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Exploring the Potential Role of 3D Technologies in Democratizing Cultural Access in the EU and Türkiye

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Thesis Pitch

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TABLE OF CONTENT

Abstract **7**

1. Introduction **8**

3. Literature Review **15**

4. Democratization of Cultural Heritage and Accessibility **19**

4.1. Cultural Heritage: Its Conceptual Definition and Interaction with Democratization 19

4.2. Why Does Access to Cultural Heritage Matter? Efforts to Increase Cultural Participation of Disadvantaged Groups. 20

4.3. Digitalization and Cultural Heritage 24

4.3.1. The Potential Role of 3D Technologies in Democratizing the Access to Cultural Heritage 25

4.3.2. Success of 3D Projects with Examples 27

4.3.3. Limitations, Challenges and Ethical Considerations 30

4.3.3.1. Digital Divide and Lack of Access to Technology 31

4.3.3.2. Cost and Technical Challenges 32

4.3.3.3. Ethical Considerations 33

5. Digital Cultural Heritage Policies in the EU and Türkiye **34**

5.1. Türkiye's Steps to Democratize Access to Cultural Heritage in Line with EU Candidacy 34

5.2. Digitalization Policies of the European Union 36

5.2.1. 3D Technologies in the EU's Cultural Policies 38

5.2.2. The EU's Funding Mechanisms and 3D Cultural Heritage 39

5.2.2.1. Digital Europe Program 39

5.2.2.2. Horizon Europe 40

5.2.2.3. Creative Europe 41

5.3. Türkiye's Policies on Digitalization of Cultural Heritage 42

6. Analysis of the Practices of the European Union and Türkiye **49**

6.1. Differences Between Their Strategic Visions 49

6.2. Differences Between Practical Implementations 50

6.3. Differences Between Funding Mechanisms 50

6.4. Conceptualization of the User and Participatory Design 51

6.5. Multisensory and Multilingual Access 51
6.6. Technological Standardization and Interoperability 52
6.7. Similarities Between Practices of Türkiye and the EU 52
7. Discussion and Conclusion 53

List of abbreviations and acronyms 57

Bibliography 59

Abstract

This thesis explores the potential role of 3D technologies in making cultural heritage more accessible to disadvantaged groups. The aim is to understand whether and how these technologies can support a more democratic engagement with cultural heritage. The main research question investigates the challenges and potential of digitalization to democratize and sustain access to cultural heritage in Türkiye and the EU. The study examines the key policy documents, projects and initiatives in both the EU and Türkiye and how EU digitalization strategies and funding mechanisms have influenced or inspired similar actions in Türkiye. It adopts a comparative case study analysis and utilizes data which are derived from document-based qualitative analysis of strategic policy papers, frameworks, institutional practices, policy instruments, and academic publications. Findings show that 3D technologies can create more inclusive and interactive experiences, particularly for people who cannot easily access traditional museum spaces or who benefit from tactile or multi-sensory engagement. The thesis argues digital tools offers significant opportunities for inclusion; their impact depends heavily on policy support, long-term funding, and a clear commitment to accessibility. The research suggests that Türkiye has made significant progress in recent years but still faces challenges in ensuring that digital cultural heritage initiatives are equitable and widespread. It also indicates that stronger cooperation with EU institutions and deeper understanding of the specific needs of disadvantaged groups could all help bridge the existing gaps. It concludes that technology alone cannot guarantee inclusion; however, it can be a powerful tool when combined with inclusive thinking and effective policy to make cultural heritage a shared experience for all.

1. Introduction

Cultural heritage is an important collective legacy shaping societies' historical identities and values. The definition of cultural heritage, which has evolved, is not limited to monuments, historical and objects of art. It includes intangible elements such as traditions, languages, music and lifestyles as well (UNESCO, 2024), Article 2). However, not all individuals have equal access to cultural heritage. Due to economic, geographical, physical or social factors, disadvantaged groups face various barriers in cultural life. Cultural access is not only an individual choice but a universal human right. Accordingly, it is possible to argue that states have an obligation to guarantee access to cultural heritage and support everyone's participation in cultural life. However, in many countries it is not sufficiently guaranteed, especially for people living in rural areas, people with disabilities, low-income groups and children. Today, technological advances offer new possibilities to overcome this problem. Digitalization and three-dimensional (3D) technologies have potential for the preservation and dissemination of cultural heritage to wider audiences (Malik et al, 2021; Neumüller et al, 2014). Thanks to 3D scanning, modelling and printing technologies, cultural artifacts are transferred to the digital environment, making it possible for many individuals to interact with these artifacts. For example, a visually impaired individual touching and experiencing an artifact reproduced with a 3D printer or a remote student examining a cultural asset in 3D through digital platforms are concrete examples of how these technologies can increase accessibility. In this sense, digitalization stands out as an innovative tool that can contribute to the democratization of cultural participation. (Murray, 2005) According to Tony Bennett (2001), democratization of cultural participation has two approaches. First is "to democratize the culture" aiming to equalize the conditions to access culture while the second is "cultural democracy" which advocates for equal respect for cultural values and preferences of diverse groups in the culturally diverse societies (Bennet, 2001). As Belfiore et al (2023) stated it requires "policies that strive for inclusion, diversity and access to the means of both cultural production and distribution".

The EU attaches significance to digitalization to increase cultural access and supports campaigns such as Twin it! 3D for Europe's Culture (Europeana Foundation, 2025) and digital cultural heritage platforms such as EUROPEANA (Europeana Foundation, n.d.).

Türkiye[1], on the other hand, has made some progress in this area, but still needs to improve its digitalization policies, especially compared to the comprehensive implementation at the EU level. The fact that Türkiye is still a candidate country for accession to the EU brings along the obligation to align its cultural policies with EU standards. This makes a comparative analysis of digital cultural heritage policies necessary and meaningful.

This thesis aims to examine the potential role of digitalization and 3D technologies in access to cultural heritage from a comparative perspective through the examples of Türkiye and the European Union. Accordingly, the study will be shaped around one main question: "What are the challenges and potential of 3D technologies and digitalization to democratize and sustain access to cultural heritage in Türkiye and the EU?". I will use three sub-questions to answer this question. These sub-questions are a) What are the digitalization and cultural access policies of the EU and Türkiye? What are the similarities and differences between them? b) How can European and Turkish digitization projects increase access to cultural heritage for disadvantaged groups? c) What are the impacts of Türkiye's EU accession process on the democratization of cultural heritage access in Türkiye?

The study will assess what role these technologies can play, especially in terms of increasing the participation of disadvantaged groups in cultural life. It will also discuss how Türkiye can benefit from EU practices. At the same time, how cultural participation can be made more inclusive will be one of the main focal points of the research. It will also address the opportunities offered by these technologies as well as their limitations and ethical issues.

There are several main reasons for choosing Türkiye for this study. Türkiye's accession process is not only subject to political and economic criteria, also known as the Copenhagen Criteria, established in 1993 by the European Council (European Union,

[1] In line with the official change by the Republic of Türkiye, this thesis uses the country's official name "Türkiye" instead of "Turkey" in English. The EU also updated the name accordingly in all official documents and communications. However, in quotations or references to official documents published prior, the original usage of "Turkey" has been retained for accuracy and consistency.

n.d.), but also to cultural perceptions (Aydın Düzgit, 2009). Since 1987, when Türkiye officially applied for full membership, it has been argued that it should not be a member of the EU due to its cultural differences (Endruweit, 1998). The Turkish scepticism prevalent in EU public opinion is fuelled by reservations about Türkiye's Muslim identity and large population, in addition to its shortcomings in democratic standards, human rights and freedom of expression. Former French President Valery Giscard d'Estaing stated in 2002 that Türkiye was not a European country, it belonged to another culture and lifestyle, demonstrating that cultural differences have been used as a key argument against Türkiye's membership (Aydın Düzgit, 2009). The growing far-right movements in Europe and debates over cultural differences have deepened concerns about Türkiye's integration into Europe's cultural identity (Levin, 2018, p. 161). This makes the cultural dimension an important obstacle in the accession process.

Although this study is not based on debates on cultural identity, the importance of culture in the relations between the two sides is indisputable. As a candidate country, Türkiye is expected to harmonize its policies with the EU and cultural policies are one of these areas. Cultural and education policies are left to the jurisdiction of the member states as stated in the Article 6 of the Treaty on the Functioning of the European Union (TFEU). It "recognizes that the EU's competences in the field of culture are to carry out actions to support, coordinate or supplement the actions of the Member States" (EU, 2008). However, the EU has provisions regarding cultural rights in the Charter of Fundamental Rights, which has the same value as the EU Treaties (EU, 2007). In this context, as a candidate, Türkiye must align its cultural policies with these principles, particularly ensuring respect for cultural, religious, and linguistic diversity, as well as safeguarding the right to participate in social and cultural life. As Tuuli Lähdesmäki et al. (2021) stated, EU institutions, especially the Commission emphasized the importance of citizens' access and participation in cultural heritage, noting that this participatory approach aimed to build an "inclusive Europe". Additionally, the EU's cultural programs have prioritized improving access to culture and particularly aimed to address unequal opportunities for access among disadvantaged groups (ibid, p. 60). European Cultural Agenda, adopted first in 2007, is a document constituting the EU's strategic framework and policies in cultural field. While the first version aimed to promote cultural diversity, aim of the New

European Agenda for Culture 2018 has expanded the scope and set three main strategic objectives including social, economic and external dimensions. Under social dimension, it aims to use culture to enhance social cohesion, promote cultural diversity and to increase citizens' access to cultural heritage while building an inclusive Europe (Cultural Relations Platform, 2018).

Türkiye, with its rich history and multilayered cultural heritage, has both significant opportunities and serious structural problems in the context of democratization of cultural access. Access to cultural life, especially for disadvantaged groups, is limited by various social, economic and geographical barriers. This makes Türkiye a highly relevant case to examine how digitalization and 3D technologies can play a role in access to cultural heritage.

My motivation for this study is not based solely on an academic interest. As a citizen of Türkiye and someone who grew up as part of a socioeconomically disadvantaged group, I had the opportunity to observe first-hand the difficulties faced by children and disadvantaged individuals, especially in rural areas, in participating in cultural life. On the other hand, while continuing my education in Europe, I witnessed successful projects in EU countries to digitize cultural heritage and make it accessible to all. The difference between these two experiences led me to investigate how Türkiye can make more effective use of digital technologies in accessing cultural heritage. Therefore, this study is both an academic analysis and a synthesis of personal observations and experiences.

This thesis consists of four main chapters, in addition to this Introduction, Literature Review and Methodology, in which I explain the method used in the research. I explain the qualitative methods used in the research and the data collection tools. The first main chapter (Chapter 4) discusses the democratization of cultural heritage, the right to cultural access, and the place of digitalization in the protection of cultural heritage. It also discusses the impact of digitalization in this field and the possibilities offered by 3D technologies as well as ethical issues. The following chapter (Chapter 5) discusses digital cultural heritage policies in the EU and Türkiye. It discusses the role of Türkiye's efforts for alignment with EU policies in the democratization of the cultural field. It also examines how the EU's digitalization strategies and financial instruments have supported

this transformation, alongside an analysis of Türkiye's own policies and implementations in this area. Chapter 6 comparatively analyses and assess the practices and policies on digital cultural heritage in the EU and Türkiye. In this section, the strengths and weaknesses of both actors are presented and interpreted in the context of the findings. Finally, "Findings and Discussion" chapter presents a synthesis of data from both the literature and policy documents, summarizing the main results of the research.

2. Methodology

This thesis adopts a comparative case study (CCS) analysis, which focuses on the EU and Türkiye as the primary cases to investigate how 3D and digital technologies are employed to democratize access to cultural heritage. The approach is suitable for the intersection of policy and practice across different cultural and institutional contexts. According to Bartlett and Vavrus (2017), CCS is valuable for analysing how global trends interact with local structures, allowing researchers to uncover not only similarities and differences but also contextual factors shaping outcomes. This makes the method appropriate for examining how government bodies, cultural institutions, and researchers in Türkiye and the EU respond to digital cultural heritage policies.

In this study, the EU and Türkiye were selected because of their asymmetrical but interconnected relationship, particularly shaped by Türkiye's EU accession process and its alignment with EU cultural policies. They represent distinct governance models in the field of cultural heritage. While the EU provides overarching strategic and robust frameworks and funding instruments to promote digitalization, accessibility, and inclusiveness in the cultural sector, Türkiye has engaged with EU norms and values to varying degrees and pursued its own domestic strategies. Comparing these two cases enables an exploration of how European integration influences national cultural policies.

The study involves a detailed, document-based qualitative analysis of strategic policy papers, frameworks, institutional practices, and policy instruments. Primary data are derived from official policy texts, project websites and academic publications. Documents analysed include official EU strategic papers such as Digital Agenda for Europe, New European Agenda for Culture, Türkiye's 12th Development Plan (2024–2028), along with the Strategic Plan of the Ministry of Culture and Tourism**.** These documents are assessed to understand how cultural digitalization and accessibility are framed and prioritized at the policy level. The study specifically compares EU-funded initiatives such as Twin It! 3D, 5DCulture**,** EUreka3D**,** ARCHES, and INCEPTION with selected national-level initiatives in Türkiye, including the Virtual Museum Platform (Sanal Müze)**,** İZDEM**,** and the Bongo Art Project**.** These are supported by academic literature and news articles to provide a detailed view.

Despite its strengths, the method has some limitations. First, generalizability is limited due to the small number of cases. Second, the quality and accessibility of data and documents vary between the EU and Türkiye. Additionally, the study does not include primary fieldwork or interviews, which could provide deeper insights into implementation challenges and user experiences.

3. Literature Review

Cultural heritage is associated with various disciplines such as archaeology, social sciences, geography, anthropology, information technologies and museology, and studies in these fields constitute a huge corpus. For this reason, in this literature review I narrowed the scope and focused on studies on the place of 3D technologies in the digitization of cultural heritage and the democratization of access to culture. It is seen that studies in the field have intensified since the 2000s and especially projects on 3D modelling, augmented reality (AR) and virtual reality (VR) have been widely covered. However, it is noteworthy that studies on the democratization of access to cultural heritage through digital technologies are limited.

The reproduction of works of art has long been a subject of debate. In his article *The Work of Art in the Age of Its Technological Reproducibility* (2008), Walter Benjamin argues that the reproduction of artworks with technological developments causes them to lose their "aura". Emphasizing that our relationship with tradition and art has changed with technology, Benjamin argues that technological reproduction weakens the "aura" (originality and uniqueness) of artworks. In literature, it is argued that reproduction with 3D technologies has a similar effect. Khunti (2018) criticizes the reproduction of the Triumphal Arch in Palmyra with 3D technology, claiming that the 3D reproduction loses its authenticity in terms of material and size. Similarly, Wilson et al. (2018) argue that 3D prints limit the "perception of reality", especially material differences, which weaken the historical context. There are studies arguing that 3D technology is not a substitute for reality (Hindmarch et al, 2019). However, with technological developments, digitalization has become one of the important tools in recent years in the context of preserving and increasing access to cultural heritage (Malik et al, 2021; Neumüller et al, 2014).

3D data collection methods enable the digital archiving of cultural assets without physical touch, thereby reducing the risk of deterioration and ensuring the safe restoration of artifacts (Balletti and Ballarin, 2019; Arbace et al., 2013). Furthermore, many in the literature have noted that technologies such as 3D scanning and photogrammetry enable the creation of highly accurate digital models of cultural heritage sites and artifacts, which

support preservation efforts by providing a backup in case physical artifacts are damaged or destroyed. (Arapakopoulos et al., 2022; Bozorgi and Lischer-Katz, 2020; Agosto and Bornaz, 2017; Ioannides and Quak, 2014). As Malik et al. (2021) pointed out, disasters such as the fire at Notre Dame Cathedral (2019) and the destruction of archaeological sites in conflict zones like Palmyra (Syria) and Mosul (Iraq) reveal the fragility of heritage. The reproduction and display of the Arch of Triumph from Palmyra in various European squares demonstrate the potential of these technologies to revive lost cultural values and increase their accessibility. However, Khunti (2018) emphasizes that reconstructed artefacts are detached from the real historical context and turned into an exhibition for entertainment purposes, together with the 3D printed model, it leads to the Disneyfication of historical heritage, i.e. transformation into a superficial and touristic spectacle. However, Malik et al. (2021) argue that the value of art does not only depend on static materials, "but also on its contextual and conceptual meaning, we may rightly insist that authenticity arises from both an object's material qualities and also its more conceptual and intangible interpretative perspectives".

Another issue discussed in the literature is the role of these technologies in increasing accessibility. 3D replicas allow visually impaired individuals to explore cultural heritage through a tactile experience. In a museum in Venice, 3D prints of works such as "The Bearded Man of Vado all'Arancio" provided access to visually impaired visitors (Ballerin et al., 2018). 3D models and VR technologies make cultural heritage sites accessible worldwide. Especially for remote or inaccessible sites, these technologies allow people to visit them virtually (Bozorgi and Lischer-Katz, 2020; Agosto and Bornaz, 2017). It is argued that online cultural heritage increases accessibility to provide opportunities for students, teachers and researchers to explore historical contexts and connect with history (Achille and Fiorillo, 2022; Schaper et all., 2018; Mortara et all., 2014;). 3D modelling democratizes access to museum collections, historic buildings and archaeological sites, but access to 3D content may require powerful computers and specialized software, which can create access barriers for general users (Fernie, 2024).

In the study on teaching historical buildings in Türkiye in a digital environment, Vargün (2020) revealed that 3D technologies support learning by increasing interaction in the field of cultural heritage and strengthen interest in cultural heritage. Interaction with 3D

models in virtual heritage environments not only provides a visual experience but also facilitates cultural heritage to reach wider audiences. Moritz Neumüller et al. (2014) state that 3D printing and rapid prototyping technologies offer new opportunities for preserving cultural heritage, increasing accessibility, research and education. As stated by Kosmas et al. (2019) such applications provide cultural content using multi-sensory approaches to a wide audience, offering interactive and accessible experiences through these technologies. In Türkiye, digital cultural heritage projects such as archaeological digital archiving (Çayırezmez et al., 2021) and Faces of Juliapolis (Sertalp et al., 2023) and an interactive 3D app of Akdamar Church (Uslu, 2022) have demonstrated the potential role of 3D technologies in the field of culture.

In the literature, 3D applications are often focused on technical details, model development, the defining of standards, contribution to the preserving and restoring cultural artefacts. As we know many individuals still face various barriers to accessing cultural heritage. 3D technologies and digital tools offer opportunities to overcome these barriers. However, the potential contribution of these technologies in addressing inequalities and barriers to access to cultural heritage is not sufficiently addressed in the literature and this study is important in terms of building on the existing literature. I will also focus on access to cultural heritage as a human right, discussing it in the context of the EU's cultural policies. The study will explore how access to cultural heritage can be made more democratic, especially for disadvantaged groups.

Furthermore, these technologies are not discussed in relation to the European Union (EU) and the cultural policies of candidate countries. Although the Council of the EU noted in 2018 "Türkiye has been moving further away from the EU" (Turhan and Reiners, 2021, p.3), it has distanced "itself from the West without giving up its membership aspirations" (Lippert, 2021, p. 273). As Turhan and Reiners (2021) point out, relations between Türkiye and the EU have long been both complex and characterized by "stop-and-go cycles" with the parties occasionally pulling away but reunite when they acknowledge their interdependence. Despite all complexities, it is still a candidate country and has an obligation to align cultural policies and practices with the EU's cultural heritage and access policies. This study will be significant to explore ways for Türkiye's potential to

harmonize its cultural policies on accessibility with EU standards, together with the opportunities offered by 3D technologies.

4. Democratization of Cultural Heritage and Accessibility

4.1. Cultural Heritage: Its Conceptual Definition and Interaction with Democratization

As the collection of material and intangible values of societies, cultural heritage is an important collective legacy. It shapes societies' historical identities and values. Cultural heritage includes not only physical structures and artifacts, but also traditions, languages and other intangible elements. Cultural heritage was first defined in the 1964 Venice Charter, emphasizing its material elements as a witness of the past (Vecco, 2010). While UNESCO's 1956 and 1962 Recommendations were based on historical and artistic criteria in the selection of heritage (UNESCO, 1962; 1956), it has been recognized over time that heritage should be evaluated not only in its material aspects but also in its sociocultural context. The 1972 World Heritage Convention reinforced the emphasis on universal value by addressing cultural and natural heritage in a single framework (Vecco, 2010). UNESCO adopted the Convention for the Safeguarding of the Intangible Cultural Heritage in 2003, which envisages the protection of elements such as rituals and social practices. Today, heritage includes all tangible and intangible cultural and natural properties which have been universally recognized as the property of humanity, and it is the common heritage of past, present and future generations (Rossi and Barcarolo, 2019).

The shift from a material-based to a more inclusive understanding of cultural heritage has affirmed cultural participation as a fundamental human right (Ferreira and Duxbury, 2017). In this regard, international documents highlight that states are obliged to support and protect the right of individuals to participate in cultural life, access to, and benefit from, cultural heritage. It is the duty of states to "promote and protect the right of everyone to take part in cultural life, including the ability to access and enjoy cultural heritage" (Educult, 2015; UN Human Rights Council, 2016). However, access to cultural heritage has been limited to mostly elite groups throughout history, and many people have not been able to participate in cultural life due to economic, social, physical or geographical barriers. It has led to cultural rights becoming privileges only for a certain social class and deepened cultural inequalities. The democratization of cultural heritage is an approach developed against these historical inequalities (Apaydın, 2022). In a democratic approach to cultural heritage, access is not limited to certain social groups.

Everyone should be able to access and experience the heritage regardless of their physical or mental disability, economic status, education level, or geography. The full and effective participation of citizens in cultural life is a right in line with the principle of cultural democracy (Bennett, 2001). In this context, democratization of culture gains importance and cultural democracy is based on recognizing the cultural needs of each individual and community and protecting these needs with specific rights (Laaksonen, 2010, p. 11). The concept includes active participation in cultural life and equal access to cultural resources. Accordingly, the access "focuses on enabling new audiences to use the available culture" and "opening doors to non-traditional audiences to enjoy heritage that has previously been difficult to access because of a set of barriers" (European Commission, 2012, p.2). Accordingly, policies and practices to increase cultural access is required to focus especially on ensuring the equal and effective participation of disadvantaged groups in cultural life.

4.2. Why Does Access to Cultural Heritage Matter? Efforts to Increase Cultural Participation of Disadvantaged Groups.

Access to culture and cultural heritage is not only about visiting museums or seeing works of art. It allows individuals to express themselves while developing a sense of social belonging. As mentioned before, cultural heritage is not just physical assets; it's a fundamental part of identity construction and collective memory of societies (Ferri, 2018). Article 15 of the UN International Covenant on Economic, Social and Cultural Rights (UN,1966) and Article 27 of the Universal Declaration of Human Rights (UN, 1948) guarantee the right of every individual to participate in, access and contribute to cultural life. Accordingly, the right to access to culture is recognised as a fundamental human right and increasing cultural participation is seen as an important tool for reducing social inequalities (UN,1966; UN, 1948). As emphasised in the Mexico City Declaration, the realisation of this right depends not only on individual will (UNESCO, 1982). As Uzelac et al (2016) point out, access to culture should be understood in terms of promoting opportunities as well as reducing physical, financial, social or psychological barriers, which requires the existence of inclusive and holistic public policies in areas such as education, environment, communication, science and economy.

Considering this multidimensional approach, states must admit that access to culture plays a fundamental role in ensuring social justice. Social justice means not only the fair distribution of economic resources, but also cultural recognition and equality in representation (Fraser, 2003; cited by Apaydın, 2022). From this perspective, the protection and accessibility of cultural heritage require the removal of all economic social and perceptual barriers. Accordingly, access should be based on a dynamic social process rather than a one-time act. In other words, cultural institutions and accordingly the policies need to constantly adapt to the needs of individuals (Russo et al, 2009).

However, in today's world, neoliberal policies and economic constraints make it more difficult for disadvantaged communities to access cultural heritage (Apaydın, 2022). Socio-economic inequalities persist; factors such as transportation difficulties, lack of access to information and lack of cultural capital, which is Bourdieu's concept emphasizing the significance of culture in society. Cultural capital shows that resources, including knowledge, skills, language and aesthetic judgements, whether they are acquired from family or through education, are unequally distributed among social classes (Bourdieu, 1984). As Veysel Apaydın (2022) has stated, in many countries, including Türkiye, the restriction of public resources due to profit-oriented policies makes cultural participation a market-based privilege. Accordingly, it is difficult for low-income or other disadvantaged groups to acquire cultural capital, which might result in social exclusion. Even if entrance to museums and cultural heritage sites is free of charge or low, transport costs, lack of information and lack of cultural competences, self-confidence and sense of belonging might prevent them from participating (Apaydın, 2022). It shows that cultural inequalities exist not only at the economic level.

The right to participate in cultural life also encompasses the right of individuals to acquire knowledge about and use of cultural heritage. The Council of Europe's 2005 Convention on the Value of Cultural Heritage for Society (Faro Convention) states that cultural heritage is not only preserving traces of the past, but also a value that provides meaning and belonging to contemporary society (Council of Europe, 2005). The European Commission emphasized the importance of citizens' access and participation in cultural heritage as part of initiatives to build an "inclusive Europe", which is "closely connected to idea of constructing a European community and belonging" (Lähdesmäki et al., 2021).

Accordingly, the EU's cultural programs have prioritized improving access to culture and particularly aimed to address unequal opportunities for access among disadvantaged groups. As the Committee on the Rights of Persons with Disabilities indicated, "parties are obliged to strive to provide access" to "cultural and historical monuments that are part of national heritage".

In this thesis, individuals who have difficulty in accessing cultural heritage due to physical, age, geographical, economic and educational barriers and disabilities are considered among disadvantaged groups. Restricting the right of access only to certain groups deepens social inequalities. Therefore, the Access to Culture Final Report emphasises that holistic policies should be developed to ensure that factors such as geographical distance, language barriers, poverty, lack of literacy and disability do not prevent disadvantaged groups from fully participating in cultural life (Educult, 2015, p. 50-51).

Data about the EU and Türkiye reveal that access to cultural rights is not a choice, but a matter of opportunity closely related to the socio-economic position of individuals. In Türkiye, low rates of participation in cultural activities are particularly seen among the groups who are at risk of poverty and social exclusion (İstanbul Kültür Sanat Vakfı [IKSV], 2017). It indicates that cultural resources are not distributed fairly and that structural inequalities in access exist. It is possible to argue that similar socio-spatial inequalities shape cultural participation in Europe (Eurostat, 2024; Montalto et al, 2021). Free access to cultural heritage sites is not enough on its own; transport costs, lack of information and cultural competences limit individuals' active participation (IKSV, 2017).

The EU recognises the importance of cultural participation for strengthening a democratic society and has developed various policy instruments and practices in this direction. The Commission's New European Agenda for Culture prioritised inclusiveness in cultural policies and developed strategies to increase access, especially for young people, individuals with a migrant background and socioeconomically disadvantaged groups (European Commission, 2018b). In Türkiye, some cultural access projects carried out by the Ministry of Culture and Tourism (MoCT) and local authorities aim to increase

participation opportunities, especially targeting children, the disabled and other disadvantaged groups (Kalyoncuoğlu, 2024; MoCT, 2025; Ankara Metropolitan Municipality, 2022).

Across Europe, cultural institutions are developing new models that adopt audience-oriented and participatory approaches to increase cultural participation. The ACED (Audience Centred Experience Design) model was developed within the scope of the Adeste Plus project. It aims to restructure the relationship between cultural institutions and society and to increase access and participation and reach communities excluded from cultural life. In this context, the model is based on a holistic approach that assesses cultural access in the context of psychological, economic and social thresholds (Adeste Plus, n.d.).

A similar understanding can be observed in Germany's cultural policies. The former coalition government stated that they "want to make culture possible for everyone by ensuring its diversity and freedom" (Blumenreich, 2023). Accordingly, such initiatives as *Kulturrucksack NRW* and *Kulturloge* make cultural participation more inclusive by offering free or low-cost cultural activities for children and low-income individuals (Ministerium für Kultur und Wissenschaft, n.d.). These examples show that cultural participation is not only about increasing audience numbers, but also about using culture as a tool for social transformation (Compendium of Cultural Policies and Trends, 2019).

In Türkiye, various mobile cultural projects have been implemented to increase the participation of disadvantaged groups in cultural life. Projects such as Gallipoli Mobile Museum by the MoCT, *Müzebüs* (Museum Bus) and *Sınıf Arkadaşım Homeros* (My Classmate Homer) are unique practices for children living in rural areas or with limited access to cultural institutions. The *Müzebüs* project aims to develop artistic awareness by introducing children to contemporary art (Rahmi Koç Museum, n.d.). The Troy Museum's project with a travelling suitcase called *Sınıf Arkadaşım Homeros* brings children in rural areas of Çanakkale together with archaeology through interactive activities, raising awareness of cultural heritage (Presidency of Communications, 2024). These projects contribute to children's early exposure to cultural values. Similarly, *Çocuklar İçin Gezen Sinema* (Mobile Cinema for Children) project, launched in 2017 by

MoCT targets the children in particularly vulnerable regions, promoting cultural participation through cinema. Organising activities in 72 provinces, approximately 600 districts and 250 villages in Türkiye, the project has reached more than 400,000 children to date (Kalyoncuoğlu, 2024).

Such inclusive approaches to increase cultural participation reflect a common vision: making culture accessible for all. However, the methods and policies applied to achieve this goal vary and are not sufficient. In this respect, the digitalization of cultural heritage and the use of 3D technologies offer important opportunities for expanding access to culture for disadvantaged groups. In the next section, the potential of digital technologies in the field of cultural heritage, their success and the ethical issues will be discussed in detail.

4.3.Digitalization and Cultural Heritage

Cultural heritage is an indispensable bridge for societies to understand and transmit their identity and history to future generations. However, the heritage is facing various threats today. Every year, large numbers of artifacts are lost due to material deterioration, theft, lack of proper storage conditions and climate change. According to UNESCO's World Heritage in Danger List, 56 inscribed world heritages are in danger (UNESCO World Heritage Centre, n.d.). Disasters such as the fire at Notre Dame Cathedral (2019), as well as the systematic destruction of the ancient city of Palmyra in Syria by ISIS (2015), have revealed how vulnerable heritage is (Malik et al., 2021). These losses are not only material assets, but also the loss of our universal culture, history and identities (Iron Mountain, n.d.). Considering this universal value, the preservation of artworks, monuments and documents has become increasingly important. However, in an age where traditional preservation methods are insufficient, the need for new technologies has increased.

With technological developments, digitalization has become one of the important tools to preserve cultural heritage (Malik et al, 2021; Neumüller et al, 2014). High resolution cameras, 3D scanners and advanced visualisation techniques allow for detailed and highly accurate digitalisation of assets. Moreover, as Isto Huvila (2025) states, the advances in digital research and curation of visual cultural records have "made the past more

accessible for research, education, and societal benefit" (p. 3). In particular, the creation of electronic copies of physically damaged or worn objects has helped to minimise direct contact and thus preserve the originals (Pandey and Kumar, 2020). Such digital approaches not only prevent the loss of architectural elements but also provide a tangible tool for the reconstruction of cultural memory.

In UNESCO's definition, digitisation is not only the creation of virtual copies of physical objects, but also a systematic process that sets access priorities (UNESCO, 2003). For instance, the digitisation of artefacts by the British Museum in collaboration with Google Arts & Culture[2] ensured the Museum visited virtually during the COVID-19 pandemic[3]. According to a museum official, the number of online visitors in March 2020 was 1.75 million, which was 137% up on February 2020 (Braun, 2020). As we see, the impact of digitalisation in this field is not limited to preserving the past; it also offers broader access to culture, increasing participation in the field of cultural heritage.

In conclusion, digital transformation is not limited only to archiving and virtual presentations. It deepens with the introduction of innovative technologies in the protection, documentation and experience of cultural heritage. In this context, 3D scanning and modelling technologies stand out as a powerful tool to preserve physical heritage and ensure access to cultural content.

4.3.1. The Potential Role of 3D Technologies in Democratizing the Access to Cultural Heritage

3D technologies are a set of tools covering the scanning, modelling and printing processes. They enable the creation of digital and physical copies of objects. They are used in many fields, from industrial design to health, from education to the documentation of cultural heritage. 3D modelling is based on photographs and geometric projections

[2] See the British Museum collection on Google Arts & Culture: https://artsandculture.google.com/partner/the-british-museum

[3] Similarly, the Louvre Museum in France made its digital collections virtually available to increase the number of online visits during the pandemic (See the Louvre Museum's online tours: https://www.louvre.fr/en/online-tours.). Thus, users were able to view artefacts from around the world with high-resolution images and access to historical information (France 24, 2021).

according to certain criteria and enables the creation of a 3D digital copy of an object using special software (Skublewska-Paszkowska et al, 2022). While scanning is performed by laser (LiDAR), structured light or photogrammetry techniques, the modelling phase involves the transfer of digital data into a 3D format, and the printing involves the conversion of this digital form into a physical object. Thanks to 3D scanning systems, cultural artefacts can be transferred to the digital environment. The generated 3D models can easily be stored and analysed, enabling accurate reproductions through 3D printing. 3D printing, also known as additive manufacturing, is a "process used to fabricate a physical object from a three-dimensional (3D) digital model, typically by laying down and bonding a large number of successive thin layers of materials" (Liu and Pen, 2022).

Many interdisciplinary projects in the documentation, conservation, and use of cultural heritage have achieved significant results (Balletti and Ballarin, 2019). For instance, Michelangelo's masterpieces such as *David* and *Pietà* have been converted into digital models through laser scanning techniques. It has ensured physical preservation and widened academic access, allowing researchers and the public to virtually interact with these artefacts. As Bernardini et al. (2001) point out, the digital modelling of *Pietà* provides exceptional accuracy in terms of restoration and documentation and represents a milestone in the continuity of cultural heritage. Crowdsourced sharing networks such as Sketchfab[4] and Thingiverse[5] are also among successful digital 3D archives. 3D models of sculptures or architectural structures are very useful tools enabling interaction through the sense of touch, especially for users with special needs. Direct interaction and touch with museum objects promote enjoyable and lifelong experiences (Bell, 2016; Wilson et al., 2018). This emphasises the importance of tactile experience in access, especially for visually impaired individuals. In addition, VR and AR applications transform the way cultural heritage is experienced by integrating with 3D technologies. VR experience can be simply defined as a combination of technology, interaction and content design that fully immerses users in a virtual world (Sherman and Craig, 2018). As mentioned before, 3D scanning and VR technologies digitally preserve particularly fragile and inaccessible

[4] See Sketchfab, a platform for publishing, sharing, and discovering 3D content online: https://sketchfab.com
[5] See Thingiverse, an open platform for sharing 3D printable designs: https://www.thingiverse.com

cultural heritage sites and can make them globally accessible through interactive experiences.

In conclusion, 3D technologies have been successful in both preserving and extending access to existing historical artefacts by creating highly accurate digital twins and representations. While these technologies offer significant opportunities, there are both success stories and challenges in their implementation. In the next section, the advantages and limitations of 3D projects will be discussed with examples collected from around the world.

4.3.2. Success of 3D Projects with Examples

The use of 3D technologies in the field of cultural heritage offers unique opportunities for conservation, research and interpretation. In addition, 3D projects have a significant potential for social inclusion. Its contribution to democratising access to cultural heritage, especially for disadvantaged groups that may face physical, geographical or socio-economic barriers, is indisputable.

4.3.2.1. Digital Archive and Preservation

Databases and archives created thanks to digital technologies, especially 3D, guarantee the preservation of physically fragile or inaccessible artefacts by creating electronic copies. As a pioneering example, the Scan the World platform was launched in 2014 as a global open source for cultural artefacts around the world. Many volunteers digitise the cultural objects through 3D scans, aiming to share physically reproducible versions of cultural objects for education, accessibility to a wider audience and preservation (My Mini Factory, n.d.). For instance, 3D scanned digital copies of the Moai sculptures, which were damaged by the fire in 2022, within the scope of the Scan the World project, have enabled them to be kept alive digitally (Prior, 2022). Another successful example is the Google Arts & Culture Platform, which offers virtual tours and 3D models of many cultural institutions and archaeological sites around the world, providing access to a global audience (Google Arts and Culture, n.d-a). The digital recreation of the destroyed Temple of Bel in Palmyra with a high-resolution 3D model using thousands of pre-

demolition photographs is another achievement for the preservation and access to lost heritage (Sketchfab, 2017).

4.3.2.2. Restoration and Conservation

3D technologies contribute to the restoration and conservation processes of artefacts and historical sites. They allow precise reconstruction of missing or damaged parts without damaging the original object. During the reconstruction of the Notre-Dame Cathedral, they played significant and decisive role. Laser scanners were used to create a detailed digital model of the cathedral as the reference point for restoration and reconstruction work. Moreover, art historian Andrew Tallon's extensive scanning of the cathedral in 2015 contributed to process and ensured the accuracy of the restoration (CNN, 2024). Another contribution of the 3D is that experts used the Sorbonne University's PLEMO 3D platform to document both architectural and decorative details in 3D using advanced digital scanning techniques. These 3D models used for scientific analyses will be useful for exhibitions and digital reconstructions in the planned Notre-Dame Museum (Sorbonne University, 2024).

The other case is the restoration of the Fontana di Melograno in the medieval Valentino Castle in Italy, where Creaform's Handyscan 3D scanner was used for highly accurate documentation and reproduction. Similarly, detailed laser scans and 3D modelling (by Factum Arte) of the Tomb of Seti I in Egypt have created accurate digital replicas, enabling virtual access to a site where physical access was limited (3D Natives, 2025). Furthermore, cost-effective frameworks combining photogrammetry with artificial intelligence techniques have been used to counter the high cost of 3D acquisition methods. For example, the framework tested by Ahmed et al. (2021) at the Qatar Museum of Islamic Arts provided interactive experiences and engaged users by creating high-resolution 3D models with cost-effective hardware. All the cases mentioned above show us how 3D technologies have become an effective tool for both preserving cultural heritage and making it accessible to everyone, especially the younger generations.

4.3.2.3. Interactive Access and Inclusivity of People with Disability

One of the most important contributions of 3D modelling and printing is the tactile and auditory access for the visually impaired people. The technologies have made it possible for visually impaired individuals to experience museums and artefacts through their sense of touch and hearing. As Sandra Dudley (2012) has stated, when we go to museums, the first thing drawing our attention is the sign: Do Not Touch! This, in fact, prevents us from using one of the most important senses of human beings. It might be an understandable situation for the protection of cultural heritage. However, for blind or partially impaired people, whose sense of touch plays an important role in experiencing the objects, this poses a challenge. However, one of the innovative approaches came from Prado Museum in Spain in 2015 by making some 3D tactile reproduction of works belonged to famous painters such as Goya and Velazquez. In Italy, the Tooteko Smart Ring System, integrated with tactile surfaces labelled with NFC sensors and a mobile application, enables the visually impaired to receive immediate auditory information about the details of the artwork they discover by touch (D'Agnano et al, 2015). This system has been tested on a 3D printed haptic model of the Church of San Michele in Isola in Venice, aiming to make traditional art spaces accessible to the visually impaired. Instead of a 'museum of replicas' for the visually impaired, it offers an experience in context. It also allows other groups preferring the touchable objects, such as children, to approach the work of art by adapting the content to their needs (ibid). Wilson et al (2018) found that 3D reproduced artefacts improve the museum experience for these groups, pointing out that 3D printed, tactile replicas offered enhanced, hands-on experiences for visitors while providing a way to overcome existing problems. These 3D replicas are proved to be a valuable tool for more inclusive exhibition design by facilitating access to exhibitions, especially for visually impaired visitors as well as other disadvantaged groups in the museum environment (ibid).

4.3.2.4.Examples in Türkiye

In Türkiye, there are various examples where 3D modelling and printing technologies are used to make cultural heritage accessible for disadvantaged individuals. The first example is the Juliopolis Project, an innovative public archaeology initiative in collaboration with

Koç University, Vehbi Koç and Ankara Research Center (VEKAM) and the Museum of Anatolian Civilisations (VEKAM, 2024). 3D technologies were used in the project focusing on the Juliopolis archaeological site in Ankara, enabling digital archiving and open access to public. The Faces of Juliopolis was exhibited in various venues from Ankara to Izmir. 3D faces were printed with a 3D printer and physically presented to the audience (Sertalp et al., 2023). It was also exhibited in the Çayırhan and Nallıhan districts of Ankara, enabling interaction with audiences not only in the centre but also in rural areas. Sertalp et al's (2023) interviews with visitors and stakeholders within the scope of the project highlighted the impact of the exhibition on children. While children in Çayırhan and Nallıhan were previously uninformed about Juliopolis, their curiosity increased after the exhibition. Interviewed teachers and museum staff emphasised that digital presentation methods attracted young people (ibid). In sum, the exhibition brought both the local community, especially children, closer to cultural heritage, and showed how 3D technologies can be used to democratize access to cultural heritage in rural areas. In another case, Ahmet Uslu (2022) developed a mobile and web-based AR application based on digital models of Akdamar Church in Türkiye. The Church has limited physical access due to its remote and isolated location. However, the results of the study demonstrated that these technologies significantly increase digital access, improving access and interaction for all individuals, including those with special needs.

As the examples in this section show, 3D technologies have a transformative potential in preserving cultural heritage and enabling access to it by disadvantaged groups. However, it comes with certain challenges, creating other inequalities. In the next section, those issues and limitations will be discussed in detail.

4.3.3. Limitations, Challenges and Ethical Considerations

Despite their great potential, digital and 3D technologies face significant challenges that limit their ability to fully democratize access to cultural heritage, including ethical and legal concerns. This section will briefly discuss these limitations, ethical debates and legal aspects.

4.3.3.1.Digital Divide and Lack of Access to Technology

While the digitisation of cultural heritage offers potential for access and democratisation, the digital gap, the digital divide, and the debates around rights pose important ethical and practical challenges (Pasikowska-Schnass, 2020). The digital divide can be defined as "the gap between individuals, households, businesses and geographical regions at different socio-economic levels in terms of their opportunities to access information and their ability to use information technologies" (Karslı and Gündüz, 2001, p. 2). The digital divide is caused by economic, social and geographical factors (ibid). Digital technology can exclude communities without access to resources such as hardware, software, internet infrastructure or education (Rouhani, 2023). Many disadvantaged groups, especially those living in rural or low-income communities, lack reliable access to high-speed internet or equipment necessary to experience advanced 3D cultural heritage content (Parry, 2013). As a result, this creates a new form of exclusion: those who stand to benefit most from increased access are often the ones facing the greatest technological barriers. Socio-demographic factors and geographical location in Türkiye significantly affect equality of opportunity in digital access. In the early 2000s, internet usage increased markedly with increasing income levels, with a large gap between urban (25%) and rural (5.9%) areas (Karslı and Gündüz, 2001). After two decades, although digitalisation in Türkiye has generally reached a higher level, according to the *We Are Social 2025 Report,* different dimensions of the digital divide still seriously affect equal opportunities. As of 2025, 78.1% of Türkiye's population lives in cities, while the remaining 21.9% of the rural population has less access to digital services. The report also states that 10.3 million people, 11.7 per cent of the country's population, are still offline (We Are Social, 2025). In this case, we can conclude that despite the widespread internet access, many people are deprived of digital opportunities due to reasons such as socio-economic conditions. It was especially evident during the pandemic. In Türkiye, the remote education, combined with inequalities in access to digital tools due to economic conditions, has led to a further widening of the digital divide among lower socioeconomic groups (Altıparmak and Demircan, 2021). Thus, it is possible to say that digital divide creates significant inequalities in issues such as access to digital cultural content.

When we look at the EU, while internet subscription in rural areas is 62% according to 2014 data (2015 briefing), as of 2019, there is an average 14% difference in digital skills between cities and rural areas in the EU, and in some countries, it has increased to 23% (Pasikowska-Schnass, 2020, p. 5).

> "In the EU, there are significant differences among Member States with regard to access to the internet in rural areas, cities, towns, and suburbs. In most cases, people living in rural areas do not have the same level of access to the internet as those living in cities (…) This difference is especially significant in (…) countries that have a significant rural population" (ibid, p. 3).

Even if progress has been made in the field of digitalization over the years, holistic solutions for accessibility are vital for the digitalized cultural heritage to reach its full potential and achieve true inclusivity.

Another challenge is that much cultural content is still concentrated in urban centres, reproducing the centre-periphery inequality. While digital tools have the potential to reduce this inequality, a lack of digital access (especially internet and device access in low-income areas) can create a new form of exclusion (Rydzewski, 2025). Despite the revolutionary opportunities provided by the digitization of cultural heritage, and particularly the use of 3D technologies, there are serious limitations, challenges and ethical issues that stand in the way of realizing the full potential.

4.3.3.2.Cost and Technical Challenges

3D digitization involves significant costs, especially for creating professional-quality models and hosting of large datasets (Ioannides and Patias, 2023). High-quality acquisition techniques such as laser scanning are a significant barrier for small cultural institutions with limited budgets. It requires specific technical skills or training, and disadvantaged groups or under-resourced institutions often do not have the means to invest in this expertise or comprehensive training programs (Champion and Rahaman 2019).

Delivering inclusive 3D experiences requires a focus on user interface design, navigation and accessibility features; technical challenges, such as sensor integration in haptic models and accuracy issues can exclude users with various disabilities or negatively impact the experience (Rossetti et al., 2018). This also limits the sustainability of inclusive cultural programs.

4.3.3.3.Ethical Considerations

The digitization of cultural heritage with 3D technologies raises a wide range of ethical issues such as copyright, ownership, cultural sensitivity, community rights and risks of political manipulation. Digitization risks "digital colonialism" when done without the consent and active participation of the communities to which the heritage belongs (Rouhani, 2023). Examples such as the Triumphal Arch of Palmyra and the bust of Nefertiti illustrate the ethical issues raised by unauthorized 3D scans and ambiguous copyright claims on digital copies of public domain works (DeHass et al., 2025; Khunti, 2018). Indigenous Data Sovereignty (IDS) and CARE principles (Collective benefit, Authority to control, Responsibility, and Ethics) mandate mutually respectful relationships from the outset of projects to guarantee Indigenous communities' rights and control over their data (DeHass et al., 2025). The commercialization of digital models through NFTs also increases the risk of commodification and potential misrepresentation of heritage (Rouhani, 2023).

The balance between factual accuracy and accessibility in the creation of 3D models is another important ethical question; issues such as the different materials and simplified craftsmanship used in the reconstruction of the Palmyra Triumphal Arch have called into question the authenticity and credibility of the model (Khunti, 2018). While digital restitution (sharing digital data with communities of origin) is an important step (DeHass et al., 2025), the Institute for Digital Archaeology's (IDA) failure to make Palmyra data available online has hindered the Syrian people's access to their heritage and strengthened criticisms of "digital colonialism" (Khunti, 2018). The limitations and ethical issues emphasize that the digitization of cultural heritage should be approached with technical competence and an inclusive, sustainable and ethical approach.

5. Digital Cultural Heritage Policies in the EU and Türkiye

5.1. Türkiye's Steps to Democratize Access to Cultural Heritage in Line with EU Candidacy

Türkiye's EU accession journey has been an important driving force in reshaping cultural rights and heritage policies. This section evaluates Türkiye's steps to make its cultural policies more inclusive within the framework of EU norms and guidelines. Türkiye's accession negotiations with the Union officially began on 3 October 2005, based on the procedural framework outlined in the *Negotiating Framework Document*, consisting of 35 chapters covering a wide range of policy areas *(European Council, 2005)*. It includes Culture and Education under Chapter 26 (Directorate for EU Affairs, 2023), which has remained unopened since 2006 due to a unilateral blockage by the Republic of Cyprus. Despite this, the candidacy has played a significant role in shaping Türkiye's cultural policy framework over the past two decades. The democratization and human rights benchmarks outlined in the *Copenhagen Criteria* and the cultural rights enshrined in the *Charter of Fundamental Rights of the EU* (EU, 2007) have influenced national policy debates. Article 13 of the Charter safeguards artistic and academic freedom while the Article 22 guarantees "respect for cultural, religious and linguistic diversity"; and Article 25 emphasizes "the right to participate in cultural life" (ibid). These principles promote both the democratization of culture which seeks to broaden access to cultural heritage (Bennet, 2001), and cultural democracy, which values the diverse cultural expressions of all social groups equally (Mulcahy, 2006). Both approaches underline the importance of access to cultural production and distribution, as well as the right to cultural expression.

As the Directorate for EU Affairs (2023) has stated, Türkiye shares the main cultural policy objectives of the Union in areas such as the promotion of cultural diversity and the protection of cultural heritage. It is notable that Türkiye's positive steps in the field of cultural rights started long before its official candidacy. Concerning the cultural rights of minorities, some legal and practical adjustments were made in response to EU expectations. These included the expansion of opportunities for broadcasting in various languages and dialects, and the establishment of cultural associations that promote minority heritage (European Commission, 2003). The Second and Third Harmonization

Packages that entered into force in early 2000s attempted to remove obstacles to broadcasting in the language of one's choice but were not successful in practice. As stated in the 2003 Progress Report, despite ongoing legal and judicial constraints, progress was made in cultural and audiovisual policy by permitting broadcasts in languages other than Turkish. (*ibid).* The Regulation on Radio and Television Broadcasts Board (RTÜK) paved the way for broadcasts in languages other than Turkish, particularly Kurdish, stating that "the legal obstacles to broadcasting in different languages and dialects traditionally used by Turkish citizens in their daily lives were removed and the broadcasting of these broadcasts was secured" (RTÜK Regulation, n.d.). It can be considered a positive step for access to cultural content by millions of citizens. Although TRT assumed this role by opening TRT6 (Kurdi) channel as a public broadcaster, there have been critiques in the public sphere suggesting that the editorial policies of such channels may reflect government influence, limiting pluralistic cultural expression (Yeni Yaşam, 2020).

With the aim of aligning its policies, Türkiye delivered on the Commission's guidance in 2016 progress report "by ratifying the 2005 UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions in March 2017" (European Commission, 2018a). The country has aligned itself with the international framework that recognizes cultural diversity as a shared heritage of humanity, requiring protection for the collective benefit of societies. Notably, Article 2 emphasizes the importance of "fair access" to diverse cultural expressions and to the means of cultural production and dissemination to enhance mutual understanding and cultural dialogue (UNESCO, 2005). In accordance, Türkiye is expected to formulate inclusive cultural policies that ensure all citizens, regardless of their socio-economic or geographic status, can access to cultural heritage and participate in cultural life. Reflecting this commitment, the Commission has noted the launch of an online platform by the MoCT to facilitate the implementation of the Convention (Enlargement and Eastern Neighbourhood Negotiations [DG NEAR], 2023). The platform, which enables the dissemination of cultural data and event information among civil society, public institutions and private stakeholders (ibid) contributes to the diversification of cultural production.

Türkiye also benefits from various EU financial and technical assistance mechanisms designed to support candidate countries in aligning with the EU acquis. One of the most significant instruments is the Instrument for Pre-Accession Assistance-IPA (DG NEAR, n.d.) In cultural culture, IPA has contributed concretely to the protection and promotion of cultural heritage, especially by supporting projects promoting cultural dialogue and local participation. For instance, the EU-Türkiye Anatolian Archaeology and Cultural Heritage Institute project is an institutional structure established in Gaziantep, aiming to develop a research and public participation mechanism. The project aims to restore historical buildings, create accessible information resources for creative sectors and promote a community-based understanding of cultural heritage (Directorate for EU Affairs, 2022; European Commission, n.d.-a). Similarly, grant schemes like Common Cultural Heritage: Preservation and Dialogue Between Türkiye and the EU have been implemented to strengthen EU-Türkiye cultural cooperation (IPA Turkey, 2022). These initiatives demonstrate that the accession efforts have contributed to the democratization of access to cultural heritage in Türkiye, not only as a funder of technical assistance, but also as a promoter of inclusive and participatory cultural policies.

5.2. Digitalization Policies of the European Union

As a leading actor in encouraging the protection of cultural heritage and promotion of access to culture, the EU has a comprehensive policy framework integrating digitalization into its broader cultural objectives. Through a range of strategies and comprehensive financial mechanisms, the EU supports member states in adopting digital technologies to protect cultural assets and expanding public access to culture. Moreover, digitalization is not treated merely as a technical process, but rather as a tool to foster cultural participation, democratize access to culture and enhance social inclusion. This section examines how digital technologies are increasingly positioned as a vehicle for bridging barriers to cultural life.

One of the EU's earliest strategic frameworks to promote access to digital content was the *2010: A European Information Society for Growth and Employment* initiative, adopted in 2005. The document emphasized the importance of increasing the accessibility of digital content across Europe and laid the groundwork for more inclusive cultural

participation through technology (European Commission, 2005). The following document *Digital Agenda for Europe (DAE)* proposed to support public funding and private sector partnerships to increase the online accessibility of Europe's shared cultural heritage, aiming to make cultural heritage more accessible to all Europeans (European Commission, 2010a). The subsequent Europe 2020 strategy linked the digitization of cultural content to the EU's digital single market objectives. It aimed to create a secure digital content market without borders to facilitate inclusive and equitable access to cultural heritage across member states (European Commission, 2010b). As Fanea-Ivanovici and Pană (2020) have noted, the digitization of Europe's cultural heritage was necessary to achieve the DAE to ensure access for current and future generations. The Commission's 2011 Recommendation encouraged Member States' cultural institutions to make their digitized material available through *Europeana*, a digital library first launched in 2008 as a platform "to democratise access to cultural heritage" (European Commission, 2019a**).** Through this, the aim was to provide direct access to 30 million masterpieces digitized and make available online by 2015 (European Commission, 2011). The aim was to increase accessibility, facilitate the flow of data and information and multiply learning opportunities.

The EU redefined its strategic approach supporting diversity, access and solidarity in culture within the framework of the *New European Agenda for Culture* published in 2018. It consists of three main dimensions: social, economic and external relations. The agenda aims to increase digital access to cultural heritage under Digital4Culture (European Commission, 2018b), which enables the Commission to address access to heritage from a human rights perspective. Accordingly, member states are expected to develop more inclusive, multilingual, innovative digital solutions for access to cultural heritage. Adopted in 2018, the European Framework for Action on Cultural Heritage positions digital preservation as an integral part of sustainable cultural heritage management. It promotes various digital solutions such as 3D scanning technologies. Particularly two key pillars of the framework directly affect digitalization and accessibility policies. Firstly, *Cultural Heritage for an Inclusive Europe* emphasizes the potential of cultural heritage to contribute to social integration. Accordingly, broad access to cultural heritage for all, especially for disadvantaged or disabled people, is targeted through digital platforms.

Secondly, Cultural Heritage for an Innovative Europe which highlights the potential of digital technologies to improve public access to and reuse of cultural heritage. One of its goals is to play a major role in the conservation and restoration of physical heritage through digital tools such as 3D scanning (European Commission, 2019b)

5.2.1. 3D Technologies in the EU's Cultural Policies

The EU has identified the integration of 3D technologies as an important strategic priority in the digitization of cultural heritage. The 2019 Declaration of Cooperation on Advancing the Digitization of Cultural Heritage is one of the key documents inviting Member States to cooperate on the 3D digitization of cultural heritage (Europeana Foundation, n.d.). It is a commitment to a pan-European initiative for the 3D digitisation of cultural heritage artefacts, monuments, and sites, aiming to preserve, enhance visibility, and promote broader public engagement through advanced digital technologies (European Commission, 2019c). To this end, the Commission has developed holistic policies to set common standards and support the reuse of digital content. In its 2021 Recommendations, the Commission called on Member States to set concrete targets for the digital preservation. By 2030, all monuments at risk, 50% of the most visited heritage sites and some categories of assets with low levels of digitization are encouraged to be documented in 3D heritage (European Commission, 2021a). To this end, a pioneering study coordinated by Cyprus University of Technology is mapping in detail the data types and equipment used in the 3D digitization process and good practice examples are shared across Europe (European Commission, 2022a). All these efforts contribute to bringing 3D content to digital platforms such as Europeana, supporting physical conservation strategies and making cultural content digitally accessible to all.

An important initiative is Twin it! 3D for Europe's culture, which aims to digitize at least one iconic cultural artefact from each Member State in high quality 3D format and make them publicly available on the Europeana through the Common European Data Space for Cultural Heritage[6] (Europeana Foundation, 2024). The accessibility of these digital models offers an inclusive and participatory cultural experience for groups that cannot

[6] For further information, see Common European Data Space for Cultural Heritage, available at https://www.dataspace-culturalheritage.eu/en

physically access cultural heritage or are disadvantaged. In conclusion, it is possible to argue that the EU is thus combining the goals of digital transformation and cultural democracy while ensuring the sustainability of cultural heritage.

5.2.2. The EU's Funding Mechanisms and 3D Cultural Heritage

The EU's cultural heritage policies are not limited to normative documents but are accompanied by funding mechanisms. In this context, Digital Europe Programme (DIGITAL), Creative Europe and Horizon Europe programs play key roles in promoting digital transformation in the field of culture, and particularly the integration of 3D technologies. This section will examine some projects supported by the programs to demonstrate their contribution to the democratization of access to cultural heritage.

5.2.2.1.Digital Europe Program

DIGITAL is a funding program developed to ensure the effective use of digital technologies by public institutions and citizens across Europe. It focuses on key areas such as advanced digital skills and the widespread adoption of digital technologies across society. DIGITAL supports projects that promote the development and application of 3D digitization technologies, thereby providing sustainable digital solutions for the preservation, sharing, and reuse of cultural content. It contributes to the strengthening of pan-European digital platforms such as Europeana, while also serving cultural democracy by increasing the accessibility of cultural data. (European Commission, n.d-b).

The 5Dculture project, supported under DIGITAL, is one of the projects to digitize cultural heritage in 3D, increase its accessibility, and promote its reuse in various fields. Integrated with Europeana, it creates high-quality digital representations of 3D cultural assets. In this context, the exhibition "Touch, See, Hear! An Inclusive Experience with Iberian Heritage in 3D", launched in collaboration with the Ibero Museum in Jaén, Spain, aims to provide an inclusive experience for individuals with visual, hearing, and intellectual disabilities, as well as children. (5DCulture, n.d). It is directly aligned with the EU's strategic objectives of ensuring the full and equal participation of persons with disabilities in cultural life. The EU Strategy on the Rights of Persons with Disabilities

2021–2030 defines access to culture and education as fundamental rights and calls on member states to make art collections and museums more accessible to people with disabilities (European Commission, 2021b). In this context, it combines 3D prints with tactile surfaces, easy-to-read content, and audio. 3D models enable visual and tactile learning and comprehension while supporting visually impaired individuals in acquiring knowledge about archaeological heritage, thereby ensuring inclusive cultural participation (CARARE, 2023). Such applications demonstrate that democratizing access to cultural heritage is both a technological and ethical responsibility.

The EUreka3D is an innovative initiative contributing to the digital transformation of the cultural heritage sector in line with the Commission's recommendations on the digitization and online accessibility of cultural heritage. The project aims to create a digital ecosystem equipped with cloud-based services and high-quality 3D digitization guidelines that are compatible with the Europeana Core Service Platform. During the project, a total of 5,000 new digital contents in 2D and 3D formats are integrated into Europeana (EUreka3D, n.d.). The aim is to digitize these contents and encourage their reuse in the Common European Data Space for Cultural Heritage in a publicly accessible manner. EUreka3D provides an infrastructure suitable for virtual exhibitions, educational platforms, and the use of cultural content in creative industries. The project's digitization chain (from selecting physical objects to publishing them on Europeana) forms the basis for professional training and lifelong learning programs aimed at developing digital skills in cultural heritage institutions (EUreka3D, 2024). In this regard, EUreka3D contributes to a more democratic, inclusive, and innovative European cultural policy vision based on cultural data.

5.2.2.2.Horizon Europe

Despite being a research and innovation-based program, Horizon Europe provides an important framework for the technology-based preservation of cultural heritage. Particularly, Cluster 2: Culture, Creativity, and Inclusive Society provides funding for projects that support social and cultural inclusivity (Horizon Europe, n.d.). It supports projects such as 3D modelling in cultural heritage fields, AI-supported conservation analyses, virtual reality applications, and big data-based heritage mapping activities.

Accessible Resources for Cultural Heritage EcoSystems (ARCHES) project aims to make museum experiences more accessible for people with visual and auditory impairments. It adapts technologies to the needs of disabled users by developing tactile models using 3D printing and mobile applications. Please Touch! An Inclusive Art Experience, developed under the project, is a system whose target audience includes individuals with visual and hearing impairments, cognitive differences, elderly visitors, immigrants with language barriers, and anyone who faces physical or emotional barriers to accessing cultural heritage. It is a concrete example of the "Design for All" approach, which views accessibility as a means of actively engaging users as cultural producers and participants. It is a successful implementation of inclusive cultural heritage policies in Europe, both for its portability (e.g., used during the COVID-19 pandemic) for individuals who cannot visit the museum space and for making the experience in the physical space more inclusive (ARCHES Project, n.d.).

Inclusive Cultural Heritage in Europe through 3D semantic modelling (INCEPTION) project is another initiative that aims to understand the evolution of European cultural heritage over time and carry out the digital transformation with an inclusive approach (European Commission, 2015). It integrated technologies to develop advanced 3D digitization methods that are both accurate and cost-effective. As a result, 3D models of cultural heritage have been made accessible and interoperable across different hardware and software platforms. The project has provided methods and tools suitable for implementation across Europe. (INCEPTION Project, n.d.).

5.2.2.3.Creative Europe

Creative Europe is the main EU program aiming to support the cultural and creative sectors. During the 2021-2027 period, it supports projects that promote use of digital tools to preserve cultural heritage and increase its accessibility. In this context, various transnational collaborations using 3D digitization technologies are supported under the Cross-sectoral Strand or Culture Strand. As part of the program, the European Cooperation Projects support projects focusing on issues such as digitization, inclusivity, and democratization of access in Europe's cultural and creative sectors. In this context, the supported projects should aim to increase physical and digital access, promote

inclusive cultural participation, disseminate environmentally friendly practices, and develop digital skills in priority areas such as cultural heritage (European Commission, 2022b).

Among the program's priorities are increasing the participation of disadvantaged groups in cultural life, particularly under the titles of Audience and Social inclusion, developing disability-sensitive applications, and reaching wider audiences through digital environments. As it is understood, it provides a solid financial and conceptual foundation for projects addressing 3D digitization and accessibility themes, prioritizing projects that democratize cultural participation for people with disabilities, minorities, and marginalized communities through digital tools (European Commission, 2021c).

In conclusion, the EU considers digitization a strategic priority for the preservation of cultural heritage, democratization of access, and ensuring sustainability in the digital environment. Accordingly, 3D digitization is considered a transformative tool to document and preserve cultural assets. It also enables disadvantaged groups with limited access to participate in cultural life. In this context, EU funding programs support high-quality 3D modelling, reuse of digital content, and accessibility-focused projects. Digital infrastructures such as the Europeana platform enable the sharing of this content with a wide audience and the creation of inclusive cultural experiences. Türkiye has also taken various steps in recent years toward the digitization of cultural heritage. The following section will examine its policies.

5.3.Türkiye's Policies on Digitalization of Cultural Heritage

In recent years, various initiatives and projects have been carried out in Türkiye to digitize cultural heritage and make it accessible. However, it is possible to argue that there is still no comprehensive, institutionalized, and strategic policy framework at the national level. It is mostly carried out at the level of independent projects by universities, municipalities, and museums. In this section, the policies, practices, and partnerships of the MoCT, the relevant institution, will be evaluated first and followed by independent projects of other institutions. Therefore, policies regarding access to cultural heritage for disadvantaged groups in Türkiye will be subject to a general evaluation.

Digitization efforts in cultural field in Türkiye began with projects aimed at preserving manuscripts and valuable rare books. One of the earliest and most systematic initiatives was the Türkiye Manuscripts Collective Catalogue (TÜYATOK) project, launched by the National Library in the late 1970s and continuing until 2000 (Çakmak, 2018) Subsequently, institutions such as the Ankara University Library and the National Library digitized manuscripts and made them available online (ibid). However, it is noteworthy that most of these efforts have been aimed at archiving, academic access, and preservation rather than prioritizing access by public. As an exception, the National Museum's digital archive can be accessed through the Europeana platform (Milli Kütüphane, n.d.).

As Tolga Çakmak (2018) states, digitization is largely based on legal regulations designed to preserve written works. In this context, the Turkish Manuscripts Institution is responsible for digitizing documents and organizing education and research activities. The legal framework provides for the creation of digital copies and access to these copies to prevent damage to the original copies. However, such aspects as access, inclusiveness, and ease of use are not sufficiently addressed in the legislation (Odabaş, Odabaş and Polat, 2010; cited by Çakmak, 2018). The legal framework for the digitization of artefacts other than manuscripts is limited to general regulations such as the Law on Intellectual and Artistic Works and the Law on the Collection of Reproduced Intellectual and Artistic Works, which prevents the digital cultural heritage policy from becoming a comprehensive and sustainable strategy (Öztemiz and Yılmaz, 2017).

One of the current strategic frameworks is the 12th Development Plan prepared by the Presidency of Strategy and Budget (PSB) for the 2024-2028 period. The "Disability Services" and "Culture and Arts" sections set out Türkiye's goals of increasing access to cultural heritage and artistic activities, integrating digitization processes, and ensuring the participation of persons with disabilities in social life (PSB, 2023). The plan adopts the protection, development, and transfer of cultural and artistic heritage to future generations as its fundamental objective (ibid, Article 779). In this context, manuscripts and rare works, along with related studies, will be digitized (ibid, Article 780). The plan aims to increase access to and participation in culture and the arts (ibid, Article 783) and includes concrete steps such as the development of library services and functional restructuring of libraries using new technologies and management approaches (ibid, Article 783). In

addition, the Plan sets as a fundamental objective the participation of persons with disabilities in all areas of social life and the provision of accessibility (ibid, Article 752). In this context, physical environment conditions, transportation services, websites, mobile applications, printed, digital, and visual media publications, and public services will be made accessible to persons with disabilities (ibid, Article 763). It directly refers to the removal of digital barriers to access to culture and art for persons with disabilities. All these measures aim to ensure the full and equal participation of persons with disabilities in cultural life.

However, such broad and general statements such as "access to and participation in culture and the arts will be increased" (ibid, Article 783) do not provide details on how this increase will be measured or what targets will be achieved. This means that how they will be implemented remains unclear. It is stated that "the data obtained will be transferred to a digital environment" (ibid, Article 780) or "the information and data infrastructure related to the cultural field will be strengthened" (ibid, Article 786). However, it is unclear under which standards (international compatibility, formats, etc.) and with which technological infrastructure digitization process will be carried out. While the plan sets general goals, it does not sufficiently detail the financing mechanisms necessary to achieve these goals. This lack of clarity is further reflected in the MoCT's 2024-28 Strategic Plan, where the inclusion of disadvantaged groups such as people with disabilities is confined to a narrow scope.

In the 2024-28 Strategic Plan, access to digital cultural content for people with disabilities is almost exclusively limited to library services. Türkiye's strategic cultural policies for the 2024-2028 period aim to increase access to information for people with disabilities (12th Development Plan). However, it is only addressed within the framework of digital library services in the MoCT's Strategic Plan, which shows that cultural participation is not being evaluated with a holistic approach. The plan explicitly identifies issues such as the insufficient number and variety of audiobook services for the visually impaired, cost barriers and technical infrastructure deficiencies in the production of video books for the auditory impaired (MoCT, 2024, pp. 64–65). In addition, the target cards under "Improving Access to and Participation in Information, Culture, and the Arts" as part of the plan specifically envisage the expansion of library services and increased production

of digital content. When examining the performance indicators in Target Cards 8 and 9, numerical targets such as significantly increasing the number of public libraries and user access, supporting the production of audiobooks and video books, and increasing the number of e-books is noteworthy (ibid). On the other hand, performance indicators such as increasing the number of films uploaded to the *Film Mirasım (My Film Heritage)* portal and the number of people reached through mobile cinema trucks are included in the targets related to the cinema sector with the aim of disseminating digital content and increasing participation in cultural activities (ibid, Target Card 10). However, there is no mention of content production for people with disabilities, accessible screening standards, or the accessible presentation of digital content.

Despite above-mentioned shortcomings, Türkiye has also taken notable steps in the digitalization of cultural heritage through specific projects. One of the most visible examples is the *Sanal Müze* (Virtual Museum) launched in 2020 by the MoCT. 60 museums and historical sites have been transferred to the digital environment so that users can visit them online as of 2025 (DG Cultural Heritage and Museums., 2025.). In the virtual museums, some 3D models of real museums can be viewed. Especially during the COVID-19 pandemic, it has been an effective tool in increasing digital access to cultural heritage. The platform reached 11.6 million visitors in 2021 (Hürriyet, 2021a) and 23.7 million visitors as of the first half of 2022 (Evrensel, 2022). However, these experiences focus largely on visual content and the general user audience. It is noteworthy that the platform, designed solely as a tour, does not include accessibility features specifically designed for people with disabilities or children.

The Museum of Anatolian Civilizations in Ankara, affiliated with the MoCT, has a hall where disadvantaged groups can experience objects by touch. The Bongo Art Project, supported by TÜBİTAK SAGA, is an important initiative that aims to make the cultural artifacts exhibited in the museum accessible to visually impaired individuals. Under the project, 3D replicas of the artifacts provide tactile models supported by audio descriptions (Artful Living, 2022). Thus, the participation of disadvantaged groups in cultural heritage has been increased, and the potential of technology in the field of accessibility has been concretely demonstrated.

Izmir Dokunulabilir Engelsiz Modern Sanatlar Müzesi (IZDEM- Touchable Barrier-Free Modern Arts Museum) established under the leadership of Izmir Metropolitan Municipality, is designed to provide access to modern artworks for visually and auditory impaired individuals. The museum offers visitors with disabilities the opportunity to discover the works of world-famous painters by touching replicas and models produced with 3D printer technology. Supported by multiple access methods such as audio description, Braille and sign language, İZDEM aims to increase the participation of disadvantaged groups in cultural heritage and art, emphasizing the inclusive and democratizing potential of technology. Thus, the museum sets an important example in terms of accessibility (İzmir Metropolitan Municipality, 2024).

3D Yazdırılabilir Eserler Müzesi (Printable Artifacts Museum 3D-YEM) is an innovative educational project supported by TÜBİTAK in collaboration with Anadolu University and Eskişehir Directorate of National Education. Using 3D scanning and printing technologies, the project aims to make 3D replicas of cultural heritage artifacts found in the world's leading museums (3B-YEM, n.d.). Within the scope of the project, 180 artifacts for the high school history curriculum were selected and digitized from the collections of institutions such as the British Museum, Louvre, New York Metropolitan Museum, Peabody Museum of Natural History and the National Museum of Kenya. In 3D-YEM, students can access content (photographs, voice-overs, videos, games, virtual museum tours) about the artifacts through QR codes next to the physically printed artifacts. The project has reduced logistical and permission problems in accessing the museums and increased the ability of disadvantaged students to touch and access educational materials (Hürriyet, 2021b). Implemented in different schools in the city, the model sets an important example in terms of bringing cultural heritage into educational environments and increasing accessibility by using technology.

VEKAM aims at preserving and making Ankara's cultural heritage accessible, playing a pioneering role in digitization (Koç University VEKAM, n.d.). It aims to increase the accessibility of cultural heritage on both national and international platforms through the digitization of its rich archive and library collections. In 2012, VEKAM joined the Local Content project as part of the Europeana and integrated its digital content into an

international network, expanding the online sharing of cultural heritage materials[7]. However, VEKAM's digitalization efforts face challenges such as lack of standards and practices, inadequate technological infrastructure and personnel limitations, which restrict the widespread and effective access of digital content (Ülger and Külcü, 2016).

Google Arts and Culture Türkiye Platform, launched to increase the digital accessibility of Türkiye's cultural heritage, offers a comprehensive digitization and visualization project within the scope of the "Türkiye's Treasures" digital collection (Google Arts & Culture, n.d.-b). Created in collaboration with the MoCT, the platform makes Türkiye's UNESCO World Heritage sites accessible digitally through 3D visualization techniques and Street View applications. Projects like this are technically important steps towards digitalizing cultural heritage and increasing its accessibility since 3D visualization, interactive virtual tours and multilingual content create opportunities for individuals with limited physical access or those who cannot access due to geographical distance. (Fortune Türkiye, 2023). However, it is clear that the platform and the cooperation are primarily shaped by the goals of cultural tourism and strengthening Türkiye's global image as the Minister of Culture and Tourism emphasized "attracting qualified tourists", "increasing product diversity" and "promoting the cultural heritage" (Şeref, 2023). While the primary objective of the project is to stimulate economic development through the valorisation of cultural heritage, it also holds significant potential for enhancing accessibility and inclusive engagement with heritage resources.

Moreover, in line with its strategies to integrate into the EU's innovation and digitalization policies, Türkiye has become part of major funding programs. Under Horizon Europe program, it participates in research and innovation projects and can take part in joint projects in areas such as cultural heritage, digital transformation, artificial intelligence, and inclusivity. In addition, with the Digital Europe Programme participation agreement signed in 2023, Türkiye has gained the right to cooperate with the EU and benefit from funding opportunities in priority areas such as advanced digital skills, and the establishment of digital innovation centres (DG NEAR, 2023b). These

[7] Another project in partnership with VEKAM is Faces of Juliopolis. See Sertalp et al (2023).

integrations have the potential to encourage Türkiye's efforts to digitize cultural heritage and increase access to it to become more aligned with EU policies.

On the other hand, when looking at digital cultural heritage projects in Türkiye, it is evident that these initiatives are largely concentrated in metropolitan centres such as Istanbul, Ankara, Izmir, and Eskisehir. It reveals that rural and semi-urban areas are excluded. Additionally, while the target audience is often described as including people with disabilities, children, and socially disadvantaged individuals, these groups are predominantly urban, educated, and have access to digital infrastructure. Therefore, the rural population with low technological literacy and limited economic resources is excluded from both the content and experience of these projects. On the other hand, positioning viewers solely as passive users points to another structural problem that limits their participation.

In conclusion, steps taken in the field of digital cultural heritage in Türkiye show significant progress, particularly in the preservation of written works and the expansion of access to cultural content through virtual museum applications. However, the fact that the projects carried out are limited to metropolitan areas spatially prevents the dissemination of access and participation goals to all segments of society. Existing strategy documents and practices reveal that digitization is mostly focused on archiving and exhibition functions, with limited focus on creating a participatory and inclusive cultural experience. In this context, the next section will provide a comparative analysis of Türkiye and the EU's policies on access to digital cultural heritage.

6. Analysis of the Practices of the European Union and Türkiye

This chapter presents a comparative analysis of the EU and Türkiye's policies and practices in the field of digital cultural heritage, with a specific focus on accessibility for disadvantaged groups. Drawing on strategic documents, funding mechanisms, and implementation examples, the analysis aims to identify both structural similarities and context-specific divergences.

6.1.Differences Between Their Strategic Visions

Both the EU and Türkiye recognize the significance of digitalization in the cultural field; however, it is notable that their strategic approaches differ in various aspects. With its long-standing and detailed strategic documents such as the DAE and the New European Agenda for Culture, the EU positions digitalization as a tool for enhancing cultural participation, democratization of access to cultural heritage, and social cohesion. Its cultural policies emphasize the importance of developing inclusive digital infrastructures that are accessible to all Europeans, including persons with disabilities, youth, and older adults. Digital platforms such as Europeana and projects like "Twin it! 3D for Europe's Culture" and "5DCulture" integrate innovative technologies with a specific focus on inclusivity across various groups.

In contrast, Türkiye's strategic framework is most recently articulated in the 12th Development Plan (2024–2028) and Strategic Plan of the MoCT. It adopts a more generalized and broader, but less technically detailed vision. Although the Development Plan emphasizes expanding access to cultural and artistic participation and highlights the integration of persons with disabilities into all areas of life, other disadvantaged groups like children, the elderly, and geographically or economically marginalized populations, are not included. While inclusivity is emphasized as a principle in the documents, there is no clear guidelines or practical applications. Therefore, inclusivity remains at a discursive level, with limited impact on practices.

6.2.Differences Between Practical Implementations

The EU's Europeana platform is one of the most comprehensive and geographically inclusive digital cultural repositories. It "currently provides access to over 58 million digitised cultural heritage records from over 3600 cultural heritage institutions and organisations" and "completely free to use for all" (European Commission, n.d.-c)

This means the platform provides everyone with centralized access to diverse heritage items including books, artworks, sound, video, 3D models. Moreover, the EU supports a wide range of digital formats, including 3D models, AR/VR experiences, and multisensory installations tailored for individuals with visual or cognitive impairments. The "ARCHES" and "5DCulture" projects are prominent examples that incorporate multisensory features and user-centred design to ensure cultural participation by disadvantaged groups.

Türkiye's most visible national initiative is the *Sanal Müze* platform. Sixty museums and archaeological sites are available through this platform. However, these virtual tours often lack features such as audio descriptions, braille support, which are necessary for meaningful engagement by visually impaired users. Likewise, while some pioneering projects like Bongo Art and 3B-YEM provide touchable 3D replicas and multisensory experiences, these remain isolated and project-based rather than systematized in national policy. The geographical concentration of such projects in major urban centres like Ankara, Izmir, and Istanbul further limits their reach and underscores the inequity in cultural access.

6.3.Differences Between Funding Mechanisms

Another difference between the EU and Türkiye lies in the funding structures. The EU channels significant resources into cultural digitalization through Creative Europe, Horizon Europe, and the Digital Europe Programme. These programs finance large-scale projects and foster partnerships among cultural institutions, tech companies, and academic researchers.

Türkiye, while eligible for EU programs like Horizon Europe and Digital Europe, lacks dedicated national funding programs focused solely on cultural digitalization. Financial resources for digital heritage initiatives are often scattered across general development budgets, municipal funds, or individual institutional supports (e.g., TÜBİTAK). We can argue that the lack of a transparent, designated financing strategy prevents long-term planning and institutionalization.

6.4.Conceptualization of the User and Participatory Design

The EU's approach to cultural heritage digitalization includes making content accessible and enabling users to become active participants in cultural production. Co-creation platforms within Europeana invite citizens to contribute and curate content. This model of participatory digital heritage aligns with the broader concept of "cultural democracy," where diverse expressions and local narratives are valued equally.

In Türkiye, cultural digitalization projects largely frame users as consumers or viewers rather than co-creators. Initiatives typically present curated content to the audience, rather than involving them in the production or interpretation of cultural narratives. The absence of participatory design limits the cultural agency of marginalized communities and reinforces a top-down model of cultural transmission.

6.5.Multisensory and Multilingual Access

The EU's investment in inclusive digital design includes a wide array of multisensory tools: tactile exhibits, audio guides, simplified interfaces, and multilingual platforms. These features are essential components in fulfilling legal obligations under frameworks like the EU Web Accessibility Directive and the European Accessibility Act.

By contrast, Türkiye's cultural digitalization efforts are still evolving toward such inclusive design. While some notable initiatives like Bongo Art employ tactile 3D replicas and braille signage, there is little evidence of institutionalized practices to embed multisensory accessibility in most public museums or virtual platforms.

6.6.Technological Standardization and Interoperability

The EU promotes strong standards for metadata, digitization formats, and platform interoperability. Projects like Europeana adhere to clear documentation protocols, which facilitate the aggregation and reuse of cultural content across borders and platforms. Türkiye, on the other hand, lacks nationally adopted digitization standards or metadata protocols. Consequently, digital outputs from different institutions vary widely in format, resolution, and accessibility. The absence of shared frameworks complicates integration and long-term preservation (Öztemiz and Yılmaz, 2017).

6.7.Similarities Between Practices of Türkiye and the EU

Despite notable differences, the EU and Türkiye demonstrate some significant points of convergence in their approaches to digital cultural heritage. Both recognize digitalization as a key instrument for safeguarding cultural heritage and ensuring its transmission to future generations. This is evident in initiatives such as the Europeana within the EU, and Türkiye's *Sanal Müze* project, both of which seek to digitize and make cultural collections accessible beyond physical museum spaces. Moreover, both actors underline the role of digital tools in overcoming geographical and physical barriers, thereby promoting broader public access to cultural resources.

In addition, educational use and public engagement are emphasized by both sides. The EU encourages reuse of digital cultural content for educational and creative purposes through projects like *Twin it!* while Türkiye promotes tactile and 3D-based museum experiences (e.g., 3B-YEM and Bongo Art) aimed at enhancing educational engagement for children and visually impaired individuals. Another area of alignment lies in the policy-level acknowledgement of disadvantaged groups**,** particularly persons with disabilities, as legitimate stakeholders in cultural access. Although implementation differs considerably, official strategies from both Türkiye and the EU reflect a shared commitment to expanding inclusivity in cultural participation.

7. Discussion and Conclusion

In this study, we have critically examined the role of digitization and 3D technologies in accessing cultural heritage, particularly for disadvantaged groups in Türkiye and the EU. Cultural heritage is considered an important shared value shaping the identities and collective memory of societies. However, access to the heritage has historically been unequally distributed, shaped by power relations, class structures, and infrastructural limitations. This research has approached the issue from the perspectives of democratization of access to culture and social justice. It has highlighted the transformative potential of digital and 3D technologies in making cultural participation more inclusive.

Cultural democracy emphasizes the right to access culture and participate in cultural production and expression on equal terms. Democratizing access to cultural heritage, therefore, requires removing structural barriers such as physical, geographic, and financial obstacles. Social justice, as understood in this thesis, goes beyond economic redistribution and calls for recognition, representation, and participation of marginalized voices in the cultural field. When evaluated within the framework of Bourdieu's concept of "cultural capital," it is evident that cultural knowledge is class-differentiated, and these differences reinforce cultural exclusion. The study also highlights how access to culture remains unequally distributed across social classes, disadvantaging rural populations, low-income individuals, and persons with disabilities.

Technological innovations, especially 3D scanning, modelling, and printing, present new opportunities to bridge these gaps, transforming access to cultural heritage. They allow tactile reproductions for visually impaired audiences, and immersive virtual experiences for those who cannot physically access cultural sites. 3D technologies challenge the "Do Not Touch" rules of traditional heritage institutions by offering multi-sensory, interactive access, especially significant for people with disabilities. Yet, as the study demonstrates, the implementation of these technologies is not inherently inclusive. It depends heavily on policy frameworks, institutional priorities, funding mechanisms, and user-centred design practices.

In the study, I have focused on one main and 3 sub-questions to examine to what extent these technologies can contribute to democratizing the access to cultural heritage, especially among disadvantaged groups, and how Türkiye, as an EU candidate country, can align its policies with the Union's strategic frameworks.

The study has revealed that both Türkiye and the EU recognize the strategic importance of digital technologies for cultural preservation and participation. However, their approaches differ in depth and implementation. While the EU has long treated digitalization and accessibility as interconnected priorities, Türkiye's policies tend to frame digitization more as a tool for preservation and display rather than a vehicle for inclusive participation. EU policies, supported by initiatives like Europeana and funding mechanisms such as Creative Europe and Digital Europe Programme, emphasize accessibility for disadvantaged groups. In contrast, Türkiye's strategy documents, such as the 12th Development Plan and the MoCT's Strategic Plan (2024–2028), include digital objectives but often lack clarity on implementation, inclusivity criteria, and participatory design. Moreover, Türkiye's practices tend to concentrate on major urban centres, with limited reach to rural and socioeconomically disadvantaged populations.

Another point highlighted in the study is that there are both inspiring examples and critical gaps. In the EU, projects like Twin it!, 5Dculture, and Eureka3D show how 3D technologies are used to create open-access platforms, high-resolution 3D archives, and inclusive content. They aim to reduce barriers for groups such as persons with disabilities, rural residents, and low-income individuals by offering multisensory, multilingual, and remotely accessible cultural experiences. Türkiye, on the other hand, has seen promising projects such as the Juliopolis exhibition and 3D-YEM, but these remain isolated and lack systemic support. Despite acknowledging the barriers in its strategic documents, Türkiye often leaves key initiatives to voluntary efforts and pilot projects rather than integrated public policy.

It has also been uncovered that Türkiye's alignment with EU cultural norms has had a positive but inconsistent impact. EU progress reports and funding schemes have influenced Türkiye's legal reforms, such as broadcasting in minority languages and ratifying the 2005 UNESCO Convention. These steps mark important milestones toward

pluralistic and participatory cultural policies. However, the stagnation of Chapter 26 of the accession negotiations have limited the depth of integration. Still, funding tools like the IPA and collaborative projects in cultural field show that EU-Türkiye cooperation continues to foster institutional capacity and public engagement. Thus, the accession process remains a critical driver, though it requires stronger political will and a more inclusive, rights-based vision of culture on Türkiye's part.

Considering these findings, broader conclusions can be drawn. Firstly, digital and 3D technologies carry great potential to preserve and democratize access to cultural heritage. However, realizing this potential requires more than technological availability. It requires inclusive policy frameworks, public investment, accessibility standards, and community engagement. Secondly, Türkiye must move beyond a preservation-oriented understanding of digitization and adopt a more comprehensive, participatory approach that addresses the diverse needs of rural, disabled, and socioeconomically marginalized groups. Thirdly, the EU provides a useful framework and funding structure, which Türkiye might benefit from, to improve technical capacities and reshape the vision of cultural rights and inclusion. The accession process, despite challenges, remains a valuable pathway for policy alignment and institutional transformation. Lastly, a holistic and just approach to cultural access must combine technological innovation with social sensitivity, public accountability, and democratic participation. Without these, digital solutions risk reproducing existing inequalities.

In conclusion, this study argues that democratizing access to cultural heritage through digital technologies is not only a technical matter but also a deeply political and ethical one. The success of such efforts depends on how cultural institutions, governments, and civil society understand and uphold the right to cultural participation, not just in words, but in action. Ensuring that digitization projects reach beyond urban centres and privileged groups requires a more inclusive mindset, one that values participation as much as preservation.

As the digital turn in cultural heritage continues to unfold, future research could explore how these technologies can empower communities not only as passive users but as active contributors to cultural memory, especially in underrepresented regions and among

marginalized groups. In the context of Türkiye's ongoing candidacy for EU membership, further studies could also examine how alignment with EU cultural norms and policy frameworks might support more inclusive and participatory digital heritage practices. Understanding it could offer valuable insights into building cultural policies that are not only technical, but also socially just and responsive to diverse needs.

List of abbreviations and acronyms

Abbreviation	Meaning
ACED:	Audience Centred Experience Design
AR:	augmented reality
ARCHES:	Accessible Resources for Cultural Heritage EcoSystems
CARE:	Collective benefit, Authority to control, Responsibility, and Ethics
CCS:	comparative case study
DAE:	Digital Agenda for Europe
DIGITAL:	Digital Europe Programme
DG NEAR:	Directorate-General for Neighbourhood and Enlargement Negotiations
EU:	European Union
IDA:	Institute for Digital Archaeology's
IDS:	Indigenous Data Sovereignty
IKSV:	Istanbul Foundation for Culture and Arts (İstanbul Kültür Sanat Vakfı)
IPA:	Pre-Accession Assistance
ISIS:	Islamic State of Iraq and Sham
İZDEM:	Izmir Touchable Barrier-Free Modern Arts Museum (Izmir Dokunulabilir Engelsiz Modern Sanatlar Müzesi)
LiDAR:	Light Detection and Ranging

MoCT:	Ministry of Culture and Tourism of Türkiye
PSB:	Presidency of Strategy and Budget
TFEU:	Treaty on the Functioning of the European Union
TÜBİTAK:	The Scientific and Technological Research Council of Türkiye
TÜYATOK:	Türkiye Manuscripts Collective Catalogue
UN:	United Nations
UNESCO:	United Nations Educational, Scientific and Cultural Organization
VR:	virtual reality
3D:	Three-Dimensional
3D-YEM:	3D Printable Artifacts Museum (3D Yazdırılabilir Eserler Müzesi)

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