عنه أو دراسته أو العمل به) ؟

5- Have you personally *studied* Design Thinking before?
☐ No لا ☐ Yes نعم

هل سبق ودرست التفكير التصميمي من قبل؟

[If people answer "No", they move to Q 7]

6- Where did you study Design Thinking before? _____
أين درست التفكير التصميمي من قبل؟

7- Have you personally *worked* with Design Thinking before?
☐ no لا ☐ yes

هل سبق وعملت في مجال التفكير التصميمي من قبل؟

[If people answer "no", they move to Q12]

8- In which sector did you work with Design Thinking before?
في أي قطاع عملت في التفكير التصميمي من قبل؟
☐ Education (teaching, curriculum design, etc.) في قطاع التعليم (تدريس, تصميم وإعداد المناهج, الخ)
☐ Information and communication في قطاع المعلومات والإتصالات
☐ Information technology في قطاع تقنية المعلومات
☐ Entrepreneurship في قطاع ريادة الأعمال
☐ Health care في قطاع الصحة
☐ Non-for-profit organization في قطاع المؤسسات غير الربحية
☐ Retail في قطاع التجارة والمبيع
☐ Financial and insurance في القطاع المالي أوالتأمين

☐ Manufacturing في قطاع التصنيع
☐ Other: _____(الرجاء ذكره) في قطاع آخر

9- What was the size of the organization/institution/company at which you worked (when interacting with Design Thinking)?

ما هو حجم الشركة / المؤسسة/ المنظمة التي عملت بها (خلال ممارستك للتفكير التصميمي)؟

☐ 1-9 employees 1 - 9 موظف
☐ 10-49 employees 10 - 49 موظف
☐ 50-249 employees 50 - 249 موظف
☐ 250+ employees اكثر من 250 موظف

10- At which kind of organization/institution/company did you work (when interacting with Design Thinking)?

ما نوع الشركة / المؤسسة/ المنظمة التي عملت فيها خلال ممارستك للتفكير التصميمي؟

☐ An Arabic company شركة عربية
☐ A branch from a foreigner company, with their headquarters in _____ [country]
فرع من شركة أجنبية مقرها الرئيسي في ... (الرجاء تسمية اسم الدولة)

11- How long have you acted in the following roles?

كم من الوقت صرفته من خلال ممارستك للأدوار التالية؟

	Never أبداً	A few hours or days بضعة ساعات أو أيام	Some weeks or months بضعة أسابيع أو أشهر	More than a year أكثر من سنة
Learn Design Thinking تعلم أو دراسة التفكير التصميمي	☐	☐	☐	☐
Teach Design Thinking تدريس التفكير التصميمي	☐	☐	☐	☐
Apply Design Thinking in a teamwork project تطبيق التفكير التصميمي في مشروع يتطلب تعاون مع أفراد أو زملاء آخرين في العمل	☐	☐	☐	☐
Apply Design Thinking in single-person work تطبيق التفكير التصميمي في عمل فردي	☐	☐	☐	☐
Facilitate Design Thinking as a team coach قمت بتدريب أشخاص على التفكير التصميمي	☐	☐	☐	☐
Offer counselling based on Design Thinking قدمت استشارات تخص التفكير التصميمي	☐	☐	☐	☐
Establish Design Thinking in an organization أسست للتفكير التصميمي في الشركة التي تعمل بها	☐	☐	☐	☐
Conduct research on Design Thinking قمت بإجراء بحث علمي عن التفكير التصميمي	☐	☐	☐	☐
Publish about Design Thinking نشرت مقالات عن التفكير التصميمي	☐	☐	☐	☐
Organize Design Thinking workshops نظمت ورشات عمل عن التفكير التصميمي	☐	☐	☐	☐

Develop Design Thinking curricula صممت وطورت مناهج تعليمية عن التفكير التصميمي	☐	☐	☐	☐
Develop Design Thinking training materials طورت مواد تدريبية لورشة عمل عن التفكير التصميمي	☐	☐	☐	☐

12- What do you associate with persons who are good design thinkers?
A good design thinker…

ماهي برأيك الصفات التي يجب ان تتوفر في المفكر التصميمي الجيد؟

☐ Has many ideas لديه العديد من الأفكار
☐ Has crazy ideas لديه أفكار مجنونة
☐ Has diverse ideas لديه أفكار متنوعة
☐ Is sensitive to needs لديه حس عالي بالإحتياجات
☐ Is collaborative متعاون
☐ Tries new things يجرب أشياء جديدة
☐ Is playful مرح
☐ Is humorous لديه روح الدعابة
☐ Loves to invent يحب أن يخترع
☐ Is confident واثق من نفسه
☐ Changes her environment يغير من محيطه
☐ Is a good artist فنان جيد
☐ Is a good scientist يعمل في مجال العلوم (هو عالم جيد)
☐ Visualizes thoughts باستطاعته التعبير عن أفكاره برسوم توضيحية
☐ Learns from failures يتعلم من التجارب الفاشلة
☐ Can observe without being judgemental باستطاعته مراقبة الأمور بتجرد بدون الحكم عليها
☐ Has strong rational, logical abilities لديه قدرات منطقية قوية
☐ Is knowledgeable of creative processes ملم بالمسارات الإبداعية
☐ Holds or acquires deep domain expertise لديه خبرة عميقة في المجال الذي يعمل به
☐ Develops many prototypes باستطاعته تطوير العديد من النماذج الأولية
☐ Has personal intuitions of what should be achieved لديه حدس شخصي لما ينبغي تحقيقه

13- What do you think could be accomplished if Design Thinking was more broadly applied in your region?

ماهو الشيء الذي باعتقادك يمكن تحقيقه إذا تم تطبيق التفكير التصميمي على نطاق أوسع في منطقتك؟

14- Is there something else about Design Thinking in your region that you would like to bring to our awareness?

هل هنالك أي إضافات بخصوص التفكير التصميمي في منطقتك ترغب في لفت انتباهنا إليها؟

15- Is there a Design Thinking expert in your region to whom we should definitely talk? __

هل لديك أية معلومات عن خبير عربي في التفكير التصميمي تقترح علينا أن نتواصل معه؟

16- How old are you? ___ years كم عمرك
17- gender: ☐ male ☐ female الجنس

18- Your nationality:_____ الجنسية
19- Your educational background: _____ الخلفية العلمية

If you would like to be contacted for further interview, please submit your email address here:

إذا كان لديك رغبة بالتواصل معنا والتحدث أكثر بالموضوع, يرجى تزويدنا بعنوانك البريدي الالكتروني (الإيميل)

Thank you very much for your participation and the invaluable contributions you have made to this research!

شكرًا جزيلاً على مشاركتك القيمة في هذا البحث

APPENDIX B: INTERVIEW GUIDE

The following questions were asked after the author introduced herself, the purpose of the study, and thanked the interviewees for taking part in it:

Introduction	• Could you please introduce yourself and tell me a bit about your work at the moment? • How long have you been working there? • What is your educational background?
Introduction to Design Thinking	• How did you hear about Design Thinking? • When was the first time you got to interact with it? • Did you study Design Thinking? When and where? For how long? • Have you had any professional training in Design Thinking? (How long? And where have you been trained?)
Understanding of Design Thinking Design Thinking Practice in their Organizations:	• Do you remember what your very first Design Thinking challenge was about? • What was on your mind when you went home afterwards? • How would you explain what Design Thinking is to friends or relatives? • What would you recommend to someone who is interested in Design Thinking? • How often do you practice Design Thinking in your organization? (The place where you work at, university, company, NGO, etc.) • How has the organization changed, in which you work, through Design Thinking?
Design Thinking in Arab Countries	• How do you experience Design thinking in the Arab culture? • What is special about it? • You have been exposed to Design Thinking in the Western culture, how different practicing it there to practicing it in the Arab world? • Do you happen to recall any challenging situations you ran into when training Arabs on Design Thinking? • Do you think that Design Thinking can be adapted to the Arab culture? • In which Arab countries do you see Design Thinking being adopted the most? Why? • What do you think should be done in the Arab region to promote Design Thinking more?

APPENDIX C: INTERVIEWS THEMES, SUBTHEMES AND CODES

Themes & Subthemes	Codes
Introduction to Design Thinking	• First time they heard about Design Thinking • First time they interacted with Design Thinking
Understanding of Design Thinking	• A methodology to solve problems creatively • A way to come up with creative solutions that work for the people you are solving their problems • A way to innovate • A mindset • An innovation process • A problem solving mindset and a set of tools • A method that helps to systematically develop an innovative business idea • An approach focusing on human aspects • An innovative process to solve problems with the users • A creative problem solving tool
Feelings After Tackling the First Challenge of Design Thinking	• Enthusiasm, transformation, and fulfilment • Good feelings • Sad they did not have that before • A striking moment • An eye opening • It felt too natural • The methodology is like magic
Mindset, Religious Beliefs and Cultural Norms in the Arab world (culture)	• Religious beliefs and social norms influence the behavior of Arabs • Arabs block their own creativity potential • Fear from the beginning like something is blocking • Arabs are not ready as maybe as German or Europeans • People are worried about not making things good • People do not accept feedback • People are ambitious but they give up quickly • Empathy is at the core of Arabs beliefs • Arabs do not apply empathy properly in Design Thinking • The Arab culture is based on competition not cooperation • Arabs are collectivists

Adoption of Design Thinking in Arab Countries and the Challenges of Western Influence there	• People in the gulf region prefer to work with Western experts • Companies' references are clearly the West • Western content needs to be customized • Design Thinking is strongly present in the gulf region • Design Thinking is still in its infancy phase in some Arab countries • Design Thinking is one of the hardest things to apply in Arab culture • Design Thinking is limited in the Arab North African countries • Western experts say this is how you need to practice Design Thinking without understanding the context of the region • Design Thinking practice is not consistent in the region • The process of Design Thinking can be applied in the region but Arabs should be working on the challenges • Most Westerners are not familiar with Arab challenges • No Arabic content is available • English language is a barrier when practicing Design Thinking in the region • No local case studies or success stories • Lack of resources and guidance in Arabic • Lack of capabilities and investment in Design Thinking
Design Thinking Practice and Challenges in Organizations:	• Mandatory training for employees • Design Thinking provides new ways to look at new business opportunities • Prototyping new business ideas before making a decision • There is a resistance inside organizations • The management had doubts • Organizations allocate funds not time for co-creation • Consulting companies need results without getting involved with the process • Changing and adapting the process • Change happens faster when working with decision makers
How to Spread Design Thinking in the Arab World? Shifting Mindset	• Spread it slowly • It is hard for people to understand how a shift in mindset can make a difference • Encourage Arabs to embrace ambiguity, experiment and take risks • Enhance the Design Thinking mindset

Role of Education	• Invest in education • Integrate Design Thinking into education • Educate people in their language • Big universities should advocate for Design Thinking • Create local Arabic content and case studies • Provide clear instructions

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