



The Higher National School of Journalism and Information Sciences

**Digitizing the tangible cultural heritage: the stakes of
applying digitization in displaying cultural heritage in
the Algerian national museums – a case study of The
Bardo national museum–**

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Dedication :

For the everlasting Memory of a face that I will never see, a love I will never experience and a part of me that will always be missing.

My dearest Grandmother

For the two who gave me life, whose continuous efforts, support and encouragement made it possible for me to go through life and Pursue my dreams with confidence

My beloved Parents Rachid & Samira .B

Through every phase of my life, I am grateful to have you

My amazing Brother Abdeljalil

To the unwavering support, my deepest gratitude and appreciation, to the man who became a second father in every way that matters

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To the ones who showered me with affection, believed in me unconditionally, and stood by me through it all

My precious Aunties Fatiha, Ouasila and Lylia

To the ones who Woke the laughter in my soul and became the melody to my days

My family of friends

For me, because i needed to complete this chapter

Abstract :

Algerian national museums hold vast national and international cultural heritage collections, despite the richness and diversity of these collections, digitization efforts have not yet fully implemented. This study examines the challenges and difficulties hindering the digitization of Algerian national museum collections and their online display, it aims essentially to explore the main reasons for the delay in integrating these technologies, especially in light of global advancements and innovations. By analyzing a specific sample, the Bardo National Museum, the study identifies key challenges that Algerian museums can address to overcome these obstacles and join the developed museums by offering online access to their collections.

Keywords :

Cultural heritage , Museums , digitization , challenges , digital mediation.

ملخص :

تحتفظ المتاحف الوطنية الجزائرية بمجموعات واسعة من التراث الثقافي الوطني و العالمي، وعلى الرغم من غنى وتنوع هذه المجموعات، لم يتم تنفيذ جهود الرقمنة بشكل كامل حتى الآن. تسعى هذه الدراسة إلى معرفة التحديات والصعوبات التي تعيق رقمنة مجموعات المتاحف الوطنية الجزائرية وعرضها على الإنترنت. وتهدف بشكل أساسي إلى استكشاف الأسباب الرئيسية وراء تأخير العمل بالتقنيات الرقمية، خاصة في ضوء التقدم والابتكارات العالمية. من خلال تحليل عينة محددة المتمثلة في متحف البارود الوطني، تحدد هذه الدراسة التحديات الرئيسية التي يمكن للمتاحف الجزائرية معالجتها والتغلب عليها للانضمام إلى المتاحف المتطورة من خلال توفير الوصول إلى مجموعاتها عبر الإنترنت.

الكلمات المفتاحية:

التراث الثقافي , المتاحف , الرقمنة , التحديات , الوسائط الرقمية.

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LIST OF ABBREVIATIONS

AR : augmented reality

APi : application programming interface

ICOM : International council of museums.

Ibid , p : the same reference

NPM : Taiwan's National Palace Museum.

Op.cit , P : previous reference / reference previously mentioned

UNESCO : United Nations Educational , scientific and cultural organization .

USA Embassy : the united state's Embassy

VR : virtual reality

3D : 3 dimensions .

GENERAL INTRODUCTION

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General Introduction :

Cultural heritage is the landmark of nations, a testament to the collective identity and rich tapestry of human history. Comprising tangible artifacts and intangible traditions, it encapsulates the essence of societies, connecting individuals to their roots and providing a profound sense of belonging. Beyond being a repository of historical narratives, cultural heritage plays a pivotal role in shaping contemporary societies by fostering education, promoting tourism, and inspiring creativity as a source of identity and knowledge.

Algeria, with its diverse landscapes and historical remnants situated in the Mediterranean basin, is a veritable treasure trove of cultural richness. A crossroads of civilizations throughout history, from ancient civilizations along its coasts to nomadic tribes traversing the vast Sahara desert, Algeria bears the traces of its rich and diverse heritage.

In light of increasing challenges facing the preservation and promotion of cultural heritage, such as the risk of damage, lack of public awareness and appreciation, environmental threats like climate change and natural disasters, as well as the risk of theft, vandalism, and armed conflicts, digitization plays a multifaceted role. Through improved accessibility, protection of fragile items, disaster recovery capabilities, enhanced documentation and research opportunities, promotion of cultural exchange and education, advanced conservation techniques, and long-term sustainability strategies, digitization ensures our rich cultural heritage remains accessible, relevant, and cherished by present and future generations. Embracing digital technologies in heritage preservation not only safeguards our collective human legacy but also fosters a deeper understanding and appreciation of diverse cultures worldwide.

Museums are institutions that play a vital role in safeguarding these cultural treasures and making them accessible to the public, serving as dedicated spaces for preserving cultural heritage and promoting understanding and appreciation. Algeria's museums offer the perfect opportunity to explore the country's rich history and culture, providing a window into its past through exhibits on ancient civilizations, collections of art, archaeology, and even entomology, showcasing its diverse legacy for visitors to experience.

In the era of digitization, museums are undergoing a profound transformation, redefining their role as custodians of cultural heritage and educational institutions. It supports and enhances all aspects of their work. With advancements in technology, museums have embraced digitization to enhance access, preservation, and engagement with their collections. They

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increasingly connect all information related to objects in a digital repository, including images, history, conservation reports, exhibition texts, related publications, and physical location. Creating such a repository increases workflow efficiency and extends access to a global audience through virtual tours, online exhibitions, digital archives, and interactive displays.

The rise of digital technologies offers exciting possibilities to overcome limitations faced by the physical experience, creating a more inclusive experience for visitors. By embracing digital mediation, particularly through the digitization of collections, museums can bridge the physical gap and democratize access to cultural heritage. Digital mediation refers to the use of digital tools and technologies to enhance the museum experience. Digitization, a key aspect, allows museums to create online collections, virtual tours, and interactive exhibits, unlocking a treasure trove of cultural heritage for anyone with an internet connection. Digital tools foster deeper engagement, with features like high-resolution images, interactive information panels, and online educational resources enriching the learning experience. Furthermore, digitization removes barriers of cost and exclusivity associated with traditional museum visits, enabling anyone, regardless of location or socioeconomic background, to explore vast collections worldwide. This democratization of access fosters cultural exchange and understanding on a global scale. In essence, digital mediation acts as a bridge, connecting the physical limitations of museums with the vast potential audience for cultural heritage.

Despite these advancements, many museums, including Algerian ones, face challenges in fully integrating digitization into their operations. While digital tools and platforms present unparalleled opportunities for broadening access to cultural heritage, Algerian museums continue to grapple with obstacles hindering their complete embrace of digitization. Consequently, they lag behind global counterparts in leveraging digitization to its full potential, impeding efforts to showcase the nation's cultural treasures and engage diverse audiences effectively.

This study examines the case of the Bardo National Museum and its ongoing digitization initiative. It aims to discover the challenges faced by Algerian cultural museums in the digitization process, the main factors contributing to delayed implementation, and explores the museum's current use of digital mediation strategies, such as online exhibits and virtual tours, to enhance visitor engagement and accessibility. By relying on interviews and observation as tools in collecting the necessary information, considering that this study is a qualitative study of the case of the Bardo Museum.

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This study is divided into three chapters. The first chapter provides a general overview of digitization and cultural digital mediation, exploring their relationship and how the latter can enhance visitor experiences in museums. We also state the international museums that rely on digitization and cultural media in their work as evidence of its effectiveness. The second chapter summarizes the general situation of cultural heritage and museums in Algeria by examining the laws and the state's strategy for preserving them. As for the third chapter, it introduces the Bardo National Museum as the case study. This chapter will discuss data collected from the respondents of the museum to reach the results that serve the study.

This research was faced by some limitations, but still able to generate valuable insights. The limitations were limited time and small sample of the respondents in collecting information in the Bardo national museum. This raises problems in the possibility of using other research tools, such as a questionnaire on employees (only the respondents on the interviews who have information about the study subject) so we relied on the observations and the interviews besides the difficulty of doing the interviews and in getting more details and information from the interviewees.

State of the problem :

Museums serve as windows to our past, offering invaluable insights into history, cultural heritage, and the diverse world around us. While many countries prioritize the development and preservation of museums as vital centers of cultural and educational interest, Algeria unfortunately falls behind in recognizing their significance. The museum landscape in Algeria has its roots in the colonial era, with efforts post-independence focused on restoring cultural heritage and establishing various museums, formally recognized under the 1985 law. Despite their historical importance, Algerian museums encounter numerous challenges, primarily stemming from neglect and adherence to traditional formats. Unlike their global counterparts, such as Egyptian Museums, German museums, UAE museums ...etc, Algerian museums struggle to embrace technological advancements fully.

In light of these challenges, this research effort aims to explore the obstacles hindering the digitization initiatives of the Algerian National Museums. The primary goal is to understand the difficulties faced, particularly by institutions like the Bardo Museum. Despite its historical significance and vast collections, the Bardo Museum encounters various challenges in implementing digitization strategies effectively. By examining the experiences and strategies of the Bardo Museum, this research seeks to shed light on overcoming hurdles and advancing

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digitization initiatives. The central inquiry revolves around identifying the most pressing challenges confronting the National Bardo Museum in its efforts to digitize and display its collections in a modern, accessible manner.

In this context, a fundamental question arises:

What are the stakes confronting the National Bardo Museum regarding the implementation of digitization to exhibit its collections?

The main question necessitates the following supplementary inquiries for clarification:

- What are the main reasons for the delay in digitizing the national museums in Algeria?
- Is Algerian national museum of bardo ready to adopt technologies and digitization?
- What solutions can be adopted for the success of digitizing Algerian museums?

Study hypotheses: This research is based on the following hypotheses:

- The National Cultural Museums in Algiers lags behind the digitization field.
- Lack of necessary expertise within the museum and the financial resources pose an obstacle to the museum's digitization process.
- The lack of a well-thought-out national strategy for implementing the digitization process in the cultural field .
- Legal legislation and state policy play a role in delaying the digitization process in museums.

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Motivation :

Personal Reasons:

- Interest in technology and its potential to enhance museums for a more interactive experience.
- Curiosity about the factors contributing to delays in Algerian museums compared to other countries like France, Egypt, or the Emirates where greater emphasis is placed on technological advancements.

Objective Reasons:

- To study how to develop museum institutions in Algeria and make them more available and accessible to the public .
- The topic's connection with our speciality media ,culture and society, especially since museums are among the most important institutions that preserve Algerian heritage, thus preserving the history and culture of Algerian society and transmitting it across generations.
- Through this research, we can assess the Algerian museums' capacity to align with the ongoing global technological advancements .

Research objectives :

Museums institutions play a crucial role as they perform educational, cultural, tourism, artistic, scientific, social, moral and national tasks, in addition to their main mission, which is to preserve, maintain and display examples of the remnants of ancient civilization , Consequently, the digitization of museums emerges as a fundamental element, essential for amplifying their impact and ensuring their preservation.

This research claims to :

- Understanding why Algerian museums face delays in implementing digitization.
- Seeking potential solutions for the state to enhance and digitize museums, while pinpointing key challenges faced by these institutions.
- Discover the initiatives undertaken by both the Bardo Museum and the government in the process of digitization.

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Type and Method of the study :

1. Type of reaserch :

In this research, we will rely on a qualitative study , Qualitative research means conducting research studies based on observations Field and interviews to obtain information without resorting to statistical uses.

This often requires the participation of community members in its research activities ,The amount of researcher participation with the targeted study individuals varies depending on the nature of the study .

In qualitative research, the researcher usually directs towards a non-random sample, that is, a purposive sample In collecting data to achieve research objectives .¹

2. the research Method:

In this research, we chose to use **the study case** approach for the following reasons :

- ✓ trying to discover the reasons that made Algerian museums lag behind compared to the museums of other countries and knowing the challenges they face.
- ✓ Proposing solutions to the obstacles that prevent the digitization of museums in Algeria .
- ✓ Trying to figure out how the Bardo Museum can overcome some of the obstacles and complete a project to digitize the museum.

These goals align with the purposes of employing the case study method, which includes:

- ✓ Discovering the main causes of current conditions through analysis and description of information.
- ✓ Develop a plan to improve these conditions and correct their course.
- ✓ Working on finding solutions to change the situation .
- ✓ Identify facts and record them objectively in order to reach general conclusions and principles².

¹ عبد الجبار توفيق البياتي , محمد عبد العال النعيمي و غيره , *مناهج البحث العلمي وطرق اعداد البحوث* , مؤسسة الوراق للنشر والتوزيع , الطبعة الثانية , عمان , الأردن , سنة 2003 , الصفحة 140.

² احمد بوذراع , *منهج دراسة الحالة في العلوم الاجتماعية و الانسانية* , قسم علم الاجتماع , كلية العلوم الاجتماعية و العلوم الاسلامية , جامعة باتنة , الجزائر , مجلة الاحياء , العدد الرابع , سنة 2001 , الصفحة 286 - 287 .

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In general , This approach is concerned with studying all aspects related to a single situation, provided that the individual, institution, or society is considered as a unit that the researcher studies in all its aspects for the purpose of revealing the factors that affect the unit studied and then arriving at practical generalizations related to it and other similar units, which is what we will do in this research , we will study the Bardo Museum and understand the obstacles that hinder it, whether legal, financial or otherwise. Then it will be circulated to any museums, considering that these institutions suffer from the same problem presented in the research.

Reaserch population :

Algerian National Cultural Museums in algiers .

Reaserch sample :

purposive sample : National Museum Bardo .

Duration of the study : 3 months from February 25 to May 20 .

Data collection Tools :

The interview :

The interview is one of the tools for collecting qualitative data. It is a planned meeting between the researcher and the subject to answer a set of questions that revolve around a specific topic with its various aspects, for which the researcher prepares well to obtain detailed, in-depth information about the research topic.

It also assesses the quality and quantity of information, depending on the research objectives and subject. This information may manifest as facts, beliefs, opinions, positions, or reasons and motives.¹

The observation :

Observation is an interaction and exchange of information between two or more people (the observer and the participants in the study) to collect specific information and data about a specific topic or phenomenon, and the follow-up method should be done in a precise, practical manner .

¹ زينب خلافة , مواضيع , نظريات ومناهج البحث في علوم الاعلام والاتصال في الجزائر : المجلة الجزائرية للاتصال نموذجاً , أطروحة مقدمة لنيل شهادة دكتوراه علوم في علوم الاعلام والاتصال تخصص اتصال وعلاقات عامة , جامعة صالح بوبندير - قسنطينة 3 , كلية علوم الاعلام والاتصال والسمعي البصري قسم العلاقات العامة , 2017 - 2018 , الصفحة 289 .

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Qualitative observation is less structured than the observation that might be used in quantitative research. The researcher Qualitative does not use pre-defined classifications and patterns, but rather records its observations in a natural and continuous manner.

It is exposed that the information resulting from the observation will appear after the information is collected and analyzed, rather than Information is imposed during the observation process.¹

Theoretical approach:

- **Cultural economy**, is a field that studies the intersection of culture and economic activity focuses on the economic value of cultural production , distribution and consumption. While the information and communication study explores the flow and the acces of the information through media , and with the emergence of the Digital technologies, there is more opportunities for cultural institutions including museums in preserving heritage, promoting it globally, and creating new economic benefits through virtual exhibitions.²

That is why in our study we talked about digital cultural mediation, to explore the use of the online platforms and to understand how they can facilitate cultural consumption within the framework of the cultural economy. By using digital tools , museums can create engaging virtual exhibitions that attract a wider audience, leading to increased interest in cultural heritage.

- **Diffusion of innovation theory** : The Diffusion of Innovation Theory, developed by Everett Rogers in 1962n, explains how new ideas and technologies spread through a social system over time. The theory describes the process of adoption through different categories of adopters:

- **Innovators:** The first individuals to adopt an innovation.
- **Early Adopters:** Those who adopt after the innovators.
- **Early Majority:** Those who adopt after the innovation has been tried by the early adopters and before the average members of the society.
- **Late Majority:** Those who adopt after the average members of the society.

¹ Ibid , page 285 .

² Cristian Ciurea and others , Using Modern Information and Communication Technologies to Support the Access to Cultural Values , Journal of System and Management Sciences Vol. 10 (2020) No. 2, pages 2-4.

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- **Laggards:** The last to adopt an innovation.¹

Diffusion happens through a five-step process of decision-making. The five steps are awareness, interest, evaluation, trial, and adoption.

According to Rogers, the factors influencing the acceptance of adopting innovations include : Relative Advantage(adoption of an innovation because of it's clear advantage) , material incentive, Compatibility (alignment with prevailing values) , Complexity (degree of complexity in understanding and use) , divisibility and transferability (ability to be divided and shared), Observability (the adoption after the clear advantage for themselves) .²

Key concepts of the reaserch :

Cultural heritage:

Heritage comes from inheritance, which is the money left behind by the deceased for his heirs, and inheritance is the original.

Culture : It can be defined as a collection of social customs invented by human groups, such as clothing, language, religious customs, and traditions, as well as artisanal works and others.³

Cultural heritage is defined as: “The tangible and intangible elements that form the unique identity of a society or nation, including traditions, customs, values, beliefs, arts, crafts, literature, music, historical sites, and archaeological remains, which are transmitted from generation to generation”.⁴

Museum : In Prague, on 24 August 2022, the **General Assembly of ICOM** has approved the proposal for the new museum definition with 92,41% Following the adoption, the new ICOM museum definition is: “A museum is a not-for-profit, permanent institution in the service of society that researches, collects, conserves, interprets and exhibits tangible and intangible heritage. Open to the public, accessible and inclusive, museums foster diversity and sustainability. They operate and communicate ethically, professionally and with the

¹ Everett M. Rogers , *DIFFUSION OF INNOVATIONS*, New York: Free Press, Library of Congress , third edition, 1983 , pages 281 – 286 .

² بسام عبد الرحمان المشاقبة : *نظريات الاتصال* , دار أسامة للنشر والتوزيع , عمان , الاردن , طبعة سنة 2015 , الصفحة 178 و 179 .
³ ادريس باخوبا , *الحماية القانونية للتراث الثقافي الجزائري* , كلية الحقوق و العلوم السياسية , جامعة ادرا , الجزائر , المجلد الخامس , العدد الثاني , سنة 2016 , الصفحة 95 , 96 .

⁴ United Nations Educational, Scientific and Cultural Organization (UNESCO), *Safeguarding Intangible Cultural Heritage*, available at : <https://ich.unesco.org/en/what-is-intangible-heritage-00003> (Accessed February 20, 2024).

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participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing”.¹

Digitization : is the process of converting physical source material into digital source material. The goal of digitization is to preserve and protect analog information and make it possible for computing devices to work with it.

UNESCO provides a definition of digitization that links it to the wider context of the decisions and activities of memory institutions: “Digitization is the creation of digital objects from physical, analog originals by means of a scanner, camera, or other electronic device. It is undertaken as part of a process that includes: selection, assessment, including of needs, prioritization, preparation of originals for digitization, metadata collection and creation, digitization, and creation of data collections, and submission of digital resources to delivery systems and repositories”.²

Digital cultural mediation :

Cultural mediation:. Cultural mediation refers to the process of bridging the gap between cultural and social spheres, it covers a vast array of practices, and is ultimately intended to make everyone a cultural player , by creating a special gathering places where artists and the public meet and which promote exchanges between people.³

Digital cultural mediation refers to the use of digital tools and technologies to enhance the cultural exchange and engagement. it involves using digital platforms, applications, and media to create interactive experiences that help individuals comprehend and appreciate alternative cultures.⁴

¹ International Council of Museums (ICOM) , *Museum definition* , <https://icom.museum/en/resources/standards-guidelines/museum-definition> . Consulted on February 21,2024 at 21.20.

² Zinaida Manžuch , *Ethical Issues In Digitization Of Cultural Heritage*, Journal of Contemporary Archival Studies , volume 4 , article 4 governance of digital memories in the era of big data , 2017 , page 2 .

³ Cultural mediation presentation , Culture pour tous !, <https://www.culturepourtous.ca/en/cultural-professionals/cultural-mediation> , consulted on May 14 , 2024. At 17.38 am

⁴ Guide to digital cultural mediatio, Mysmartjourney , <https://mysmartjourney.com/en-ca/post/guide-to-digital-cultural-mediatio> , 18-04-2023 . consulted on May 14 , 2024 at 17.50.

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The previous studies :

A. Previous studies in English :

Thesis :

- ✓ Meriem SIDI AISSA , titled “New Ways of Presenting History, Culture and Nature Through Multidisciplinary National Museums Integrated in The Region of Jijel”.
- ✓ **Problem statement of the Study:**

What is the most effective way to integrate multidisciplinary museums of history, culture, and nature in Jijel region to ensure a comprehensive and dynamic experience for visitors ?

✓ **Abstract of the thesis :**

This research study focuses on the inadequacy of the current museum setup in Algeria, which fails to effectively highlight the country's rich heritage. It aims to improve the museum's ability to communicate its significance and provide visitors with a dynamic and enlightening experience. The region of Jijel has been chosen as a spatial support for this study. The study uses a mixed-methods approach, combining surveys, analysis of museum reports, and examination of inspirational examples from other countries. The findings validate hypotheses related to technology integration, collaboration with local communities, and the promotion of multidisciplinary exhibits. The research provides valuable insights and recommendations for creating transformative and inclusive museum experiences. It offers an opportunity to display the richness and diversity of history, culture, and natural wonders in one accessible and immersive setting, saving visitors the time and effort of traveling to different sites or regions.

✓ **Results :**

- The integration of innovative technology and sustainable practices has the potential to enrich the visitor experience and contribute to conservation efforts.
- Collaborating with local communities and experts ensures accurate representation and inclusivity of regional perspectives.
- The current museum setup in Jijel, Algeria, lacks the integration of technology, sustainable practices, and collaborating with local communities, hindering its ability to effectively showcase the country's rich heritage.

✓ **Relationship with our study :**

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The study on “New Ways of Presenting History, Culture and Nature Through Multidisciplinary National Museums Integrated in The Region of Jijel” is directly linked to our study on “Digitizing the tangible cultural heritage: the stakes of applying digital in displaying cultural heritage in the Algerian national museums - a study case of Bardo national musuem-”, they both share a common goal of enhancing public engagement. by acknowledging the challenges and opportunities in integrating innovative technologies in the Algerian national museums , and Althouth this study doesn't directly address digitization itself , its findings on technology integration, community collaboration, and sustainable practices offer valuable insights that can be a basis to rely on in our research .

Thesis :

- ✓ Theodora Topali , titled “ Digitality and Museums; The Benefits, the Challenges and a Case of a Non-digital Museum “
- ✓ **Problem statement of the Study:**

To what extent can museums leverage digital technologies to enhance their missions without compromising the irreplaceable value of the physical museum experience?

- ✓ **Abstract of the thesis :**

This study explores the impact of digital technologies on museums. it investigates both the benefits and challenges associated with adopting digital practices, such as virtual reality tours, social media presence, and online exhibitions. The analysis is informed by contrasting examples: museums with successful digital integration and the Archaeological Museum of Dion, which currently lacks such practices.

- ✓ **Results :**

- digital tools allow people to connect with museums remotely, fostering global reach and overcoming geographical limitations. it also can attract new audiences, leading to the potential growth of museums.
- Interactive exhibits and online content enhance the audience engagement with museum collections .
- Digital tools can bring museum exhibits to life, making them more engaging and interesting for visitors.
- Copyright restrictions may limit the online availability of certain exhibits.

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- Not everyone has equal access to technology, potentially excluding some audiences.
- Overreliance on digital elements could detract from the value of physically visiting museums.
- There are many reasons and obstacles that stop the heads of several Museums from adopting digital technologies in their exhibitions. Many of these could be financial reasons, different priorities, lack of staff, workload.

✓ Relationship with our study :

The study on “Digitality and Museums; The Benefits, the Challenges and a Case of a Non-digital Museum” is linked to our study on “Digitizing the tangible cultural heritage: the stakes of applying digital in displaying cultural heritage in the Algerian national museums - a study case of Bardo national museum-” ,because it provides a comprehensive overview of the various aspects of digitization in museums which is crucial in understanding the difficulties that faces the bardo national museum in its digitization efforts , besides it uses the same collecting data tool which is the interview.

B. Previous studies in Arabic :

Study :

✓ حاج كولة غنية , الاستخدامات الثقافية لمواقع التواصل الاجتماعي للمتحف و حتمية الانتقال من الواقع الى الافتراضي (دراسة ميدانية لصفحات فايسبوك المتاحف الوطنية).

The cultural uses of the museum's social networking sites and the imperative of moving from reality to (virtualization field study of the Facebook pages of National museums)

✓ Problem statement of the Study:

To what extent have the cultural uses of social media sites contributed to activating the roles of the museum and enabling the public to interact with the museum virtually? and what are the means used to market the museum's image ?

✓ Abstract of the study :

This study investigated the uses of social media sites by cultural institutions, notably the Museum, because museum actors found themselves obliged to enter the digital world , that became imperative to enhance the functions of the museum. in this study the researcher tried to reveal the most important cultural uses of The Facebook platform by analysing the

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contents of what was displayed on the Facebook pages For the national museums located in Algiers (Bardo -ancient relics -arts and folk traditions)

✓ **Results :**

- There is a difference in the use of the Facebook platform between the three museums studied.
- the imperative use of social media to promote museum exhibitions and activities, bringing the public closer.
- Adopting virtual reality has contributed to attracting visitors and enhancing their engagement with the performances and practices carried out by Algerian museums.

✓ **Relationship with our study:**

The study on “The cultural uses of the museum’s social networking sites and the imperative of moving from reality to (virtualization field study of the Facebook pages of National museums) “ is linked to our study on “Digitizing the tangible cultural heritage: the stakes of applying digital in displaying cultural heritage in the Algerian national museums - a study case of Bardo national musuem -” because it serves as a testament to the active presence of Algerian museums on social media platforms, which has effectively contributed to attracting a wider audience and a larger number of visitors. This phenomenon serves as the impetus for our study, which delves into the utilization of digital media by the Bardo Museum for the exhibition of its artifacts.

Chapter 1:

Digitization and

Digital Cultural

Mediation

Chapter 1 : Digitization and Digital Cultural Mediation

Introduction :

This chapter delves into the intersection of digitization and cultural mediation, particularly within the context of museums. It explores the relationship between these two concepts and their impact on the presentation, interpretation, and accessibility of cultural heritage in the digital age. Through examining digital mediation in the cultural field, the evolution of museums with technology, and strategies for cultural digital mediation, this chapter offers insights into how museums leverage digital tools and technologies to engage audiences and enhance the understanding and appreciation of cultural artifacts. Additionally, it provides examples of digitized museums to illustrate the practical applications of digitization and cultural mediation in museum settings.

1.1. Digitization and cultural mediation

1.1.1. Digital mediation in the cultural field :

Before discussing digital cultural mediation, we need to talk firstly about cultural mediation.

Cultural mediation is “ a form of communication that involves mediators who are interpreting speech and communicating cultural content in a three-way joint interaction between culturally different individuals or groups in order to facilitate communication and promote mutual understanding.” (Vještica and Sjekloća 11). ¹

Cultural mediation aims to establish spaces for dialogue among participants in a cultural experience, artists, cultural organizations and the public through a range of practices from audience development to participatory and community art. These practices leverage personal expression and experience as starting points for exchange around various cultural manifestations. Cultural mediation projects therefore focus on the inclusion and participation of different types of audiences in local artistic and cultural life.²

¹ Marija Marjanović and Adam Harbutli, *STANDARDS ON CULTURAL MEDIATION IN PROTECTION* , edited by Vladimir Sjekloća , Crisis Response and Policy Centre, 2021 , page 5 .

² *Médiation culturelle numérique définition* , culture pour tous , <https://www.culturepourtous.ca/accompagnement-numerique/wp-content/uploads/sites/31/2019/08/De%CC%81finition.pdf> , Québec, consulted march 23, 2024 at 9.28 am.

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The role of the cultural mediator is to facilitate connections between cultural objects, such as material productions, creative processes, and individuals. Depending on the project, they may serve as educators, guides, or informants, adapting their approach to suit the specific needs of audiences and the artistic, cultural, or social context.¹

“His action aims to facilitate encounter, exchange, and mutual understanding.”(Caune 2012)²

The term "cultural mediation" emerged in the cultural field in France in the 1960s, but it truly gained prominence in the library and museum sectors in the 1980s in Anglo-Saxon countries.³

According to Jean Caune, the concept of cultural mediation arised in a context of profound societal changes, characterized notably by:

- Increased cultural diversity due to migratory phenomena
- Risks of exclusion and identity withdrawal
- A need to rebuild weakened social bond

Additionally,” The emergence of cultural mediation responds to a major democratic challenge which is enabling dialogue between cultures and living together in pluralistic societies”. (Caune 2012)⁴

In cultural mediation projects, there are various types of action:

1. Creation: These projects involve audience participation in collective creative processes, where digital technologies serve as both tools to aid in creation and platforms for live dissemination of the creative process.
2. Education: Some projects focus on initiating participants into the expressive and technical languages of certain artistic disciplines through educational workshops. These workshops introduce participants to the technical foundations of digital creation technologies.
3. Interpretation: Similar to traditional art presentation, mediation activities objective is to transfer knowledge necessary for interpreting a work within a specific context.¹

¹ *Mediation culturelle, observation des mediations culturllles*, culture pour tous , <https://www.culturepourtous.ca/professionnels-de-la-culture/mediation-culturelle> , consulted march 23,2024, at 10.50 am.

² Jean Caune , *La médiation culturelle : le sens des mots et l'essence des pratiques*, sous la direction de Jean-marie la fortune , collection publics et culture , presse de l'université de Québec 1-1-2012 , page 30

³ Marie-Blanche Fourcade , *guide : la médiation culturelle en question*_, département d'histoire de l'art de l'Université du Québec à Montréal, 2014,page 3.

⁴ Jean Caune , Op.cit.pages 23,24, 68.

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Originated from earlier cultural mediation efforts aimed at making cultural works more accessible, digital mediation appeared in the 1980s as society began digitizing, with cultural and educational organizations such as libraries accompanying their audiences to access this cultural shift.

Digital mediation became prominent in the 1990s alongside movements like makerplaces and fablabs², emphasizing collaborative knowledge sharing within a digital culture framework.

In the 2000s, governments began addressing the concept of the "digital divide," referring to the gap between those who have access to digital technology and those who do not. This led to the implementation of proactive public policies aimed at bridging this gap, particularly for individuals deemed to be the furthest removed from digital advancements. Consequently, a new network of mediation actors emerged, working to actively promote digital literacy and participation within dedicated spaces known as "digital public spaces," "multimedia spaces," or "cyberbases." The primary objective was to ensure that individuals have access to a computer connected to the Internet in order to benefit from digital information and resources.

Today, digital technology and its applications have evolved. They are widespread and touch almost every aspect of daily human activities, from communication and entertainment to education, work, and commerce. The rise of social media, user-generated content, and participatory culture has further democratized digital cultural mediation, allowing diverse voices and forms of cultural expression to rise and reach global audiences³, besides, it has played a crucial role in preserving and increasing access to cultural heritage through digitization efforts by libraries, museums, and archives, which enhanced accessibility and engagement with cultural resources.

In addition, Digital spaces have provided platforms for underrepresented or marginalized groups to assert their cultural identities, narratives, and experiences, challenging dominant cultural narratives, it has also enabled the commercialization of cultural content.⁴

¹ *Médiation culturelle numérique définition*, culture pour tous, <https://www.culturepourtous.ca/accompagnement-numerique/wp-content/uploads/sites/31/2019/08/De%CC%81finition.pdf>, Québec, consulted on March 24, 2024, at 11:02 pm.

² A fab lab (fabrication laboratory) is a small-scale workshop offering open access to (personal) digital fabrication with providing technology tools to make almost anything, it can be used by the public to create transform creative ideas into tangible prototypes. Taken from: *What is a fablab?*, Fablab BeNeLux, <https://fablab.nl/?lang=en>, consulted on May 9, 2024 at 18:40 pm.

³ Coline Siguier Rigoni, *la technologie et les pratiques évoluent : la médiation numérique aussi*, Dans Les Cahiers du Développement Social Urbain /1(N° 75), Éditions Labo Cités, 2022, pages 26,27.

⁴ Jussi Parikka, *What is Media Archaeology?*, Polity Press, 2012, pages 91-116.

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In conclusion, Digital mediation serves the purpose of cultural mediation by actively involving the visitor through interactive screens, and applications that stimulate users' interest to explore, search, compare, sense, act, and express themselves. Digital mediation practices provide an excellent opportunity to stimulate perceptual memory.¹

1.1.2. Digital cultural mediation and digitization :

Digital cultural mediation and digitization are closely entangled concepts that complement each other in the realm of cultural engagement and interpretation.

Digitization, serving as the foundation of modern technology, revolutionizes various aspects of communication and media. it involves converting analog messages into digital signals, enabling their transmission, processing, and storage in electronic devices. this transformation facilitates the integration of voice, image, and text, thereby paving the way for multimedia applications and reshaping traditional communication tools like telephones, radios, and computers. Additionally, digitization simplifies communication processes, reduces device sizes, and promotes mobility, thus revolutionizing traditional reporting practices.²

In culture, digital technologies play a crucial role in supporting mediation and interpretation of artistic works, fostering collective creation, and facilitating artistic expression. they are transforming our engagement connect cultural works on various applications. for instance, communication software enables digital technology to facilitate exchange and participation among participants in cultural activities, addressing issues of time and mobility associated with in-person engagements.

Moreover, new digital applications offer innovative immersive and interactive experiences, along with novel forms of connection with cultural content. Open-source software enables creative appropriation of technologies like 3D printing and electronics, leading to the realization of new mediation activities and leveraging digital literacy skills among audiences.³

Conversely, digitization provides the necessary technological foundation and infrastructure for museums and cultural institutions to build extensive digital collections and databases. Digital cultural mediation then capitalizes on this digitized content to enrich how audiences

¹Guide sur la médiation culturelle numérique , My smart journey , <https://mysmartjourney.com/fr-fr/post/guide-sur-la-mediation-culturelle-numerique> , le 24-10-2022,at 14.23 ,consulted on march 25,2024, at 8.55 am.

² Imran Durakoglu , *Digitalization of The Museum: The Case of Sakıp Sabancı Museum* , Phd thesis , Istanbul Bilgi University ,Institute of Social Sciences, pages 28,29.

³Jussi Parikka , op.cit , page 117.

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experience, interpret, and interact with cultural heritage in the digital age. Leveraging digital technologies such as multimedia, virtual reality, augmented reality, and interactive installations, digital cultural mediation creates engaging interpretive experiences, offering multiple entry points, and immersive contexts for audience exploration of cultural narratives and connections with collections.¹

Overall, while digitization supplies the "raw materials," digital cultural mediation creatively utilizes and adapts those materials to facilitate interpretation, meaning-making and creating a richer cultural experience for a digital audience.

1.1.3. Digital tools and technologies :

Digitizing museums involves both software and hardware components, Hardware refers to the physical and material components of a computer system or electronic device, while software consists of programs, applications, and instructions that run on the hardware, allowing users to perform specific tasks or interact with the computer system.²

Hardware tools :

Computer and wifi : powerful computers and high internet flow are required for processing and editing large image and 3D data files generated during the digitization process.

Digital Storage : to make sure that there is enough storage for the digital items , there are three main options for digital storage : drives , the cloud , network-attached storage .³

digital cameras: An electronic camera that directly captures a digital image without the use of film , Museums used to digitize objects and items that are too large for a flatbed or book scanner. These cameras often have advanced features like tilt-shift , lenses and specialized lighting setups.⁴

There are other equipment to support the camera in photography sch as :

- Tripod : it is a three-legged stand utilized to stabilize the camera when capturing photographs of objects, ensuring steadiness and clarity.

¹ Octavio Kulesz ,*the impact of digital technologies on the diversity of cultural expressions in Spain and Hispanic America* , Intergovernmental Committee for the protection and promotion of the diversity cultural expressions, Tenth Ordinary Session Paris, UNESCO Headquarters 12-15 December 2016 , page 12.

² *Digital Initiatives: Hardware & Software* ,Digital Initiatives department at the North Dakota State Library , <https://library-nd.libguides.com/digitalinitiatives> , march 22,2024 , consulted on march 31 , 2024 , at 9.03 am.

³ Hardware , Op.cit , page 8 .

⁴ Ibid, page 15.

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- **Lighting** : a proper lighting equipment is crucial for capturing accurate and detailed images. This may include diffused lighting sources, adjustable light stands, and light modifiers to control shadows and reflections.
- **Backdrop** : it has to be neutral to eliminate distractions and ensures that the focus remains on the artifact being captured.
- **Media card reader** : it can transfer the images from the digital camera's memory card to a computer for processing.
- **Photo tent** : it is used to uniform lighting and minimize shadows, resulting in clear and professional images of artifacts.¹

Scanners: A scanner is used to capture an item in digital format, there are several types of scanners depending on the digitized object or item :

- **Flatbed scanners**: for scanning documents, photographs, and flat objects, high-resolution flatbed scanners are utilized to create digital copies.
- **Book scanners**: they are used to scan books, documents, and oversized items.
- **3D laser scanners**: 3D scanning technologies, such as light scanners (use light beams to capture the data), photogrammetry setups, are used to create detailed 3D models of objects.²

Audio and video recording equipment: it includes professional cameras, microphones, audio recorders, and lighting setups to ensure optimal image and sound quality.³

Software Tools:

Image software: software tools used in editing, converting, correcting and enhancing digitized images like Adobe Photoshop, Lightroom, Nomacs.

Document software : a computer program designed for creating, editing, formatting, and managing various types of documents, like: Adobe Acrobat (editor and reader), PDF fill, Foxit.

Video software : a computer program designed for creating, editing, and manipulating video content such as: shot cut, Handbrake.

¹ Ibid, page 15.

² hardware, Op.cit, pages 1,2.

³ Ibid, page 2.

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Audio software: a computer programs designed for recording , editing , mixing and manipulating audio content such as : audacity .¹

3D software: it used in creating interactive 3D models, and VR experiences, such as Autodesk Maya, Blender, Cinema 4D, and 3ds Max.²

Photogrammetry software: it involves capturing multiple photos of an object to create a 3D digital representation. By taking images from different angles and elevations. this method requires precision in photo capture to ensure accuracy in the final 3D models which are then processed using specialized software to generate a 3D model such as Agisoft Metashape, Reality Capture, or Meshroom for generating 3D models from overlapping photographs, ³

Collections management systems: Museums utilize specialized CMS software, Axiell Collections, museum plus, museum index plus .⁴

1.2. Digitization and cultural digital mediation in museums.

1.2.1. Museum evolution with technology:

Cultural institutions are undergoing a transformative phase by integrating digital strategies into their functions. this is evident in the practices of cultural professionals and the interactive experiences offered by the museums. ⁵

The rapid evolution of technology has brought about profound changes in recent museums and also in the consumer preferences, leading to a growing demand for easily accessible cultural goods, especially among young people. The integration of computer technology and the internet into the museum sector was not immediate, rather, it was an evolution unfolded nearly half a century. The initial phase of this digital transformation involved digitizing museum collections, which includes creating digital representations of objects, documents, images, and ideas. Subsequently, museums worldwide have embraced a wide variety of

¹ software handout , Op.cit , pages 1,2.

² Racheal christine woody ,2021, *Considering Museum Digitization Tools by Item Type* , Lucidea , <https://lucidea.com/blog/considering-museum-digitization-tools-by-item-type> , consulted on March 31,2024, at 11.44 am.

³ Racheal christine woody , 2018 , *3D Digitization in the Museum – Part 1: Photogrammetry* , Lucidea , https://lucidea.com/blog/3d-digitization-in-the-museum-part/?_ga=2.109348557.950974243.1631036948-34595263.1631036948 , consulted on March 31,2024 at 11.57 am.

⁴ *How to : collection managemnet system* , museums and galleries of NSW , <https://mgns.w.org.au/wp-content/uploads/2019/01/how-to-collection-management-systems.pdf> , 17/01/2019 , page 7 , consulted on March 31,2024 at 12.12 pm.

⁵ Cristina Badulescu & Valérie-Inés De La Ville , 2018 , *Museum mediation through the prism of digital technology* , <https://journals.openedition.org/rfsic/5463?lang=en> Call for papers of La Revue française des Sciences de l'information et de la communication , open edition journals , consulted March 26,2024 at 10.30 am.

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digital tools and techniques, giving rise to a new, modern form of the museum in the digital age.¹

In the evolution of museums with technology, several key mark the progression towards digitization and enhanced visitor experiences. beginning in the 1970s, early efforts focused on museum cataloguing and the role of computers in archaeology as preliminary steps to embrace technology in cultural institutions.²

The emergence of the internet further accelerated this progression, with cultural information becoming more extroverted and interactive, museums make their collections accessible through websites and social media, like Instagram, Facebook, LinkedIn, Twitter, and YouTube. In addition, museums use other channels like Wikipedia, Wikimedia, and Google Art Project to encourage virtual users to access their collections. using different channels means reaching a wide range of targets of online users. Moreover, the internet ensures open access to anyone, regardless of the age, education, job or social and economic background. a computer and Wi-Fi are all that is required to have access.³

As technology continued to advance, museums embraced emerging technologies such, Virtual Reality (VR), and Augmented Reality (AR) to enhance visitor engagement. virtual and augmented reality experiences emerged as a central focus in the early 21st century, offering immersive and differentiated reality for museum visitors. these technologies enabled enhanced experiences both on-site and online, bringing museum collections and hidden finds online. Efforts in metadata⁴ standardization and content digitization further facilitated the digital transformation of cultural heritage, ensuring accessibility and preservation of cultural objects.⁵

Alongside this transformation, the rise of digital technologies has reshaped the traditional museum visits towards immersive virtual experiences. virtual museum that called also as on-

¹Eirini Alexandrou , *Digital Strategy in Museums:A case study of The Rijksmuseum, Amsterdam* , Law and Arts Management, SCHOOL OF ECONOMICS, BUSINESS ADMINISTRATION & LEGAL STUDIES , Thessaloniki – Greece , January 2020 , page 5.

² Vassilis Pouloupoulos and Manolis Wallace, *Digital Technologies and the Role of Data in Cultural Heritage: The Past, the Present, and the Future* , Knowledge and Uncertainty Research Laboratory, University of the Peloponnese, 221 31 Tripolis, Greece , page 2 .

³ Lara Corona , *Digitization for the visibility of collections* , Department of Humanities, international university of Catalunya, Barcelona, Spain , 27 december 2022 , page 76.

⁴ Metadata : “ data about data” they are pieces of information that have some meaning in relation to another piece of information. They can be created, managed, stored, and preserved like any other data. Taken from *Metadata for Data Management: A Tutorial: Definition* , university libraries , updated february 8 , 2024 at 3:11 pm, <https://guides.lib.unc.edu/metadata/definition> , consulted March 26 ,2024 at 10.42 am.

⁵ Vassilis Pouloupoulos and Manolis Wallace, Op.cit , pages 2.3.4.

line museum , hyper museum and digital museum defined as ” a logically related collection of digital objects composed in a variety of media which, because of its capacity to provide connectedness and various points of access, lends itself to transcending traditional methods of communicating and interacting with visitors , it has no real place or space, its objects and the related information can be disseminated all over the world” (Andrews and Schweibenz ,1998)¹ . it has risen as a new approach to mediating cultural heritage, allowing individuals to explore digital reconstructions of cultural sites, artifacts, and exhibitions regardless of their location. Through the integration of advanced technologies like virtual reality (VR) and augmented reality (AR), visitors can now engage with cultural heritage in innovative ways, immersing themselves in engaging and interactive digital spaces.²

The COVID-19 pandemic led to a significant increase in digital activities among museums worldwide. Closures affected over 85,000 institutions, encouraging them to develop and launch various digital initiatives such as online exhibitions and virtual tours.³

The focus of cultural institutions has transformed in recent years, prioritizing the needs of visitors, with personalization and adaptive content becoming integral to the museum experience. machine learning and artificial intelligence have played significant roles in enhancing user interactions and connecting people with culture. despite challenges such as copyright issues, the evolution of museums with technology continues to redefine cultural experiences and narratives.⁴

1.2.2. Cultural digital mediation and audience engagement:

Audience engagement in museums involves how visitors interact with exhibits, which is influenced by their personal experiences and the use of technology. Through a captivating mix of education, entertainment, escapism, and aesthetics, museums empower visitors to actively construct knowledge. participation levels can range from simply being present to actively engaging with the exhibits, this means that how accessible, interactive, and participatory the museum experience is can greatly impact the way visitors engage with it. with the rise of

¹ Werner Schweibenz , *The Development of Virtual Museums* , Adjunct Faculty, Department of Information Science, University of Saarland, Germany , ICOM news , NO.3 , 2004 , page 2 .

² Yuanbing Deng, Xinhui Zhang, Bowen Zhang, Bei Zhang, and Jing Qin, *From digital museuming to on-site visiting: The mediation of cultural identity and perceived value* , published in *Frontiers in Psychology*, 2023, page 2.

³ Chiara Zouanni , *Museum digital projects during COVID-19: from lockdown connections to digital transformation?*, <https://mw21.museweb.net/paper/museum-digital-projects-during-covid-19-from-lockdown-connections-to-digital-transformation> , University of Graz, Austria, Published January 16,2021 , Consulted March 26, 2024 at 10.56 am.

⁴ Yuanbing Deng and others , Op.cit , page 6.

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digital technology, museums are finding new ways to enhance visitor experiences and deepen cultural understanding.¹

The emergence of digital technologies has profoundly transformed audience engagement with cultural content through digital cultural mediation, which encompasses various aspects of how digital platforms and tools shape cultural experiences and facilitate new forms of audience participation.

It has enabled interactive and immersive experiences that enhance audience engagement and emotional connections with cultural productions, Virtual reality, augmented reality, and interactive storytelling platforms have opened up new paths for audiences to deeply engage with cultural narratives and worlds.²

One of the key elements of digital cultural mediation is the emergence of participatory culture, often referred to as “public curation”, this concept encompasses the diverse ways audiences collaboratively contribute to shaping museum offerings, processes, and experiences. As a result, audiences are no longer passive consumers but active participants in the creation, sharing, and remixing of cultural artifacts.³ Social media, geotagging maps, mobile applications, user-friendly web tools and online communities like fan communities that engage in practices such as fan fiction, fan art, and fan-made videos, extending and reinterpreting existing cultural works. have empowered audiences to co-create, modify, and circulate cultural content, erasing the traditional boundaries between producers and consumers.⁴

“ Participatory culture is emerging as the culture absorbs and responds to the explosion of new media technologies that make it possible for average consumers to archive, annotate, appropriate, and recirculate media content in powerful new ways”(henry Jenkins 2006)⁵

The digital landscape has also facilitated the collection and analysis of audience data and engagement patterns, providing valuable insights for cultural organizations such as museums and producers to better understand their audiences so they can adjust their strategies .¹

¹ Myrczik , Eva Pina , *Digital Museum Mediation in Denmark : A critical exploration of the development, practice, and perceived outcomes* , a PhD Thesis , university of COPENHAGEN , department of information studies , august 2019, pages 45-48.

² Lara Corona , Op.cit , page 129.

³ Sara Radice , *designing for participation within cultural heritage : Participatory practices and audience engagement*, Doctoral programme in Designing heritage experience processes, Politecnico di Milano , Design Department , march 2014, page 103.

⁴ Ibid. page 129.

⁵ Henry Jenkins and all , *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century* , An occasional paper on digital media and learning , the MacArthur Foundation , 2007 , page 7.

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Additionally, digital technologies have also contributed to audience fragmentation. With the growing popularity of online communities, audiences are increasingly finding specialized groups centred around shared interests and subcultures, this fragmentation challenged traditional models of mass cultural consumption within museums and necessitates more targeted and personalized approaches to reach diverse audiences.²

Overall, digital cultural mediation has transformed the ways audiences engage with cultural productions, enabling new forms of participation, co-creation, and immersion.

1.2.3. Strategies of digital cultural mediation :

When discussing strategies of digital cultural mediation, we should consider various aspects that museums and cultural institutions utilize digital technologies in engaging with audiences and enhancing cultural experiences inside and outside the museum.

1.digital strategies: it encompasses the deployment of technological tools and platforms to enhance the presentation, accessibility, and engagement of their collections, and these tools come in three types:

The fixed tools: they are primarily used during the visit. these are non-mobile supports that are used for accessing additional content in exhibition room. fixed tools include:³

- touch screens: it is a computer screen that is used to provide information, show advertisements or provide services in a public space .⁴

- audio guide : An audio guide is a special audio device or a digital platform viewed on a mobile phone or tablet that provides audio content to educate and inform visitors and guide them around their surroundings. Audio guides typically include voice-over narration, music, sound effects, and other background sounds to enhance the narrative experience.⁵

- virtual reality: it allows users to directly experience a place created on the computer environment in three dimensions. it may be interactive or a 360-degree video. the virtual

¹ Philip M. Napoli, *toward a model of audience evolution: new technologies and the transformation of media audience* , working paper, the Donald MC Gannon communication research centre , july 2008 , page 26.

² Ibid. page 20.

³ Eva Sandri , *Patrimoine et musées locaux : clés de gestion , chapitre : Technologies : enjeux techniques et symboliques pour la médiation culturelle* , Université Montpellier Paul Valéry 3, Laboratoire Lerass , edition n 29 , 24/11/2021, page 387.

⁴ Lütü ATAY , , *use of technology in museums , sample applications* , Çanakkale Onsekiz Mart university , 2020,vol 1 , issue 2, page 95.

⁵Ibid. page 95.

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reality cuts the connection of users with the real world and integrates users with virtual world alone.

- Augmented reality : it is the integration of the physical world into the virtual world and unite them within the same frame , allowing users to interact with digital content within their physical surroundings.

- Touch tables : it is an interactive table equipped with a touch screen and special software that allows content to be displayed and edited.

- Exploration boxes : an interactive learning tools containing themed objects and materials for hands-on exploration by visitors, particularly children, to enhance engagement and learning. ¹

The mobile tools : mobile tools offer flexibility. they can be used in different places (inside and outside the museum) and at different times (before, during, and after the visit). For example, visitors can use touch-screen tablets or smartphones with tour apps to navigate the museum and learn about artworks. these tools are valuable because they can serve multiple purposes, such as providing information before the visit, helping visitors understand the exhibits during the visit, and even being accessed later for further exploration.²

Online tools : tools offering online content (virtual exhibitions on the web, social media , websites, chat bots , voice bots and online catalogs) can be accessed before, during, and after the visit. they aim to extend the museum experience by providing additional resources and engagement opportunities beyond the physical visit.³

Chat bots : it is a software that interacts with the user in natural language , usually in written form, through messaging applications, websites or mobile applications . ⁴

Voice bots : is a software that interacts with the user in synthetic spoken language instead of written form . ⁵

2.Audience engagement strategies :

It encompasses a variety of approaches used by museums to connect with their audiences and enhance their involvement. these strategies may involve interactive experiences, providing

¹ Ibid.page . pages 96- 100.

²Eva Sandri , Op.Cit.page 387.

³ Ibid. page387.

⁴K Štekerová ,2022 , *Chatbots in Museums: Is Visitor Experience Measured?* , Czech Journal of Tourism , 21-12-2022 , page 15.

⁵ Ibid. Page15.

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educational opportunities, providing information on activities and programmes online, personalized communication, community building, and the use of digital platforms. by implementing effective audience engagement strategies, museums aim to foster deeper connections with their audiences, increase participation, and ultimately achieve their goals more effectively.¹

3.collaborative digitizing projects strategy :

Museums embrace the concept of sharing data, presenting a significant advantage for consumers once the information is gathered and presented effectively. while visual resources can be costly, they can be affordably exchanged among them , presenting extensive opportunities to provide consumers with more immersive experiences.²

1.2.4. Examples of digitized museums :

The British museum :

The British Museum has leveraged digitization efforts to enhance visitor experiences both on-site and online. the museum's Collection Database project, initiated over a decade ago, aims to build a searchable database of its extensive collection for research and exhibition purposes. The museum's online collections receive approximately 1.5 million visits monthly, showcasing collections from various regions. Additionally, multimedia guide devices are employed to complement on-site explanations, offering visitors additional information and interactive features for over 200 objects across multiple galleries. ³

In 2014, the VR experience at the British Museum, featuring a simulated 4,000-year-old roundhouse with flickering fire and ambient lighting, was developed to be accessible to thousands of people across the world.⁴

It has also directed its efforts towards engaging children under 18 years old by introducing a new application for smartphones and tablet computers, developed in collaboration with Samsung, utilizing AR technology. Named "A Gift for Athena," this application gamifies the

¹ Museums report 2016 , *digital transformation in the museum industry* ,AXELL , pages 8-9.

² Ibid , pages 10-11.

³ Li, Yu-Chang , *Digitization of Museum and Art Gallery: A Framework for Enhancing User Interactivity and Personalization in On-site Environments* , a PHD Doctorate thesis , School of Information and Communication Technology , 2015, pages 30,31.

⁴ Museums report , Op.cit , page 8.

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museum tour experience, challenging players with tasks to locate specific artifacts within the museum and providing relevant information about each artifact.¹

In November 2015, over 4,500 objects from the British Museum's collection were made accessible online through their website, "The Museum of the World" This initiative was established through a new partnership with the Google Cultural Institute. Utilizing Gigapixel super high-resolution photography, this project aimed to enhance the comprehension and exploration of objects."²

October 2023, The British Museum has set out plans to increase access to the collection, and ensure everything is documented and available online. According to Mark Jones the Interim Director of the British Museum this project will take 5 years , and means that for the first time the entire collection will be accessible to anyone who wants to explore it. Alongside this, plans for enhanced access to the Museum's study rooms, where members of the public and academics can see additional items from the collection by appointment.³

The Louvre museum :

For over two decades, the Louvre has been engaged in museum digitization efforts, supported by government funding. their efforts focus on digitizing paintings and employing multimedia display techniques, making digital resources accessible through their website and mobile apps. this digitization initiative allows users to access digitized collections, including 3D representations and descriptions, easily online or on portable devices. Key achievements include providing detailed information about exhibits and artists, offering themed access to collections, virtual tours for remote visitors, and searchable databases for researchers and visitors.⁴

Additionally, the Louvre Museum has embraced digital technology to engage diverse audiences employing two key approaches: the development of a Louvre mobile application

¹ Lütfti ATAY , *Op.cit*, page 97.

² Adrian Murphy , march 3 , 2016 , *Digitising Collections – breaking through the museum walls and opening up collections to the world* , interview with the head of digital strategy at the british museum Chris Michaels , <https://advisor.museumsandheritage.com/features/british-museum-making-worlds-collection-available-global-audience> , consulted march 26 , 2024 at 10.07 am.

³ *British Museum sets out plans to digitise fully the collection* , press release of the British museum , https://www.britishmuseum.org/sites/default/files/2023/10/British_Museum_sets_out_plans_to_digitise_fully_the_collection.pdf , 17-10-2023 , consulted on march26,20124 at 10.16 am.

⁴Li, Yu-Chang, *Op.cit*.pages 29,30.

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and the creation of an audio guide for the Nintendo¹ 3DS XL. the mobile app aims to facilitate exploration and discovery of the palace and its collections, providing to users both on-site and remotely. Conversely, the Nintendo 3DS XL audio guide offers immersive features adapted specifically for on-site visitors, including indoor location tracking, three-dimensional gallery reconstructions, 3D artwork photos, and high-definition imagery.²

In 2021, an estimated 482,000 works have been digitized and integrated into the Louvre's collections database, highlighting the museum's dedication to preserving and providing access to its extensive cultural heritage.³

The Egyptian museum in Cairo :

The Egyptian museum is one of the most important museums for ancient Egyptian artifacts, it maintains its traditional identity while adapting to modern advancements .

This museum initiative with the digitization was in collaboration with CultNat in doing a temporary projects includes:

- Culturama,⁴ a large panoramic display offering immersive experiences, and Mini-Culturama, utilized in exhibitions like "One God and Three Religions."⁵
- Holograms, adaptable to different lighting conditions, display clear three-dimensional images. An example is the hologram of the Mask of Tutankhamen at the Egyptian Museum, used during its restoration.
- Virtual Reality, showcased in exhibitions like "Keys to Rome," offers interactive educational experiences for all ages.

¹ Nintendo is a type of computer games machine made by the Japanese company Nintendo, which is used to play video games on a television or computer. Taken from : *Nintendo* From Longman Dictionary of Contemporary English , <https://www.ldoceonline.com/dictionary/nintendo> , consulted on march 26 , 2024 at 10.21 am.

²Kenaya N. Camacho , *(Re)birth And Resurrection - Digitizing Antiquity: Preparing Ancient Egyptian Collections for the Digital World at The Grand Egyptian Museum and The Egyptian Museum in Cairo* , Johns Hopkins University, Museum Studies Digital Curation Certificate Program , april 21 , 2017 , page 20.

³ Neda Ulaby , march 30 , 2021 , *Not Heading To Paris This Summer? The Louvre Has Digitized 482,000 Artworks* , heard on morning edition at 5:02 am , <https://www.npr.org/2021/03/30/982258972/not-heading-to-paris-this-summer-the-louvre-has-digitized-482-000-artworks> , , consulted on march 26,2024at 10.29 am.

⁴ Culturama is a large panoramic display that surrounds the audience in 180 degrees. It is a semi-circle, it can also be customized to have different forms. Taken from *Cultural interactive panorama (culturama)*,google patents , <https://patents.google.com/patent/EP1771837A1/en> , consulted on consulted March 26, 2024 at 10.35 am.

⁵ Rania Mostafa , Abdalla Eshaq and all, *The Impact of Using Digital Technology Applications on the Egyptian Museum's Display*, *Scientific journal* , volume 2 , essue 1 10-08-2021 , page 110.

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- The Selim Hassan Temporary Exhibition showcased collaboration between the Egyptian Museum, the Alexandria Library, and CultNat , featuring innovative technology applications like holograms and Cave-Virtual Reality. it highlighted the excavations and documents of Selim Hassan, a pioneering Egyptologist. Concurrently, the Egyptian Museum introduced touch screen interactive displays and a mobile application, alongside a Wall of Knowledge featuring Tutankhamen's tomb discovery.¹

Taipei National Palace Museum :

Taiwan's National Palace Museum (NPM) is considered one of the most digitized museums in Asia, leads in digital archiving with its Digital Archives Project, initiated in 2004 and supported by the government. the project aimed to digitize NPM's vast collection, including costumes, paintings, calligraphy, and ancient Chinese documents, totalling 682,061 volumes by 2010. The NPM provided free public access to digital databases, enhancing user experience for researchers and promoting educational initiatives like "Adventure in NPM," offering 3D experiences.

By 2017, it has digitized 70,000 images of its Chinese artifacts and artworks, offering free downloads and detailed histories through its Open Data initiative, setting a new standard in online accessibility for these collections.²

NPM unveiled largest interactive wall in the continent on May 27, 2020. This 12-meter wall offers visitors a unique interactive experience, allowing them to select, drag, and scroll through numerous images, videos, and animations simultaneously. controlled by a sensitive and user-friendly interface equipped with infrared sensors, the wall can showcase over 300 works of art. ³

The Metropolitan Museum of Art :

The Metropolitan Museum of Art in New York has undertaken significant digitization efforts, with over 7,000 works digitized for public access through the internet. these digital resources include information on exhibits and conventions, alongside a collection searching tool called the Timeline of Art History, illustrating the collection's history from two million years to the present.

¹ Ibid.page 111.

² Eileen kinsella ,2017 , *Taiwan's National Palace Museum Digitizes 70,000 Images of From Its Vast Collection*, article published on ARTNET News , <https://news.artnet.com/art-world/taiwans-national-palace-museum-digitizes-70000-images-1048163> , consulted on 27 march ,2024 at 8.23 am.

³ Op.cit.page 99.

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It has initiated projects like the Met project and social tagging to enhance personalization and interaction. The Met project provides an online collection database, enriching the pre-visit experience with diverse media formats and personalized museum records through “MyMet”. the social tagging experiment aimed to involve visitors in enriching search results by contributing keywords.

Additionally, the museum utilizes online social networks like Facebook, Twitter, YouTube, and the audio guides to engage with the community. these efforts are supported by the establishment of a new department of digital media in 2010.¹

The Metropolitan Museum's digital department established a Media Lab to explore technologies impact on visitor experience and artistic expression. it maintains the Digital Underground blog and an online collection database with over 424,000 records as of March 2016.²

Inside the process of digitizing 1.5 million objects in 2018 , The Met museum allowed public access to over 200,000 pieces through a newly launched API³. this initiative aims to make the museum's artworks easily accessible to researchers, students, and the general public worldwide.⁴

In 2023, The Met museum introduced “Replica”⁵ AR app within Roblox⁶, allowing users to explore its collection digitally and collect wearable digital artworks for their avatars. this innovative initiative employs technology to reimagine art engagement, expanding accessibility and educational opportunities beyond physical museum visits.⁷

¹ Op.cit. pages 31,32.

² Chen-Wo Kuo and all , 2016 , *The Digital Museum: A Case Study of Digital Applications in the National Palace Museum* , article published by *Global journals* , January 15 , 2016 , pages 3,4.

³ APIs are mechanisms that allow two software components to communicate with each other using a set of definitions and protocols. Taken from : *Qu'est-ce qu'une API (interface de programmation d'application) ?* , Article publié dans la plateforme AOS , <https://aws.amazon.com/fr/what-is/api> , consulted on march 27,2024 at 9.59 am.

⁴ Rachel Kraus , *A museum without walls: How the Met is bringing its ancient collection online*, *Mashable middle east* , october 25, 2018, <https://mashable.com/article/the-met-museum-api> , october 25 ,consulted march 27 ,2024 at 10.19 am.

⁵ Replica is an exact copy or model of something, especially one on a smaller scale , to creat replicas is to a duplicate of an original artistic work. Taken from : *Definitions provided by: Oxford Languages* , https://www.oed.com/dictionary/replica_n?tab=factsheet#25836926 , consulted on march 26 , 2024.

⁶ Roblox is a gaming platform that allows to play dozens of user-created games or create games through Roblox Studio. Taken from : Garret Garrett , *What is Roblox? Here's everything you need to know* , Published by CNN at 9:53 AM , Fri August 11, 2023 , <https://edition.cnn.com/cnn-underscored/electronics/what-is-roblox> , consulted on march 26 , 2024 at 10.38 am.

⁷ Audrey Kemp , *The Metropolitan Museum of Art & Verizon launch AR art discovery app in Roblox* , august 1 , 2023 , <https://www.thedrum.com/news/2023/08/01/the-metropolitan-museum-art-verizon-launch-ar-art-discovery-app-roblox-replica> , august 1 , consulted march 27 at 11.17 am.

Conclusion :

In conclusion, the digitization of museum collections represents a fundamental shift in how cultural institutions operate in the digital age. moving beyond preservation towards accessibility and engagement through comprehensive digital repositories. this process aligns with the concept of digital cultural mediation, where the technology enables museums to connect with audiences in innovative ways, by embracing digital platforms, museums can engage diverse audience worldwide , transcending physical barriers.

Chapter 2:
Heritage and
Museums in
Algeria

Chapter 2 : Heritage and Museums in Algeria

Introduction

this chapter aims to explore the richness of the Algerian cultural heritage, and the crucial role that museums play in its preservation and promotion, it highlights the diverse facets of Algeria's cultural heritage to examining governmental policies, besides, it focuses on the evolution and organizational structure of museums in Algeria, highlighting their vital contribution to safeguarding and interpreting the nation's rich cultural heritage for present and future generations.

2.1. Algerian cultural heritage

2.1.1. Cultural heritage in algeria:

Algeria, with its vast geographical area and its status as a recipient of several ancient civilizations, contains a rich and diverse historical heritage, it encompasses tangible sites of ancient ruins and natural wonders, alongside intangible traditions and customs passed down through generations. from the prehistoric civilizations to the Roman, Islamic, and Ottoman periods.¹

Tangible cultural heritage in Algeria: consists immovable and movable heritage:

Immovable heritage : includes : Archaeological sites such as rock engravings, caves, and burial grounds found in various regions of Algeria like Ouled Djellal, Djemila, Tassili, and Sidi Ahmed Cemetery in Biskra.

military buildings like forts and watchtowers in cities like Guelma and Tlemcen. civil structures like bridges and gardens in Constantine and Biskra, religious sites like mosques in Algiers and Tlemcen, historical and traditional collections include architectural landmarks like Béni Suef, Ouled Djellal, , as well as palaces Aziza Palace.²

Movable heritage : like scientific manuscripts, artistic drawings, and photographs found in national museums. It also encompasses everyday life tools, pieces of national cultural

¹ سارة الحاج , مذكرة لنيل شهادة دكتورا بعنوان -التراث الثقافي الجزائري المادي و اللامادي - , جامعة عبد الحميد بن باديس- مستغانم- كلية الآداب العربي والفنون , قسم الفنون البصرية , سنة 2020-2021 , الصفحة 17 .
² ايمان هنشيري , الموروث الثقافي الجزائري الواقع و الافاق , جامعة عنابة , الجزائر , مجلة حوليات التراث , العدد 7 , سنة 2017 , الصفحة 101 , 100 .

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production, and historical artifacts, serving as witnesses to historical eras, intellectual movements, and societal norms.¹

Intangible cultural heritage in Algeria in the other hand consists on :

1. Oral traditions and oral expression arts: including heroic tales, myths, folk songs, and proverbs, rooted in collective memory, preserve cultural knowledge and values across diverse linguistic contexts, sustaining the cultural vitality and regional identities of Algeria.
2. tradition performing arts: including music, dance, theater, mime, and poetic recitation, reflecting human creativity and playing vital roles in various non-material cultural spheres.
3. Social practices, rituals, and celebrations : such as religious rites, life cycle events, and social interactions, it reinforce cultural identity and collective cohesion, reflecting a deep connection to history and tradition.
4. Beliefs and practices related to nature and the universe : encompass folk medicine , the collective understanding of the world and supernatural realms, expressed through language, oral traditions, and spiritual connections, shaping cultural identity and community cohesion,
5. Skills associated with traditional crafts: including various forms such as tools, clothing, jewelry, performance arts, and more, reflecting diverse cultural expressions.²

2.1.2. Algerian cultural heritage public policies:

Due to the diversity of Algerian cultural heritage, Algerian government has implemented several public policies aimed at preserving and promoting it, through:

1. Legal framework: issuing Law No. 04/98, concerning the protection of cultural heritage, it essentially includes the concept of cultural heritage, its classification, and the legal measures for its protection.

Alongside, it enacted a collection of executive decrees like executive Decree 11-352 of October 5, 2011, and ministerial decisions such as ministerial decision dated in November 10,

¹ Ibid , page 101.

² ايمان هنشيري , مرجع ذكر سابقا , الصفحة 102 - 106 .

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2009, containing the classification of protected movable cultural property aimed at safeguarding heritage.¹

2- cultural institutions and centers : including : Ministry of Culture and Arts through its directorates and structures. Besides Local entities, including municipal and state representatives, along with the state committee for cultural properties.

Museums like National Museum of Islamic Arts , National museum of bardo .

The Centres: The National Center for Manuscripts and the National Center for Archaeological Research.

Offices : There are five offices at the national level, including the National office for the Management and Exploitation of Protected Cultural Resources, the office of Riadh El Feth.

The Cultural Centers including: the Cultural Center for the Saharan Atlas, the Cultural Center for Tamanrasset and Guerara, and the Cultural Center for Tindouf.

Agencies include: the National Agency for Major Cultural Projects, the National Agency for Cultural Radiance, and the National Agency for Preserved Sectors.²

3- International conventions ; Algeria has signed a series of international conventions aimed at providing legal protection for cultural properties : the Hague Convention of 1954, the UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export, and Transfer of Ownership of Cultural Property of 1970, the Convention concerning the Protection of the World Cultural and Natural Heritage of 1972, the UNESCO Convention on the Protection of Underwater Cultural Heritage of 2001, and the Convention for the Safeguarding of the Intangible Cultural Heritage of 2003 , the Convention on the Protection and Promotion of the Diversity of Cultural Expressions of 2005.³

4- Preservation of historical sites and monuments:

¹ جمال قروف , الحماية الادارية للتراث الثقافي في الجزائر , الملتقى الوطني عن بعد المعنون ب : الحماية القانونية للتراث بين التشريع و التطبيق , جامعة 8 ماي 1945 قالمة , كلية الحقوق والعلوم السياسية , مخبر الدراسات القانونية البيئية , 7 ماي 2022 , قالمة , الصفحة 4 - 5 .

² Ibid pages 6 – 8 .

³ احمد بن دحو , جهود الدولة الجزائرية في حماية الممتلكات الثقافية عبر الاتفاقيات الدولية , كلية العلوم الانسانية و العلوم الاسلامية , جامعة وهران 1 , الجزائر , عصور , العدد 32 - 33 , جانفي - مارس 2017 , الصفحة 14 - 24 .

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The government has implemented conservation and restoration programs for historical sites, such as the renovation of the Casbah of Algiers and the preservation of Roman ruins like Timgad and Djemila.¹

5- Algeria's efforts to classify its cultural properties on the UNESCO global list

there are 7 algeria sites that have earned a place on UNESCO's World Heritage List , showcasing their global cultural value : Beni Hammad Fort 1980 in Msila ,Tipasa 1982 ,Timgad 1982 in Batna ,Djemila 1982 in Setif ,Tassili n'Ajjer 1982 in Illizi ,M'Zab Valley 1982 in Ghardaia ,Casbah of Algiers 1992 .²

Additionaly , Algeria has several intangible cultural heritage elements that have been inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity.

- Ahellil of Gourara 2008 .
- The practices and skills associated with the Tlemcenian wedding attire 2012.
- Practices and knowledge related to the Imzad music and its instruments among the Tuareg communities in Algeria, Mali, and Niger 2013.
- The annual visit to the tomb of Sidi Abdulkader Ben Mohammed (Sidi El Sheikh) 2013.
- For rituals and celebrations associated with the Sbiba festival in the Jant Oasis in Algeria 2014.
- the "Sboua" ritual: the annual visit to the shrine of Sidi El Haj Belqasem in Guerara on the occasion of the Prophet's birthday 2015.
- the knowledge and skills related to the water carriers in the oasis of Tuat and Tidikelt 2018.³
- Couscous and the skills required to prepare it , as a common heritage between Algeria, Tunisia, Mauritania, and Morocco 2020⁴.
- Algerian Rai folk singing 2022 .¹

¹ فرقة البحث حول الحماية القانونية للتراث الثقافي في الجزائر، *المحافظة على التراث العمراني في الاوساط الحضرية : التثمين و متطلبات الحماية* , الملتقى الوطني عن بعد المعنون ب : الحماية القانونية للتراث بين التشريع و التطبيق , جامعة 8 ماي 1945 قالمة , كلية الحقوق والعلوم السياسية , مخبر الدراسات القانونية البيئية , 7 ماي 2022 قالمة , الصفحة 104 - 105 .

² Unesco's world heritage list , <https://whc.unesco.org/ar/list> , consulted on april 1,2024 at 11.52 am.

³ The Algeria ministry of cultur official website , <https://www.m-culture.gov.dz/index.php/ar> , consulted on april 1,2024 at 12.20 am.

⁴ مقال بعنوان : تصنيف الكسكس كنراث انساني غير مادي من قبل اليونسكو , وكالة الانباء الجزائرية , 16 ديسمبر 2020 على الساعة 19:35 , تم الاطلاع عليه يوم 1 افريل 2024 على الساعة 12.58 . <https://www.aps.dz/ar/culture/98107-2020-12-16-18-36-20>

6- Cultural tourism :

The government has implemented initiatives to promote and develop this sector such as :

The tourism development plan SDAT 2025 announces the state's vision for national tourism development , is defined as a tool that translates the state's intention to valorize the country's natural, cultural, and historical assets, and to utilize them in the service of tourism, aiming to elevate them to a level of excellence in the Mediterranean region.²

As part of its efforts, the Algerian government has enacted a series of laws aimed at protecting cultural heritage in the field of tourism: Law no 03-01 focuses on subjecting the development of tourism activities to the rules and principles of protecting natural, cultural, and historical heritage.

Law no 03-03 focuses on the use and exploitation of cultural, historical, religious, and artistic heritage for tourism purposes , The necessity to align the development and planning of expansion areas and tourist sites with legislation related to environmental protection, coastal protection, and cultural heritage preservation.³

2.1.3. Algeria's efforts to digitize its cultural heritage:

In recent years, many digitization projects have emerged in the field of preserving the Algerian cultural heritage both governmental and private, including:

-Since 2007 The Manuscripts Service of the National Library of Algeria has begun The digitization process in order to preserve manuscript heritage and to facilitate the research process for researchers.⁴

- Since 2012 , The National Center for Cinema and Audio-visual has digitized 16 feature films from the Algerian cinema classics , it also restored and digitized 10 classic Algerian films in 2023 , with

¹ مقال بعنوان : 2022 عام تميز بتصنيف الراي في قائمة اليونسكو , وكالة الانباء الجزائرية , 28 ديسمبر 2022 على الساعة 17:11, <https://www.aps.dz/ar/culture/136854-2022> تم الاطلاع عليه يوم 1 افريل 2024 , على الساعة 13.15.

² فرقة البحث حول الحماية القانونية للتراث الثقافي في الجزائر , دور الديوان الوطني للسياحة في تنشيط قطاع السياحة التراثية في الجزائر , الملتقى الوطني عن بعد المعنون ب : الحماية القانونية للتراث بين التشريع و التطبيق , جامعة 8 ماي 1945 قالمة , كلية الحقوق والعلوم السياسية , مخبر الدراسات القانونية البيئية , 7 ماي 2022 , قالمة , الصفحة 66.

³ اسيا يلس , ياسين علال , الحماية القانونية للتراث الثقافي في القوانين الخاصة بالسياحة , الملتقى الوطني عن بعد المعنون ب : الحماية القانونية للتراث بين التشريع و التطبيق , جامعة 8 ماي 1945 قالمة , كلية الحقوق والعلوم السياسية , مخبر الدراسات القانونية البيئية , 7 ماي 2022 , قالمة , الصفحة 7-6.

⁴ زليخة وليد , رقمنة المخطوطات ودورها في حفظ التراث الوطني : تجربة المكتبة الوطنية الجزائرية أنموذج , جامعة معسكر , مجلة المواقف للبحوث والدراسات في المجتمع والتاريخ , مجلد 17 , العدد الاول , جويلية 2021 , الصفحة 1059 .

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a focus on works that left a mark on the cinematic scene and won important awards such as the Palme d'Or.¹

- In 2015 , a research project of archaeology researcher Farid Egil Ahrez used a 3D scan to create a digital replica of the funerary monument of the Tuareg queen Tin Hinan in Tamanrasset.²

- In 2016, the Algerian Ministry of Culture has launched an electronic portal dedicated to tangible and intangible heritage, such as cinema, theatre, literature, and various folklore expressions such as folk poems, songs, and chants, as well as professions related to the arts, in addition to museums and historical and archaeological sites , it aims to digitize as many components of Algerian culture as possible in order to highlight its richness and diversity and make it accessible to the largest number of audiences.

- The National Algerian Theater has digitized its repertoire of 192 plays since its creation in 1963.

- Since 2018 , The Laboratory of Mediterranean Architecture of the University of Ferhat Abbas in Sétif has been working on a method of taking 3D digital fingerprints of archaeological properties.

- The National Center for Manuscripts in Adrar has digitized 153 manuscripts.

- The Algerian Cinematographic Center (Cinémathèque) has digitized 15 rare Algerian short films from the 1960s.³

- The Algerian Ministry of Culture and Arts is working on a project to create a digitized geographic information system encompassing over 15,000 archaeological sites under its jurisdiction ,it aims to provide researchers with unprecedented access and insights into Algeria's rich archaeological heritage.⁴

2.2. Museums in Algeria:

2.2.1. Definition of concepts related to museums:

Collection : a collection may be defined as a set of material or intangible objects (works, artefacts, archive documents, testimonies etc.) which an individual or an establishment as

¹ المركز الوطني للسينما و السمعي البصري : نحو ترميم و رقمنة 10 افلام جزائرية , وكالة الانباء الجزائرية , 14 ديسمبر 2022 , 12.51 , <https://www.aps.dz/ar/culture/136145-10> , تم الاطلاع عليه يوم 7 ماي 2024 على الساعة 20.32 .

² الرقمنة في خدمة التراث الثقافي الجزائري , وكالة الانباء الجزائرية , 14 اكتوبر 2020 , 15:20 , <https://www.aps.dz/ar/culture> , تم الاطلاع عليه يوم 7 ماي 2024 م على الساعة 20.50 .

³ نفس المرجع السابق .

⁴ ياسر كعيش , 15 الف موقع اثري في الجزائر على منصة رقمية , 26 افريل 2023 , الشروق , <https://www.echoroukonline.com> , تم الاطلاع عليه يوم 7 ماي 2024 على الساعة 21.13 .

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assembled, classified, selected , and preserved in a safe setting and usually displays to a smaller or larger audience, according to whether the collection is public or private.¹

preservation: To preserve means to protect a thing or a group of things from different hazards such as destruction, deterioration, separation or even theft; this protection is ensured by gathering the collection in one place, inventorising it, sheltering it, making it secure and repairing it. In museology, preservation covers all the operations involved when an object enters a museum, that is to say all the operations of acquisition, entering in the inventory, recording in the catalogue, placing in storage, conservation, and if necessary, restoration.²

Public: “public museum” – explains the legal relationship between the museum and the people of the area in which it is located. The public museum is essentially the property of the people, it is financed and administered by the people through its representatives and by delegation, through its management.³

Curation: Curation encompasses a range of activities associated with the care and management of museum collections, including acquisition, conservation, research, and interpretation, as well as the physical organization and presentation of objects in exhibitions .⁴

Object: an "object" can be defined as any tangible item or artifact that has cultural, historical, artistic, or scientific significance and is collected, preserved, and exhibited for the purposes of study, education, and appreciation.⁵

2.2.2.. Algerian museums : history and policy:

1- History of algerian museums :

The history of establishing museums in Algeria has passed through two fundamental stages :

1) Pre-Independence Era (1835-1962):

During the pre-independence era, the establishment of museums in Algeria unfolded in two significant phases:

Formation of Initial Museums:

¹André Desvallées and François Mairesse , *Key Concepts of Museology* , With the assistance of the Musée Royal de Mariemont and the ICOM . page 26 .

²Ibid , page 65.

³ Ibid , pages 70,71.

⁴ Dave Wells 2020 , What Is Data Curation? Why Is It Important? , Alation , <https://www.alation.com/blog/what-is-data-curation> , consulted on april 3 , 2024 at 12.22 pm.

⁵ Ibid , page 61.

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Aderian Berburgger initiated the creation of the first museum and library in Algiers in 1835, marking the beginning of museum development.

The National Library in Algiers, initially situated in Bab El Oued and later moved to larger premises, played a pivotal role in preserving historical manuscripts, prints, and documents.

The Museum of Antiquities in Algiers, founded in 1898, emerged as the oldest museum in Algeria and Africa, showcasing ancient artifacts and Islamic art.

Colonial Expansion and New Museum Establishment:

In the 20th century, as colonial authorities conducted excavation campaigns, the rediscovery of Roman maps and ancient artifacts prompted the establishment of new museums.

In commemoration of the centenary of France's colonization of Algeria, three new museums were established: the Museum of Fine Arts in Algiers 1939-1931, the Constantine Museum 1931, and the Oran Museum 1935.

These museums were designed to exhibit archaeological and artistic artifacts collected from various regions of Algeria and serve the colonial narrative presented to European society.¹

Additionally, museums were also established in Cherchell, Tlemcen, Skikda...²

2) After independence era :

after independence, Algeria prioritized confronting the effects left by colonization through the restoration and valorization of cultural heritage in general, including museums and archaeological sites in particular, by carrying out restoration and maintenance works and retrieving some artistic treasures that were located in France.³

Consequently, the task of managing museums was delegated to municipalities. However, this endeavor failed due to the lack of human and material resources available. This negatively impacted museum collections and buildings, as it hindered their proper management and maintenance.

¹ زهير مالكي , تاريخ المؤسسة المتحفية بالجزائر 1835 م , 1985 م , عصور , العدد 37 , أكتوبر - ديسمبر 2017 , الصفحة 374 - 379.

² سعد الله ابو القاسم , تاريخ الجزائر الثقافي , دار البصائر للنشر و التوزيع , الجزائر , طبعة افريل 2008 , الصفحة 402 .

³ عبد القادر قاضي , زين الدين فاضي , مؤسسات الذاكرة في الجزائر : النشأة و التطور من الصفحة 1077 الى 1101 , مجلة المواقف للبحوث و الدراسات في المجتمع و التاريخ , مجلد رقم 17 , عدد خاص , جانفي 2022 , الصفحة 1079.

HERITAGE AND MUSEUMS IN ALGERIA

After the UNESCO report of 1967, which highlighted the situation of Algerian museums, a proposal was made to establish a national office for museums and antiquities, as well as a national laboratory for the maintenance and restoration of antiquities.

Then, the basic model law for classifying Algerian museums was issued in 1985, marking the first step towards revitalizing interest in museums in Algeria.¹

2- Algerian museums policies:

The number of Algerian archaeological museums dated back to the colonial period exceeds thirty museums of various types and ranks and they have remained in the same form inherited from that time. As for the rest of the museums, they were originally schools, mosques, palaces or warehouses, were transformed into museums, such as the National Museum of Antiquities, which was originally a school and also the Bardo national museums which was and is originally a palace.²

In 1985, Algerian national museums were brought under Law No. 85-277, which outlined a foundational framework for their operation. It established national museums as public institutions with administrative status, enjoying legal personality and financial independence, and are subject to the supervision of the Minister of Culture. They are established, regulated, and organized for educational, cultural, and recreational purposes.³

Then this law was cancelled due to the issuance of the decree No. 07-160 dated in may 27, 2007 which outlines the criteria for establishing museums, their responsibilities, structure, and functioning.

This decree was also canceled just four years after its issuance, following the issuance of the new decree No. 11-352 dated in October 5, 2011, which defines the basic model law for museums and interpretive centers with a museum character, which is still valid to the present time.⁴

¹ زوهير مالكي , مرجع سبق ذكره , الصفحة 381 - 382 .
² غنية حاج كولة , المتاحف الجزائرية بين الممارسة الثقافية و الاستهلاك المظهري : دراسة ميدانية للمتحف الوطني البارديو و متحف الاثار القديمة و الفنون الاسلامية , مذكرة لنيل شهادة الماجستير في علم الاجتماع , كلية العلوم الاجتماعية و الانسانية بجامعة الجزائر , تخصص ثقافي تربوي , سنة 2007-2008 , الصفحة 44-43 .
³ مليكة دحمان , لخضر سليم قيوب , اثر النصوص التشريعية على التسيير الذاتي للمتاحف الجزائرية : المراسيم المتخفية 1985 - 2011 , مجلة الحقوق و العلوم الانسانية , المجلد الخامس عشر , العدد الرابع , ديسمبر 2022 , الصفحة 58 .

⁴ Ibid , page 58 .

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In addition to the decree No. 11-352 , a joint ministerial decision dated May 4, 2014 came to strengthen it, which aims to determine the internal organization of the National Public Museum and its annexes.

According to these decrees , the fundamental functions of the museums in Algeria are : preservation and conservation, inventory management, exhibition, communication, organization of national and international conferences, activation through exhibitions and lectures, and establishment of cooperative relations with similar institutions.¹

According to these legislations, museums are classified into:

The Public National Museum: is an administrative institution with legal and financial autonomy, its Annexes are created through joint decisions by the supervising minister and the Minister of Finance, with internal organization determined by ministerial decree issued in collaboration with the relevant authority for public administration.

public museums affiliated with local municipalities: it must obtain a conformity certificate from the Minister of Culture, following consultation with the Museum Committee, its requirements for establishment including comprehensive collections meeting professional standards, and compliance with museum exhibition and conservation criteria.

Nonprofit museums: are permanent institutions whose purpose is not profit-oriented. They are established by legal entities subject to nonprofit laws, with their subject matter focused on social and cultural benefit.

Interpretive centers with a museum-like nature: An institution aimed at providing interpretive readings of historical events, specific landscapes, and explaining and presenting them to the public through museum or informational means.²

These legislations also included the administrative and financial organization of the museum and also the standards necessary for establishing museums, However, this legislation has not been updated since 2011, which represents a problem in the field of developing Algerian museums in line with the current time. Additionally, the management policy that characterizes our museums lacks a scientific and technical methodology due to a lack of effective strategies

¹ لخضر سليم قنوب , قراءة في النصوص التشريعية المتعلقة بالمؤسسة المتحفية بالجزائر , مجلة التنوير , العدد الثالث , سبتمبر 2017 , الصفحة 140 .
² مليكة دحماني , مرجع سبق ذكره , الصفحة 60 - 62 .

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in the field of planning and formation besides the legal vacuum that our institutions rely on in running the museums and the frameworks working in this Institutions.¹

2.2.3. Organization of museums in Algeria :

The administrative organization of museums in Algeria is subject to the following structure:

1. Steering Committee : Represents the Supreme Authority for Museums, it convenes at least twice a year. Its tasks include : establishing internal regulations and organization for the museum , accepting donations and bequests, approving estimated income and expenditure statements , budget projects , annual and multi-year activity programs, as well as reports on last year's activities , annual accounts.
2. Museum director: he is responsible for managing the museum , he is appointed based on a proposal from the supervisory authority.
3. The Scientific Committee : it is managed by the museum director , it provides opinions and recommendations on : exchange and cooperation programs , conservation and valorization projects for cultural heritage , acquisition programs to enrich national collections , all operations related to the restoration of cultural property, whether domestic or abroad.
4. The Technical Committee for Museums : In charge of providing its opinion on the establishment of museums and museum interpretive centers , providing technical opinion prior to the designation of an “Algerian Museum” , providing technical opinions on museum-related issues or matters pertaining to museum collections, upon request from the Minister responsible for culture.²

As for the financial organization of museums, it entails :

Expenses: these include management expenses, equipment expenses, and all expenses related to their subject matter.

Revenues: State's support, local associations, and public institutions.³

Additionally , the internal organization of public museums in Algeria, it is often divided into: Department of research and artifact preservation , Department of pedagogy and activation, General administration department , besides , it is noted that the General Administration

¹ مليكة دحماني , مرجع سبق ذكره , الصفحة 51 .

² سعد الله ابو القاسم , مرجع سبق ذكره , الصفحة 142 - 144 .

³ مليكة دحماني , مرجع سبق ذكره , الصفحة 68 .

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Department contains the same elements in the museums . However, the other departments may have slight variations in the elements.¹

Each museum should also have the following facilities to comply with museum standards:

Exhibition space, Storage rooms, Laboratories, Library, Workshop, Visitor area.²

Conclusion:

In conclusion, Algerian museums play a crucial role in preserving and promoting the country's rich cultural heritage, they are established by regulations that guide their operations. In addition, to ensure continued effectiveness in the field of cultural heritage, Algeria is implementing modernization initiatives, including digitization projects for cultural artifacts like manuscripts, films, and museum collections.

¹ The official website of the algerian ministry of cultur and art , <https://www.m-culture.gov.dz/index.php/ar> , consulted on april 7 , 2024 at 11.26 am.

² سعد الله ابو القاسم , مرجع سبق ذكره , الصفحة 145 .

Chapter 3 :

PRESENTATION

OF THE CASE

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THE RESULTS

PRESENTATION OF THE CASE STUDY AND DISCUSSION OF THE RESULTS

Chapter 3 : PRESENTATION OF THE CASE STUDY AND DISCUSSION OF THE RESULTS

Introduction

This chapter presents the case study of the Bardo national museum by highlighting its history, functions, and digital policies, and also it provides the analyses of data collected using the interview and the observation tools to explore the level of the digitization process in the museum and the difficulties that's faces it.

3.1. THE Algerian national museum of Bardo

3.1.1. Presenting Bardo national museum

The Bardo national museum is a museum of prehistory and ethnography, it houses several collections dating from the prehistoric age. it was built between the 17th and the 18th century during the Ottoman era, The residence passed from hand to hand over the time, between nobles and governors. All in enriching it with successive additions, architectural and artistic modifications . ¹

The musuem contains important collections dating back to prehistoric civilizations that were brought from various parts of the Algerian homeland, such as the sites of Ain Hanash in Setif, Taghnif in Biskra, the Atari sites in Tebessa, and from Tasli, Hoggar, and others.

These collections consist of various materials: stone, clay, shells, metals, drawings, and rock engravings.²

It also displays ethnographic artifacts, which focus on studying the material manifestations of human activity, including various customs and traditions. They are distributed according to the topics and materials that compose them: urban, rural, and desert, to reshape scenes of daily life in the eighteenth and nineteenth centuries.³

The Bardo National Museum is situated in the heart of the capital city, close to the People's Palace. Covering an expansive area of around 1000 square meters, it stands as a significant historical

¹ André Gob Neomie Drouguet, Histoire, développement, enjeux actuel, 4ème édition, Armond Goli, La muséologie, page . 45.

²The official website of the Bardo national museum of Algeria , <https://museebardo.dz/prehistoire>, consulted on April 7 , 2024 at 12.30 pm.

³Ibid , <https://museebardo.dz/ethnographie> , consulted on April 7 , 2024 at 12.48.

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landmark in Algeria. The museum was officially classified through an official declaration in the Official news paper in early September 1985.¹

The museum opens its doors daily except on Sundays and holidays from 9:00 AM to 5:00 PM.

Address : 3 Franklin Roosevelt Street, Algiers.



Image N°1: Location of the bardo national museum

Source : the official website of the Bardo national museum

Contact : (+213) 21 61 26 77 / (+213) 21 61 26 98 / (+213) 21 61 0190 .

Facebook : Musee Public National du Bardo-Algerie .

Website : www.museebardo.dz

E-mail : bardo.programmation@gmail.com .

Instagram : museebardo.dz.²

The architecture of the Bardo national Museum :

At the end of a vault of tall trees, the white mansion appears with its stacked cubes of walls and terraces. An staircase adorned with blue tiles leads to the porch, where a massive, studded, locked, and iron-clad door opens, passing under the small watchtower. Access to the favorite's chamber is through a gallery composed of five of five curved doorways ,

¹ الجريدة الرسمية الجزائرية ، 1985/11/12، أمر تنفيذي رقم 85-280 الصادر بتاريخ 29 صفر 1406 الموافق 12 نوفمبر 1985، الصفحة 1729 .

² The official website of the National Public Bardo Museum . <https://museebardo.dz/> , consulted on April 7 , 2024.

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connecting the courtyard with a short staircase of marble. Its walls are richly decorated with tiles, and it features recesses on all four sides with sculpted and painted plaster arches adorned with floral motifs.

The water hums over the basin, mirroring the architecture and palm fronds.

Three galleries frame the luminous courtyard with their colonnades and horseshoe arches, one of its raised covered walkways sinks and narrows into a viewpoint, which dominates the groves of fruit trees and the countryside of the Sahel.¹

At the end of another gallery, a secluded pavilion offers a tranquil escape. Its walls are adorned with blue pottery, and the pillars have hollows that once held lamps. The charming woodwork completes this gem of 18th-century Maghrebi art.

Under the third gallery there is a reception room. In a hollow reinforcement opposite the door, couches were to accommodate visitors, the front part of the house was accessible to foreigners, and lower rooms for domestic use, pantry and kitchens.

Opposite the entrance a porch similar to the first gave access to the vegetable garden, in one of the service rooms, the interior of a Moorish café equipped with its fireplace and shelves and covered by an archway. through an arched door you enter the house itself where you can find (Sqifa) which is a living room where the guests of the master of the house waited before being received there is two barrel vaults on top of it, to enter there is a thin staircase leading to the first floor.

The patio is another major space where rooms are longer than they are wide, it is not central and it is topped by a dome.

A door opens on the other facade, it gives entrance to a large vestibule covered by a dome and to a corridor leading to the patio which frames the rooms. This interior courtyard has a very remarkable architectural layout, the windows are largely on the back wall.

A staircase going up from this floor leads at the same time to upper rooms and to a private hammam, it is made up of two rooms: the rest room is very deep, and next to there is a square hot room with an eight-sided domed roof

¹ Le Bardo, Musée d'ethnographie et de préhistoire d'Alger, édition les presses de l'imprimerie officielle, Alger, mai 1949, pages 14-15.

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There is also a fireplace underneath it which heats up both the water tank and the floor, which can also be used as an oven for baking bread.

Fountains enrich the interiors of the villa , there are three fountains at the “Bardo” level : at the level of the Diwan , at the lower courtyard level , at the higher court level.

The Ethnography section , which in turn contains a group of sections :

- The Urban Ethnography Section of the museum is divided into several halls, each housing artifacts and exhibits arranged systematically and coordinated according to the architectural character of the rooms. In the central courtyard ,there is an open-air space typical of Algerian architecture. The Bardo Palace has a closed central courtyard with two rooms and a fountain with incense. there is also a Women’s Chamber that recreates a scene from a Delacroix painting showing urban women’s lifestyles , there is also the Maghreb Hall that displays models of artifacts, clothing , jewelry, and tools from Morocco, Tunisia, Mauritania, and Libya , in addition to the Dress Hall exhibits dolls in traditional Algerian clothing from different regions like the capital, Shawia, Mzab, and the Sahara, as well as wooden shoes and embroidered socks , besides there is a Traditional Bath Hall that depicts the social bathing practices at that time, including domestic steam baths, water baths, and a relaxation/grooming room.¹

- The Saharan Ethnography Section reflects the desert lifestyle of Saharan men and women, showcasing a variety of everyday items. These include leather storage containers used for obtaining water and preserving food, as well as models of war weapons used by Saharan men for defense or hunting. Additionally, there are representations of Saharan men and women, with the former depicted with travel necessities such as saddlebags, while the latter is shown engaged in daily tasks such as cooking, decorating, and playing musical instruments as an artist.

The prehistoric section : six large halls dedicated to prehistory, in which the collections are distributed according to chronological order the reception , it includes : introduction hall, and the Paleolithic period (bottom and middle), Late Stone Age and Neolithic, Stone Age , Modern and the dawn of history, prehistoric art .²

¹ Ibid , pages 16-24.

² Ibid , pages 27- 29.

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The laboratory : the redevelopment of the Bardo Museum made it possible to install a small archeology and prehistoric anthropology laboratory. It occupies a room independent of the Museum but adjacent to the prehistory collections.

Library: the museum library, which was set up in 1987 with a reduced number of works, has grown with the regular acquisition of works and the recruitment of specialized staff. The documentary collection now includes more than 3,000 works relating to all the specialties of the museum: prehistory, ethnography, conservation and restoration, anthropology, archaeology, civilization, heritage architecture, museology, history, arts and fine arts. It also includes theses, journals and periodicals (Archéologia, Dossiers d'Archéologie, la Lettre de l'OCIM, le Saharien, Muséum international, Revue Africaine...)¹.

The garden: which is also a "Historic Site".

Admenistrative organization of the bardo national museum :

According to the joint ministerial decision dated May 4, 2014, it includes the internal organization of the of the National Public Museum and its annexes.

¹ Ibid , pages 46-48.

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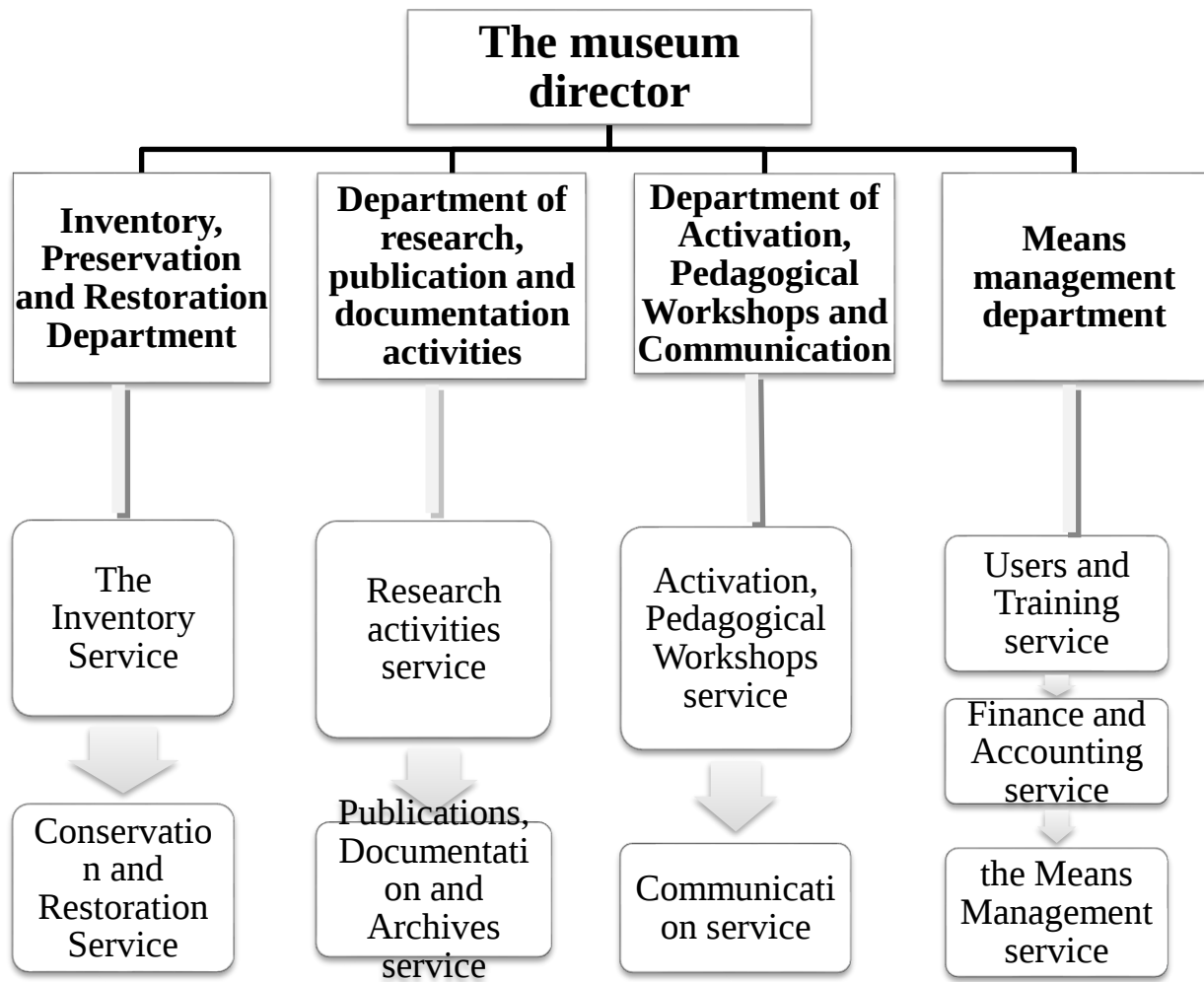


Figure N°1 : The organizational structure of the National Bardo Museum

Source : The administration of the Bardo national museum (translated by the student)

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3.1.2. History of Bardo national museum :

According to the stories of Lucien Golvin the villa would have been built in the 18th century , it is attributed to an exiled Tunisian prince, identified in the character of prince “Mustapha Ben Omar” .¹

The name Bardo that the villa holds , is a distortion of the Spanish “PRADO” (which means field of flowers) , which was a sumptuous summer villa inhabited by the Beys in the suburbs of Tunis and whose possession fell to the Hafside sultans , from the 15th century. Assigned, from the 1830 dates of the French conquest, to General Exelman, the villa have belonged to : Mr. Lichetlin in 1846 , Mr Baccuet in 1851 , Mr. Grauby in 1868, Mme Aziza Fao, daughter of Bacri in 1874.²

In 1875 , the villa came into the possession of Ali Bey, Agha of Biskra, who undertook numerous modifications to it , without disfiguring the place, he imported the richest earthenware from Holland, Tunisia and Morocco, Iran and Turkey. He exhibited very beautiful ceramic frescoes, moreover, he decorated the gardens with the most beautiful plants, he built it in the lower part of the residence where he set up stables in the current location of prehistory collections.³

In 1879 Ali Bey sold the villa to Mr Joret . From that time on, he renriched the rooms with precious collections , additioanly he enhance it with the furniture combined with the porcelain, multi-colored carpets the embroidered silks , lamps, braziers, chests, musical instruments... all coming from the East, Persia, Italy, Tunisia and Morocco, to house its valuable collections.

On the death of Mr Joret the villa rightfully belonged to Mrs Féront, sister and heiress of Pierre Joret, until 1926 when the Bardo villa was ceded to the estate. It was only in 1930 that the villa took on the status of Museum of Ethnography and Prehistory. For this new vocation, other modifications have been introduced. Due to a lack of sources and insufficient information, the attribution of its additions remains discreet in knowledge.⁴

¹ *Le Bardo, Musée d'ethnographie et de préhistoire d'Alger*, édition les presses de l'imprimerie officielle, Alger, mai 1949, page 13.

² Henri Klein , *feuillets d'El-Djazair* , comite de vieil Alger , Tome 2 , Editions de Tell , page 95.

³ Bardo , publication du musee , alger ,1999 ,

⁴ Golvin Lucien , *Palais et demeures D'Alger a la periode Othomane* , OPU , france 1988 , page 316.

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And because of its architectural and historical richness. The villa was classified as a “historical monument” on September 1, 1985. And On November 12, 1985, the museum was established as a “national museum” according to the Decree No. 85-280.

3.1.3.Functions of the Bardo national museum:

The National Bardo Museum’s mission in the national plan is to achieve economic and cultural development and implement the policy of acquisition, restoration, preservation and display of collections on the public, as the latter reflects the cultural, historical and artistic character of our ancient civilization

Therefore, it is mandated to: restoring and maintaining collections, developing research plans, and participating in research activities and work such as exploration, collecting documents, contributing to training courses, and carrying out information, education, and publishing information at the level of publications, magazines, brochures, and audio-visual media, presenting them to the public and forming activation programs (lectures, performances).¹

To these goals that the museum aims to achieve, we can also talk about the mission of each department of the museum that we mentioned before :
Inventory, Preservation and Restoration Department : this department is concerned with :

Preparing plans and programs to preserve collections, to secure and acquire them, to restore and follow up on antiquities.

Preserving, restoring, studying, acquiring and enriching collections.

Maintaining and storing an inventory of collections.

Ensuring the management of warehouses, laboratories, and preservation and restoration workshops.

Ensuring the exchange and transfer of collections and antiquities with other museum institutions within the framework of temporary exhibitions, and it includes two (2) main services:

- The Inventory Service: is responsible for preparing collections inventory records / cards, keeping and documenting the collections inventory, implementing the collections acquisition

¹ غنية حاج كولة , مرجع سبق ذكره سابقا , الصفحة 59 .

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plan, tracking and managing of the collection's movements and transfers within the framework of exhibitions and loans.

- Conservation and Restoration Service : is tasked with implementing the plan and the program of preserving, restoring and securing the collections and the museum, preserving, studying and enriching the collections, managing warehouses, laboratories and preservation and restoration workshops.¹

Department of research, publication and documentation activities : is responsible for :

Initiating and supporting scientific and technical research activities and investigations in fields related to museums.

Establishing national and international exchange relations and partnerships in the field of scientific and technical research and investigation activities related to museum science and antiquities studies.

Participation in scientific projects and forums at the national and international levels.

Publish scientific and technical findings through specialized scientific publications and forums.

Publish the results of scientific and technical evaluation through exhibitions, exhibits, exhibition catalogues, and general publications directed to the general public.

Preserving and maintaining the museum's documents and archives

Managing the library and the museum's documentary stock .

It consists of two (2) services :

- Research activities service : in charge of carrying out scientific and technical research activities in the field of museums and participating in them , rganizing and participating in scientific and technical activities in the field of scenography, sound and light, participating in scientific and technical research and investigations in the field of museums at the national and international level, implementing investigation protocols in the field of risk management.

¹ الجزائر , قرار وزاري مشترك مؤرخ في 4 رجب عام 1435 الموافق ل 4 ماي 2014 يحدد التنظيم الداخلي للمتحف العمومي الوطني و ملحقاته , 17 الجريدة الرسمية للجمهورية الجزائرية , جمادى الأولى عام 1436 هـ الموافق ل 8 مارس 2015 م , العدد 12 , الصفحة 30 .

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- Publications, Documentation and Archives service: it is responsible for publishing information and results of museum evaluation and producing scientific and technical activities, ensuring the management and maintenance of the documentary balance, archives, library and photo library and making them available to the public and scientific users.

Department of Activation, Pedagogical Workshops and Communication : it is responsible for Envision the implementation of interactive programs related to its subject and educational activities aimed at spreading museum culture.

Organizing visits inside the museum.

Make collections accessible to the public.

Creating media and communication spaces , pedagogical workshops, and educational spaces.

Implementing activation programs such as lectures, meetings, and exhibitions.

It includes two (2) services :

- Activation, Pedagogical Workshops service : it is concerned with implementing activation programs and organizing pedagogical workshops in the museum and out of it , implementing temporary and mobile exhibitions , and developing the scenography of permanent and temporary exhibitions.

- Communication service : it is responsible for publishing information related to the museum's purpose and activities through pedagogical and educational means , creating a data bank using an automated tool for collections, archives and libraries and communicating it to the public.

Means management department : it is responsible for managing human resources.

Preparing and implementing the annual plan to train users , improve their level, and renew their knowledge.

Preparing the museum's budget .

Ensuring the provision of public means .

Ensuring the management, maintenance and security of the museum's movable and real estate property.

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It includes three (3) services : Users and Training service , Finance and Accounting service , and the Means Management service .¹

Further more the The Bardo national Museum organizes temporary and traveling exhibitions like “Algerian Costume in miniature”, presentation of the diversity of clothing types in Algeria in miniature, from May 18 to October 16, 2016 , educational workshops, study days and conferences , Animation of artistic and cultural evenings .

3.1.4. National Bardo museum’s digital policy:

The museum had not begun digitizing its collections until recently. The process started when the Ministry of culture and art established an agreement with the U.S. Embassy, the Egyptian Heritage Rescue Foundation and Antiquities Coalition to create a training program for the cultural museum’s employees on digitizing collections. The Egyptians were responsible for conducting the courses. and the participants from the Bardo national museum are: Harichane Zoheir the museum director, Arezki Bourrai heritage curator, Khelifa Tidjdedam librarian and head of the communication department, Lalia Youcef Khodja assistant engineer , Souad Arab Heritage Curator , Saliha Bouali Restoration Service Manager.

The programme was divided into two parts , the first part was online training to introduce the employees to the items covered in the on-site program , it lasted for 3 days (May 9, 10 and 11 , 2023) , the main topics discussed during those days were : managing museum collections , museum collection’s policies , the collection and acquisition policy of museum collections (a case in practice of the metropolitan museum of art) , museum collection management system , registration – data collection methods , the use of the new technology multimedia and applications in the museum scenario display , the approach for preventive conservation and emergency stabilization . Each subject lasted for 1 hour, with 3 subjects on the first day, 2 on the second, and 2 on the third.

The second part was In-person training course titled “digitizing museum collections” , which took place over 2 weeks from May 21, 2023, to June 1, 2023. The training was held from 9 am to 4:45 pm on Saturday, Sundays, Mondays, Thursdays, Wednesdays, and Tuesdays.

The subjects covered in the first week, from May 21 to May 25, 2023, were: Opening and Presentation of the Training Course , Digitization and Digital Transformation of Cultural

¹ الجريدة الرسمية للجمهورية الجزائرية , نفس المرجع , الصفحة 31 - 32 .

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Heritage , Models for Museum Collection Management Systems , Museum Collection Data Management , Photographic and Photogrammetric Documentation , Identifying Threats to Museum Collections , Definitions of Digitization and Digital Transformation of Cultural Heritage , Procedures in Museum Collection Management Systems , Building a Database Compatible with the Nature of Museum Collections , Risk Assessment , Digitization vs. Traditional Methods in Museum Management Systems: Benefits of the Digitization Trend, Procedures in Museum Collection Management Systems , Methods of Digital Data Collection and Recording , Preparation and Risk Reduction , Museum Collection Management Standards: UK Museum Collection Management Standards Spectrum Model , Application of Deep Learning in Cultural Heritage , Methods of Digital Data Collection and Recording .

The subjects covered in the second week, from May 27 to June 1, 2023, were: Photographic and photogrammetric documentation, reorganization of museum storage, condition assessment and damage assessment, emergency evacuation of museum collections, advanced documentation methodologies.

Employees from other Algerian national museums such as the national museum of fine arts, also participated in this training programme, the purpose was to prepare the attendees to become future trainers for other museums.

After the training, the US embassy donated technical materials to the Bardo national museum, including: digital camera, two (2) powerful computers, the tripods and the lightning material. And they currently using them in making 3D versions of the museum's objects .

As for the software , they use basically windows software like power-point , and to make the 3D copies they use “Agisoft Metashape” which is a photogrammetric software that performs photogrammetric processing of digital images and generates 3D spatial data to be used in GIS (Geographic Information System) applications, cultural heritage documentation, and visual effects production as well as for indirect measurements of objects of various scales .¹

To start the process , they take a series of high- quality , overlapping photographs of the object from all angles .

¹ Official website of agisoft foundation , <https://www.agisoft.com/> , consulted on May 11,2024 .

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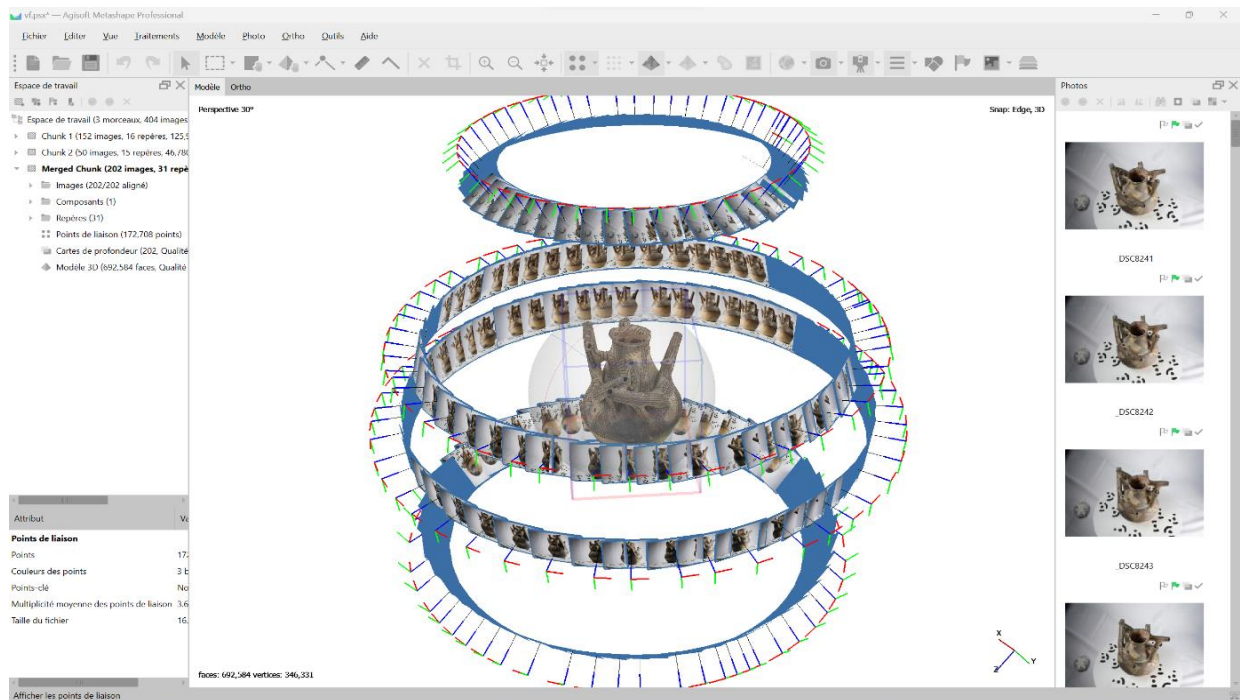


Image N°2: photographs of the object “ jug “ from all angles

Source: Mr.Arezki Bourrai from the digitization cell

The next step is to import the images into Agisoft Metashape , which aligns the photos and detects common points to create the basic shape of the object.

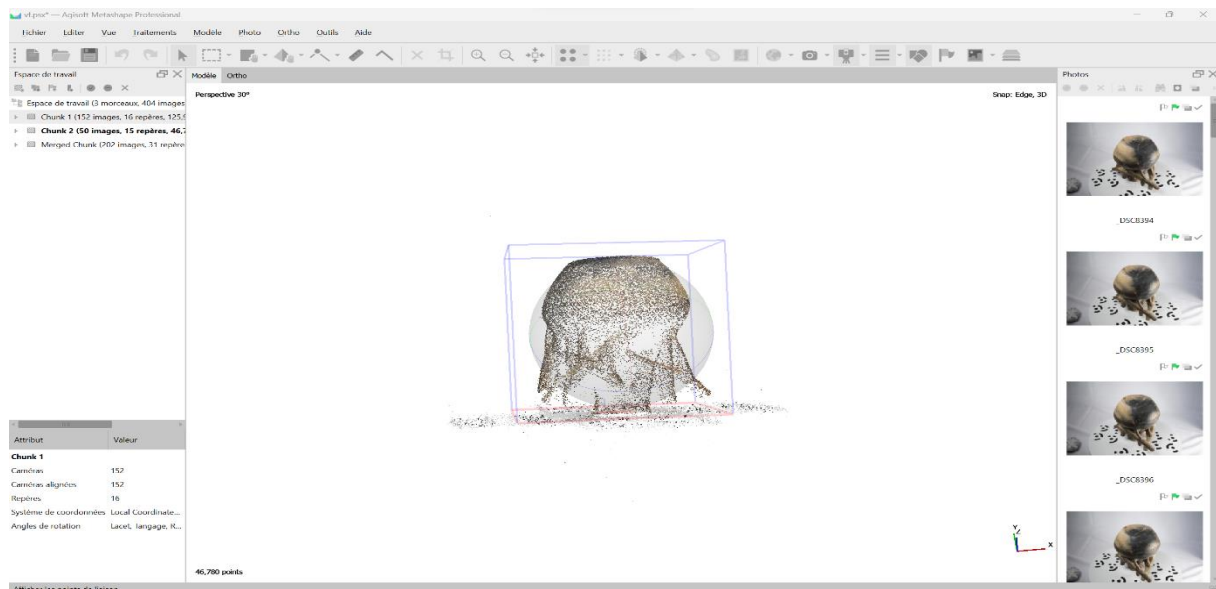


Image N°3 : the basic shape of the object “ jug “ after the detection of the common points from the photographs by Agisoft metashape

Source : Mr.Arezki Bourrai from the digitization cell

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the software adds more points to that shape to fill the gaps in order to create fuller picture .

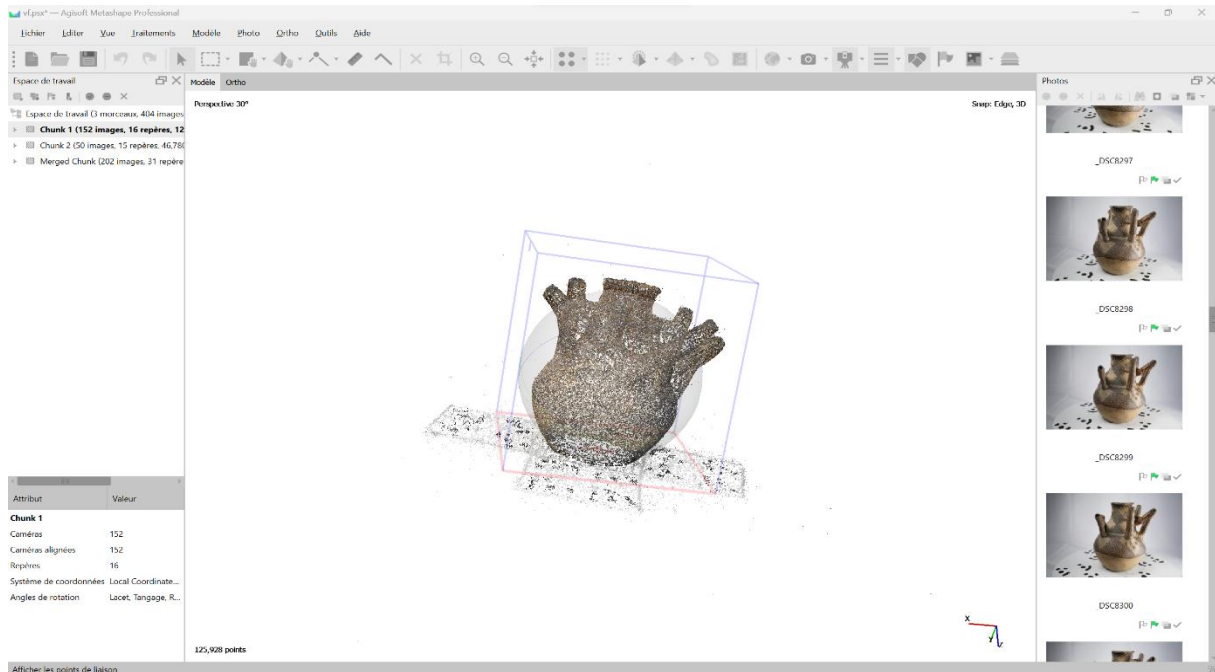


Image N°4 : the full shape of the object “ jug “

Source: Mr.Arezki Bourrai from the digitization cell

finally it connects those points to create a solid surface that represents the 3D version of the object.

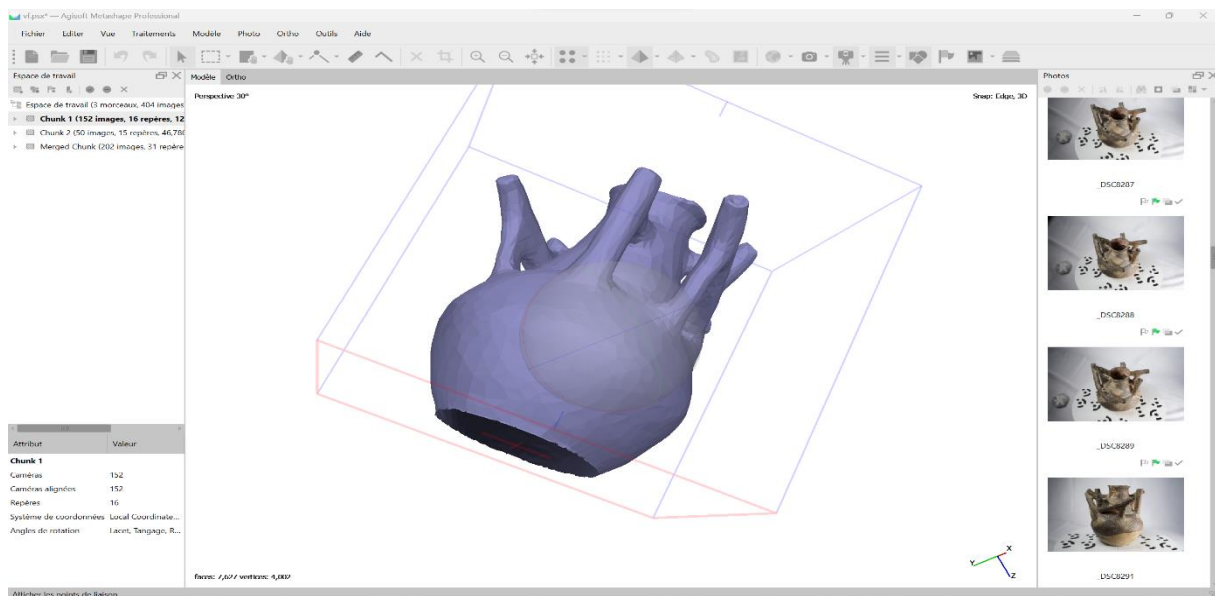


Image N°5: the 3D version of the “ jug “ object

Source: Mr.Arezki Bourrai from the digitization cell

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In addition, Agisoft Metashape applies the colour and texture of the object according to the photos of the object.

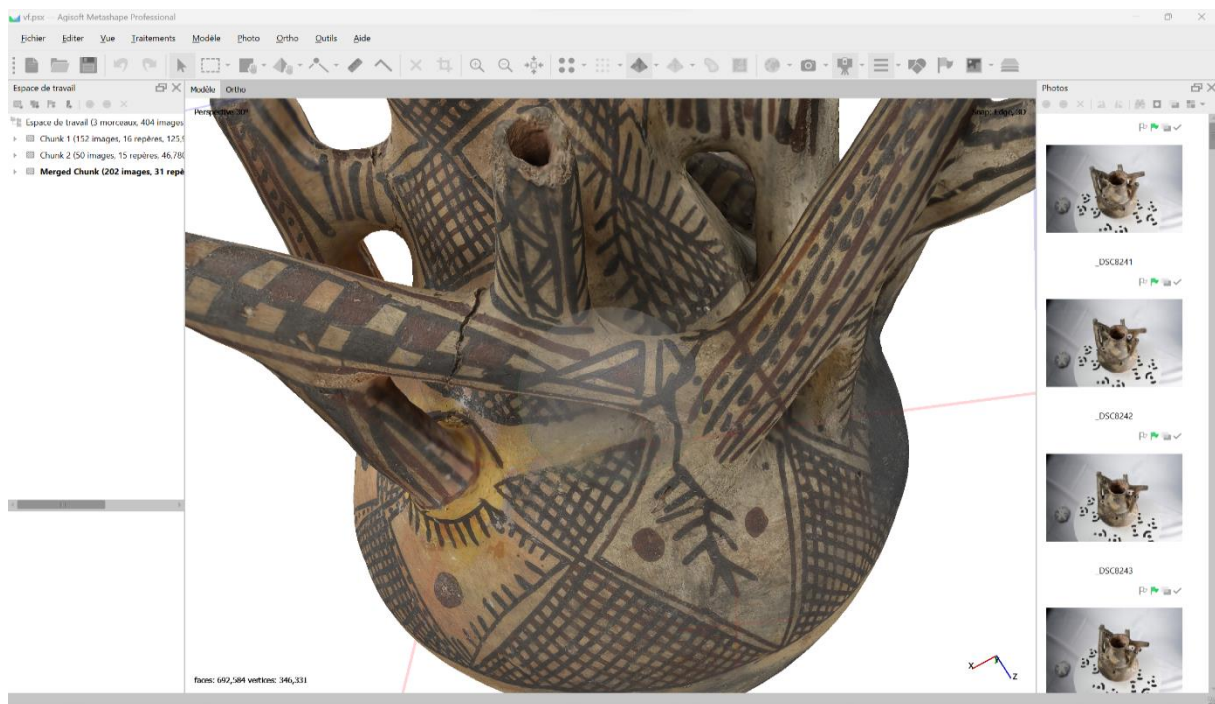


Image N°6: the “ jug “ after applying the texture and the colour

Source: Mr.Arezki Bourrai from the digitization cell

the final step is to edit the 3d version before exporting it in format OBJ to become like this :



Image N°7 : The final 3D version of “ the jug “

Source : Mr.Arezki Bourrai from the digitization cell

Regarding social media, the museum utilizes Facebook and official website to share information , activities about the museum and “the object of the month”(every month they

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choose object to display it online. The 3D versions of these objects are shared on museum's official website allowing the public to get a better look on it .

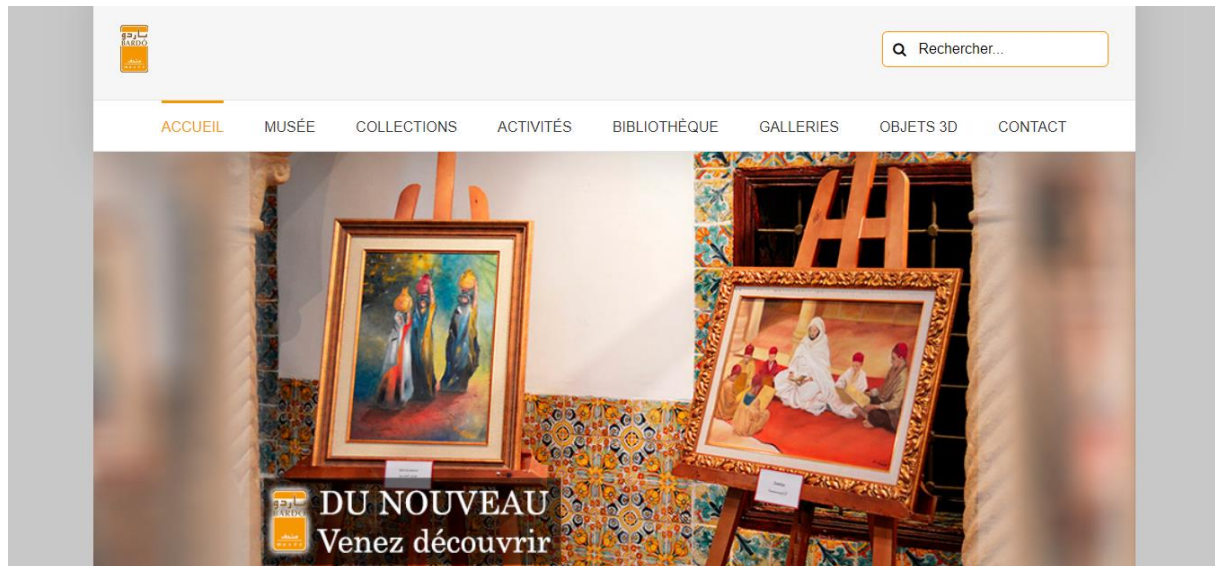


Image N°8 : the official website of the Bardo national museum

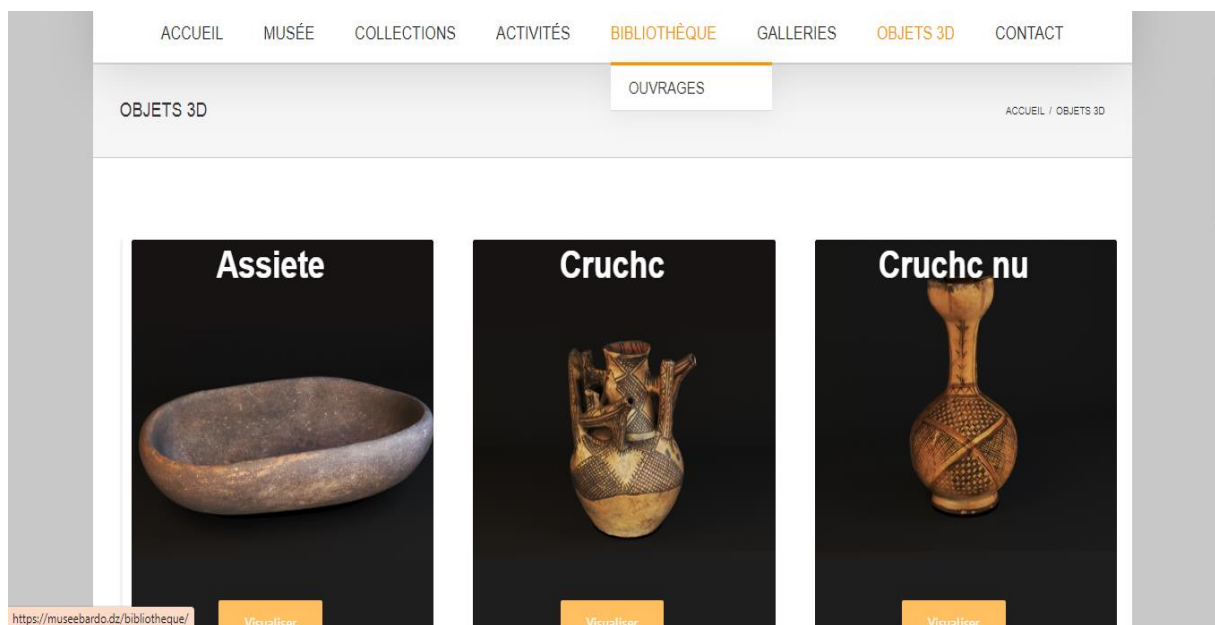


Image N°9 : 3D objects published on the official website of the Bardo national museum

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As for Facebook, it doesn't currently support 3D models, so they need to convert the 3D object into a video or a GIFT format by using usually the power-point so they can be able to share it.



Image N°10 : Facebook page of the Bardo national museum

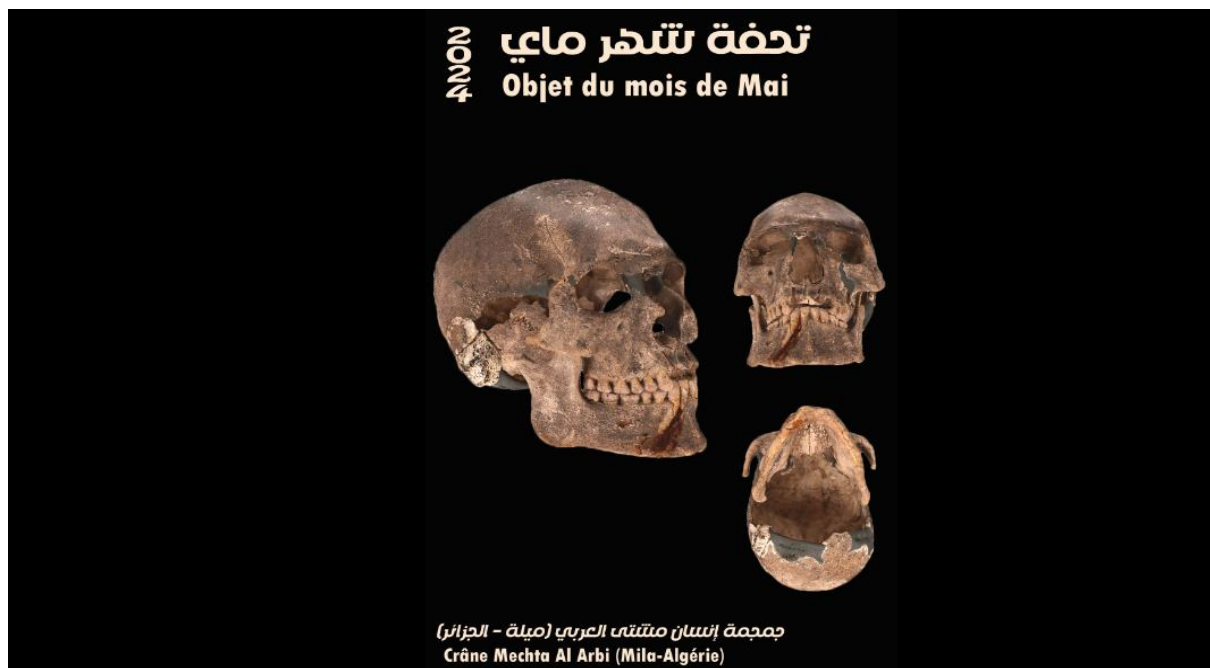


Image N°11 : Example of the way 3D digitized objects are published on the facebook page of the Bardo national museum .

Source : the Facebook official page of the museum

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3.2. Analysis and discussion of results

3.2.1. Analysis of the data collected:

A. The interview : In collecting information in this research, we relied on the semi directed interview with structured questions as a main tool due to its effectiveness in qualitative research compared to other tools, as it allows for great flexibility in asking questions , It provides the researcher with opportunities to define, formulate and arrange questions, besides it allows the researcher to control the interview situation and its course, which ensures that he obtains the necessary answers. Additionally , it enables the researcher to collect additional information about the subject and to observe the interviewees behavior while answering the questions for more accuracy in analyzing the information collected.

Validity of the interview guide:

The interview guide for this research was subject to arbitration by a two (2) professors with experience in the field of information and communication sciences research, in order to ensure its effectiveness in collecting the required information. They are :

Dr.Karima Ghediri , University professor at The National Higher School of Journalism and Information Sciences .

Dr.Bekouche Faiza , University professor at The National Higher School of Journalism and Information Sciences .

What should be modified in the guide as a suggestion from these professors was modified with the approval of the supervising professor, and then we conducted our Interviews with the interviewee involved in the research.

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Table N°1 : Presenting the interviewees .

Name and Surname Code	Post / Activity	Their roles	The interviewee's diploma and experiences
Harichane Zoheir (A1)	- The director of the Bardo national museum - Associate researcher at the National Center for Prehistoric Anthropological and Historical Research Algiers.	Managing the museum. (All functions related to management.) - he works on archeological projects like” « <i>la plus ancienne présence humaine en Afrique du Nord</i> »	- Master in Quaternary Archeology. - Master in Prehistoric Archeology. - he studied at the University of Algiers (Institute of Archaeology) in 1993. - he studied at Rovira i Virgili University, Tarragona, Spain in 2006. - he is specializing in Spatial Archeology and Archaeostratigraphy, Geographic Information Systems (GIS) and new technologies applied to archaeology, as well as methods and techniques for field recording data on Pleistocene archaeological sites.
Arezki Bourrai (A 2)	heritage curator	Taking care of specific collections from the Prehistory department. - writing technical data sheets, and providing all	- Master's degree in Prehistory from the Faculty of Archaeology. - one year experience as heritage curator starting from March 2023. - the participation in several exhibitions of prehistoric artifacts

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		relevant information about these collections for the display or for researchers and students.	in Algeria. - he is currently pursuing a doctoral degree. - interests in technology and digitization.
Abdellali Touil (A 3)	head of the Animation and Communication Department, the chief curator of Cultural Heritage at the Bardo national museum .	He is responsible for everything related to the museum's activities and communication inside and outside.	- Master's degree in Archaeology, specializing in Prehistory. - he has been working at the Bardo national museum since June 1989. - held various positions over the years : the Prehistory Department, the Research and Conservation Department, the Animation Department. - worked in several cultural institutions, including the National Conservation Office of Ahaggar from 1994 to 1995. The director of the Manuscripts center in Adrar from 2009 to 2013. - returned to work at the National Bardo Museum until today .
Rachid Gahlouz (A4)	Librarian , head of the publications , documentation, and archives department at the museum .	He works at the museum's Library, and he also have a role in the publication of the museum in the online platforms.	- Master's degree in Managing and processing information . - studied Library and documentation Science at the University of Algiers 2. - 14 years work experience at the

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			Bardo national museum .
Khalifa Tidjdedam (A5)	Librarian at the museum and head of the Communication Department.	He also work at the museum's Library, and he is the responsible on the online platforms of the museum especially the Facebook .	- Master's degree in Library and Information Science, specializing in Public Reading Libraries . - he has been working at the Bardo Museum since November 2014.
Lalia Youcef Khodja (A6)	Assistant engineer in the museum.	she is responsible for everything related photoshop , editing and the museum's website ,	- Graduated from the Bir Mourad Rais Institute of Graphic Arts, specializing in Computer Science in 1997. - she has been working at the Bardo museum since in June 1989 as a senior technician, then was promoted to assistant engineer 5 years ago.
B	Assistant Director of Archives, Documentation, Statistics, and Information Technology.		- The previous post is Office Manager -Specialization:Information Technology Engineer.

We used the codes to not repeat the names in the second table , A identify the interviewees with the museums employees and B to identify the interviewee of the ministry of culture,

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Table N°2: Information about the interview.

Code of the Respondent	Date of the Interview	Place of the interview	Duration of the interview	The interviewee's relation with the research
A1	May 15, 2024 at 10.52 am .	The interviewee's office at the Bardo national museum	31 minutes.	The director of the museum so he has all the information about it .
A2	April 28, 2024 at 8:37 am .	The Bardo national Museum's garden	44 minutes.	He is in charge on the digitization process at the museum .
A3	April 30, 2024 at 9.12 am.	The Bardo Museum, in the interviewee's office.	50 minutes.	to gain general information about the museum
A4	April 30, 2024 at 11.51 am.	the Bardo national museum's Diwan	23 minutes	One of the responsible for managing the museum's official pages on social media.
A5	April 30, 2024 at 10.15 am at the Bardo national the museum's library.	The Bardo national the museum's library.	15 minutes	One of the responsible for managing the museum's official pages on social media.
A6	April 30, 2024 at 13:12 pm .	In her office at the Museum.	17 minutes.	She is responsible for the official website of the

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				National Bardo Museum.
B1	May 20,2024 at 11 am .in the ministry of culture .	In the ministry of culture .	Around 10 minutes.	They are the responsible on the digitization at the ministry .

Before we start analysing the axes , we should mention that there were no significant contradictions in the information provided by the respondents, although some offered slightly more detail than others .

The first Axis : The situation of the museum :

This axis was answered by three (3) interviewees , it's purpose is to undersatnd the conditions available to the Bardo and the Algerian national museums .

The Algerian national museums are facing major challenges regarding the staffing and the funding , according to the interviewees, the low funding that is dedicated to the them , causes the shortage of workers. It has decreased since 2016 after they had a financial prosperity with the availability of appropriate working conditions, in addition to their independence. This underfunding led to a shortage of workers like the guide for example and researchers because they have low public sector salaries so they preferred to work in universities instead of the museum. As Mr. Abdellali Touil said: “the conditions of the algerian national musueums has gone through stages , the first stage is the formation of the museum institution , it witnessed diffrent financial conditions , and it was distinguished by the formation of a group of Algerian researchers, conservatives, and specialists , and over time, these conditions improved, especially at the beginning of the 20's where the budget of the national museums increased as it witnessed a “financial surplus” and it had the necessary materials to work , thus its activities increased, Additionally, that period witnessed the independence of the national museums, which helped strengthen their work. But since 2016, the Algerian national museums have witnessed a decrease in the budget allocated by the Ministry of Culture, which caused problems, including the employment problem raised by the basic employment law,

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which placed the researcher or conservator within the public sector employment that is known by its low salaries”¹ and Mr. Arezki said: “considering the museums are affiliated to the ministry of culture , and it has a small budget compared to other ministries , about the employees it’s normal to have a Worker shortage compared to the country’s conditions” ²in addition , the income generated by the national museum goes directly to the state treasury , which restricts their ability to address staffing issues and improve operations and activities , making them directly tied to the budget provided by the authorities “ the museums income goes to the state treasury, so we do not really benefit from it” ³

As for conditions of the cultural national museums affiliated to the ministry of culture , the privet museums and the moujahideen museum , they differ in terms of the ranking , while the the Mujahideen Museum holds a higher rank (Category A), have annexes across states, enjoy larger budgets, better facilities and a better legislations than the national cultural museums (Category B) , as Mr Abdellali Touil said: “they have a bigger budget and a better maaterials ,but we have limited resources available compared to them , so we requested to reconsider the arrangement, management and law of museums in order to adapt to what is happening in the world today, because national cultural museums have become more like an exhibition hall only because of the administrative nature of the museum”⁴

However , despite these challenges , the Algerian national museums are committed to the international standards , because they actively engage in the global museum community through exhibitions, conferences, and activities , they attempt to create engaging and immersive exhibition experiences in collaboration with an Algerian scenography team , by investing in scenography studies and implementing suggestions from experienced specialists. Mr. Harichane Zoheir: “Algerian national museums are committed to international standards, driven by their exposure to international exhibitions , conferences and activities . for example, we are currently preparing for a special exhibition on rock art. Collaborating with a scenography team, we are setting up the necessary museum technology for the

¹ Interview with Abdellali Touil , the head of the Animation and Communication Department , the chief curator of Cultural Heritage at the Bardo national museum , April 30, 2024 at 9.12 am.

² Interview with Arezki Bourrai , heritage curator at the Bardo national museum , April 28, 2024 at 8:37.

³ Interview with Abdellali Touil , the head of the Animation and Communication Department , the chief curator of Cultural Heritage at the Bardo national museum , April 30, 2024 at 9.12 am.

⁴⁴ Interview with Abdellali Touil , the head of the Animation and Communication Department , the chief curator of Cultural Heritage at the Bardo national museum , April 30, 2024 at 9.12 am.

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exhibition. We are awaiting the completion of the scenographic¹ study to re-position the collections, as Algerian visitors have become more demanding, having witnessed the standards available in museums worldwide”², besides they collaborate with foreign museums, cultural institutions, and organizations like UNESCO and the ICOM in the context of the Algerian state’s agreements with other countries, these agreements aim to facilitate knowledge exchange, training programs, and the implementation of international standards within Algerian museums. “for example in the field of exchanging experiences, whether by sending technicians and researchers for training there or inviting specialists from other countries to train researchers here, all of these are related to the Algerian state’s agreements with other countries. Or by participating in agreements of international organizations such as the International Council of Museums (ICOM) by participating in forums, and since Algeria is a member of UNESCO, it is imperative that we submit to international standards”³

There is also national cooperation between Algerian museums in the field of conservation and displaying the artifacts, as Mr. Arezki Bourrai said: “there is a national cooperation between the Algerian museums specially in displaying artifacts, for example the Bardo National Museum organized “the street museum” in cooperation with other museums in order to attract the public who has no interest in the museum and make them feel curious about the contents of this exhibition and thus a new experience for them in the field of the museum, and promoting museum culture among the Algerian people”⁴

Concerning the main functions of the national museums in Algeria, it revolves around preservation through preventive and curative conservation measures, valorisation of artifacts via activation, documentation and the inventory, as well as other activities like conferences, activities for the adults and childrens initiatives to protect heritage by providing security services with the necessary information about antiquities in order to protect them

¹ it is the combination of technological and material stagecrafts to represent, enact, and produce a sense of place in performance, and in the museum field it is the means by which the aims and the content of the exhibition are defined, and even precedes selection of the exhibits themselves, taken from : Tristan Kobler, *shaping stories*, <https://holzerkobler.com/process/shaping-stories>, consulted on May 9, 2024.

² Interview with Harichane Zoheir, the director of the Bardo National Museum and Associate researcher at the National Center for Prehistoric Anthropological and Historical Research Algiers, May 15, 2024 at 10:52 am.

³ Interview with Abdellali Touil, the head of the Animation and Communication Department, the chief curator of Cultural Heritage at the Bardo National Museum, April 30, 2024 at 9:12 am.

⁴ Interview with Arezki Bourrai, heritage curator at the Bardo National Museum, April 28, 2024 at 8:37.

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from smuggling , and also the displaying of the collections in other wilayas in cooperation with cultural directorates.

The second Axis : The digitization in the bardo museum :

This axis was answered by two (2) interviewees ,it aims to discover the digitization efforts and plans of the Bardo national museum.

The beginning of digitization at the Bardo Museum was through the training program proposed by the USA Embassy , it was adopted by the Ministry of Culture and Arts with the aim of encouraging digitization, The Bardo National Museum was chosen as a pilot site to establish a dedicated digitization cell, with the intention of subsequently training personnel from other national museums across Algeria. As the director of the museum mentioned :“ The digitization process is a national project in Algeria now , as for the training collaboration with the USA embassy and the Egyptian association , it is a proposal presented to the Ministry of Culture by the American Embassy to train some museum workers on digitization. The Ministry studied this proposal and adopted it through its agreement with the American Embassy and with the Egyptians. They chose the Bardo Museum as a sample in order to establish a digitization cell in it and so that the museum then trains the rest of the Algerian national museums’ workers in this field, So main its goal is to train digitization specialists in the field of museums).¹

In addition, the museum has a digitization project of it’s exhibition in collaboration with the scenographic professionals from the communication agency “Nour Sud.” This project aims to showcase the museum’s collections in an enhanced and better way in order to provide a new museum experience for the Algerian public.

The initiative of the digitization of the objects has been difficult because of the lack of prior expertise in digitization techniques , however the responsible on the process managed to digitize a number of objects .

The main objectives of the digitization in the Bardo national museums are protecting collections from natural risks , accidents or damage, preserving fragile and organic artifacts

¹ Interview with Harichane Zoheir, the director of the Bardo national museum and Associate researcher at the National Center for Prehistoric Anthropological and Historical Research Algiers , May 15, 2024 at 10.52 am.

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like skulls, leather, and clothing , facilitating the exchange of antiquities between Algerian museums by sharing 3D copies instead of physically transferring objects as well as reducing transportation risks and digitizing heavy objects that pose logistical challenges for physical transfer, Mr.Arezki the responsible on the digitization of the objects said that: “ The objectives of the digitizing collections is to protect them from various risks, whether natural or accidents, and also to preserve the fragile and the organic objects like Skulls ,leather , dress... , so that if they are damaged, we will have a copy of them that prove it existed , in addition to facilitating the exchange of antiquities between Algerian museums, so that a three-dimensional copy is sent instead of being transferred, which contributes to their protection. And reduce risks to them. or if an object is heavy such as the large carved rocks located that we have in the museum pose a difficulty in the transportation process”.¹

Furthermore, the strategy adopted by the Bardo National Museum for digitizing its collections involves converting objects into high-quality 3D models while adapting to the latest technologies and online platforms. The digitization process utilizes tools and equipment provided by the US Embassy, including computers, digital cameras, lighting equipment, and a photogrammetry turntable, as for the digitization strategy prioritizes objects of high historical significance, material value, and fragility, ensuring preservation of these cultural treasures.

Moreover, to achieve high-quality digitization, the objects are being photographed in natural lighting conditions in order to have a High-resolution captures that reveals all the objects details. followed by the careful handling procedures and the editing process in software that aims to create precise 3D representations of the original artifacts. As Mr.Arezki noted : “ high quality digitization is realised by photographing the objects in a place with natural light to better capture the object’s details , besides we have to be cautious and to know how to deal with the object , and also we work to provide an exact 3D version of it in the process of editing it in Agisoft Metashape”.²

¹ Interview with Arezki Bourrai , heritage curator at the Bardo national museum , April 28, 2024 at 8:37.

² Ibid.

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The third Axis : The impact of digitization on the process of displaying museum collections to the public online :

This axis was answered by three (3) interviewees , it's purpose is to undersatnd the level and the way the Bardo national museum use the online platforms in order to manage and display it's collections , and to engage with the public .

The Bardo national museum have a basic online presence focused mostly on facebook due to it's widespread public usage and interaction , and the official website . by keeping those platforms updated with the latest museum news, events, and by displaying the "Museum Object of the Month" by the responsible on them and they are only 3 people which could limit their capacity for more advanced and interactive digital initiatives.

These platforms was created basically to promote the museum's activities , and now it's used also to dislay the museums objects (for now displying only the object of the month like we mentioned earlier) .

Facebook is the primary platform on which the museum operates, whether through publishing information and displaying collections or through interacting with the public and knowing their opinions about the museum's content and also their complaints, which are taken into consideration in determining the online content and to provide the appropriate atmosphere that reflects the real atmosphere of the museum. The purpose of it is to attract the largest number of the public and at the same time introduce the Algerian cultural heritage, especially to children, as Mr. Rachid Gahlouz said, "We have many followers on the Facebook platform whose number is 10,000 followers as a result of the museum's scientific content that is

published on social media sites." , " there is an interaction with our public , we take their opinions and their complains in consideration , even in the musuem we have register complaints , this step enables us to take feedbacks in order to improve the museum experience for visitors".¹

However the website lag behind in incorporating the latest digital content like the 3D objects or the 360 virtual tour mentioned by the interviewees , although its contents are updated just as Facebook is updated, it is not visible to the public. For example, 3D objects are published

¹ Interview with Rachid Gahlouz , librarian and head of the publications, documentation, and archives department at the Bardo national museum , April 30, 2024 at 11.51 am.

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on the site but are not shown to the public. This may be due to the fact that the site is managed by a communication agency and not by the museum , besides the museum has limited access to the site, as it is only authorized to publish on it , to the point that even the number of followers does not appear to be responsible for it , in addition it is still in the process of updating as a result of the recent developments in the museum , as Mm Lalia Youce Khodja said : “ At the present time, the official website is still under experimentation and development because we have not used it much before, especially after the Covid-19 period. For example, the ability to publish 3d objects is a new option on the website, which is why we face problems in controlling it, and whenever a problem arises, we ask the communication agency to correct it and that what causes the delay”¹

As for cooperation with other museums in the field of digitization , there is no cooperation because digitization is new in the Algerian museums and it began with the Bardo national Museum.

The respondents think that online platforms attract more visitors than the physical museum , especially when they see the museum’s activities and content , and about the use of other social media platforms , they represent concerns about maintaining appropriate content quality that respects the status of the museum , especially in platforms like Tiktok.

The fourth Axis : The role of the Ministry of Culture in supporting the digitization of Algerian national museums :

This axis aims to explore the main role of the ministry of culture and art in supporting the digitization in the national cultural museums , but it was not answered in details because **the Sub-Directorate of Archives, Documentation, Statistics, and Information Technology** is specialized in the digitization of the ministry of culture and art , and in studying the projects undertaken by the Ministry in general.

but they provided us with some valuable information that we could use in analysing this axis , these information include :

- The Ministry of culture and art has a digitization project which is the creation of the SIG (Geographic Information System) , this project aims to unify all the data related to national cultural heritage on one database (locations , history , their inventory data ...) , and the

¹ Interview with Lalia Youcef Khodja , assistant engineer in the Bardo national museum , April 30, 2024 at 13.12 pm.

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museums are one of the cultural institutions beneficiaries from it , they update all of their data in it.

- About the safety of these information, this system is fully available to the ministry , and accessible with a limited extent to cultural institutions such as museums (they upload all the information about the cultural heritage and their activities) , as for the public access is currently unavailable as the system is under development , and it will be available in a controlled manner for the Algerian researchers and students , however for the foreign researcher with authorization from the ministry and with conditions to use .
- The ministry guides establishments under supervision, such as museums, to adopt new technologies for the modernization of the establishment, and introduce digital tools in the management and promotion of heritage , In addition, the cultural museums have the freedom to act in the matter of digitization because they are the most knowledgeable about what suits their collections and activities on condition that the ministry is informed, the ministry supports the museums through the registration of cultural heritage digitization projects, partnerships with international organizations, and training and awareness-raising and provides them with the budget needed.
- Furthermore, The ministry cooperates nationally with digitization authorities like the High Authority for Digitization and Specialized Economic Operators. Internationally, such collaboration aligns with the state's digitization policies and agreements with other countries.
- To ensure digitization efforts in Algerian national museums are accessible to the public, the Ministry of Culture encourages museum officials to digitize their institutions, publish information through digital portals, and incorporate 3D virtual tours. It also urges them to adopt modern technologies to enhance the digital experience and facilitate access to cultural heritage.

The fifth Axis : The stakes and the challenges in digitizing the museum :

This axis was answered by six (6) interviewees , it's purpose is to undersatnd the difficulties to the museum's digitization effort , and to explore potential solutions proposed by researchers that can be adopted in this field .

The main challenges faced by the Bardo national museum according to the repspondants are : the lack of digitization and photogrammetry training amog the museum's staff which led to

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the delay in implementing digitization in the museum , besides the financial shortage because the budget provided by the Ministry of culture and art to the museum is small, this led to a lack of technological and innovative materials and software nessacery for the digitization procedure as Mr.Rachid Gahlouz said “The main reason of the delay in digitization in the bardo national musuem is the lack of budget provided by the Ministry of Culture and Arts to the museum , it’s very little compared to the cost of software and technological means ,that what made the museum more concerned and focused in organizing temporary exhibitions than he is in digitizing the display and all its functions like archives and library and all , but now there is a presidential desicion that demand the digitization in all the algeria institutions , and the cultural institutions among them”¹

This lack also affected the museum’s initiatives in developing digital platforms and interactive applications that make museum content more attractive and accessible to the public , and the example of this weakness is the limited control over the official website of the museum which affect the interaction with the visitors and the update of the museums latest activities and 3D models of objects , as Mm. Lalia Youcef Khodja said : “We can’t see the number of followers of the official website page because we don’t technically manage it in the museum , it’s managed by the communication agency that we’re working with”²

However , according the interviewees , there is no legal problems that causes the delay of the museum digitization , Contradictory the Algerian government is supporting the digitization in all the fields , and the ministry of culture is taking initiatives in digitizing the cultural field , and the museums among them. As Mr.Khelifa Tidjdedam mentioned “ there is no legal prblems in the digitization process , because the ministry of culture is supporting it , besides there is a presidential decree requires the necessity of digitizing Algerian institutions in all fields, including cultural ones”.³

In addition the museum’s online collection is protected by cultural heritage laws , besides any use of photos, information, or 3D models requires permission from both the Ministry and the museum particularly by foreign entities with the condition of accompanying the museum’s logo with it to identify the source .

¹ Interview with Rachid Gahlouz , librarian and head of the publications, documentation, and archives department at the Bardo national museum , April 30, 2024 at 11.51 am.

² Interview with LaliaYoucef Khodja , assistant engineer in the Bardo national museum , April 30, 2024 at 13.12 pm.

³ Interview with Khelifa Tidjdedam , Librarian and head of the Communication Department, April 30, 2024 at 10.15 am.

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As for the solutions suggested by the interviewees, they revolve around the development of a national strategy for the digitization of museums by creating a common server and database between them , as well as providing the necessary technologies and materials and collaborating with professional tech agencies and digitization experts in training the museum's workers in the field of digitization.

Moreover, increasing the museum's budget and collaborating with national and international entities for knowledge, expertise, and strategy sharing. "One of the solutions is to develop a national strategy for the digitization of museums, and also to create a shared server and database between all the Algerian national museums in which their information and the collections available on them are placed and accessible to those responsible for the museums. In order to enhance digitization and facilitate the exchange process between museums . we also need a cloud server to secure the museum's information, in addition we need to work with professionals in digitization in the museum , and also to train the museum's employees how to deal with the servers and the computer , and this requires a huge amount of money and a greater efforts to achieve , besides provide the necessary materials and the right conditions for a high quality digitization like the scanners for example".¹

¹ Interview with Arezki Bourrai , heritage curator at the Bardo national museum , April 28, 2024 at 8:37.

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1. The observation : We also relied on the observation as a secondary tool because it is considered an easy tool for collecting direct information, regardless of the participants's response, it also allows to verify the validity of the data collected previously and to enhance its accuracy. We used it mainly to discover more details about the difficulties the museum faces in digitizing its collections.

According to our observations , the Bardo national museum is lacking qualified and expertise staff in digitization , there is one worker who handles the digitizing process , by converting the museum's objects into 3D models , However , this worker does not have professional training in photography or photogrammetry, which are essential skills for digitization (except for the accelerate training programme that some of the museum workers participated in) which make him do researchs each time he struggle in photography or in using the software, besides , the museum houses around 13.000 objects¹ , and with these conditions the digitization process will be slowed down . on the other hand , this worker is experienced in handling the museum's objects which reduces the risks of damaging them during the digitization , plus , he's passionate about learning and knowing everything related to technologies and computer .

Along with the limited staff, there is also limited equipments, the museum has only two (2) powerful computers and one digital camera, with no Wi-Fi equipment in the place that dedicated to digitizing the objects, the responsible uses his mobile data (internet) to complete the procedure. Furthermore, they use the free version of the software “ Agisoft Metashape “ which could affect the quality and efficiency of digital copies. This may be due to the fact that the digitization efforts are in their early stages in the museum and also to the lack of funding from the relevant authorities, as mentioned previously in the interviews.

Considering the museum's location, it's located in an old palace classified as a cultural heritage landmark, which presents additional challenges, because environmental factors like humidity can negatively impact the digitization equipment.

From what we observed, the museum workers seem to prioritize the preservation of artifacts over displaying them (their primary focus lies in preservation, restoration, and inventory, while the display especially online display takes a secondary role) which could limit the

¹ Information provided by Abdellali Touil, the head of the Animation and Communication Department, the chief curator of Cultural Heritage at the Bardo national museum .

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urgency and resources dedicated to digitization efforts. As example, we have noticed that there is a limited staff dedicated to the online exhibition of the objects.

Moreover, the museum lack a strategic plan in choosing which object should be digitized, they select a certain object each month to digitize it and display it online (the only way for the online exhibition of the museum's objects) , and the rest of the digitized objects are chosen randomly by the responsible on the digitization , or are asked for by other departments in case the object is fragile or is in risk of destruction. And this is probably as a result of the museum is at the beginning of its digitization.

The museum's online presence is limited to its Facebook page, Instagram page, and official website which could restrict their ability to share their digitized content with a wider audience. Additionally , there are difficulties in sharing the 3D models in their facebook page , because facebook doesn't have the 3d option ,wich add an extra work to the responsible on digitization in converting the 3D models into video or GIFT model by using the powerpoint due to the lack of a proper software . as well as , the 3D models shared in the musuem's official website does not appear to the online visitors in the exected way .(they share the 3D model so that the public can interact with it).

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3.2.2. The results :

- The Bardo national museum actively participates in exhibitions, conferences, and invest in scenography to create engaging visitor experiences.
- The primer role of the museum is the preservation, valorisation, documentation, and security of the collections.
- The museum faces challenges due to the low funding and staffing shortages.
- The cultural national Algerian museums are subject to a public sector system and that system is known for its low employee salaries, making it difficult to retain researchers and specialists.
- Their income goes to the national treasury which limits their ability to cope with the difficulties.
- The Mujahideen Museum has a better facilities and budgets compared to cultural museums.
- the museum participates in national and international conference, and aims to follow the international standards.
- The digitization of the objects at the bardo national museum started through a training program proposed by the USA Embassy and maintained by the Algerian ministry of culture and art.
- The Bardo national museum was selected as a sample to establish the digitization cell and to train the employees of the other museums in the field of digitizing the objects using the photogrammetry.
- The museum has a digitization project to enhance the exhibition experience for the visitors, but the study of this project has not finished yet.
- The begining of the digitization process was difficult as result of the lack of experts in photogrammetry and photography.
- The main objects of integrating the objects into the digital form is to preseve them and to faciliate their exchange with other algerian museum for display .
- The museum's priotisizes the objects of high historical significance, material value, and fragility in the digitization process.

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- Objects are photographed in natural lighting conditions for high-resolution captures and detail preservation to create a 3D version that resembles the real one.
- The museum aims to adapt to the latest technologies and online platforms in displaying and maintaining its collections.
- The Bardo national museum has a basic online presence focused on Facebook due to its widespread public usage and interaction, and the official website to promote its activities and display the objects (the object of the month).
- Facebook is the most used platform due to its large audience, however the website lags behind because of technical issues, they are unable to display the 3D models of the objects to the visitors (the 3D version does not appear to visitors on the website) and its management by an external agency.
- There is currently no cooperation with other Algerian national museums in digitization because its initiative started recently from the Bardo national museum.
- Getting the visitors' attention is crucial online, however maintaining appropriate content quality that respects the status of the museum through other social media can be challenging.
- The Ministry of Culture has a general digitization project called SIG / GIS aims to unify all the data related to the cultural heritage, including the museum's cultural heritage.
- The Ministry guides and supports museums in adopting new technologies for digitization, modernization, and promoting their heritage, while giving them the freedom to choose the most suitable digital tools for their collections and activities.
- The Ministry supports national museums with the registration of cultural heritage digitization projects, facilitating partnerships with international organizations, and providing the necessary budget.
- The Ministry collaborates nationally with digitization authorities and specialized economic operators, and internationally through state digitization agreements with other countries.
- The major obstacles that face the digitization procedures at the Bardo national museums are the financial shortage, the lack of training staff, lack of availability of technologies and software and the limited control over the museum's website.
- The Algerian government supports the digitization process so there are no legal issues.

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- Cultural heritage legislations ensure that online collections remain under the control of their institutions (in this case the Bardo museum) by requiring permissions for use by foreign entities.
- Insufficient equipment like powerful computers, cameras, and the use of free software versions because of the funding issue.

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3.2.3. Discussion of the results

Based on the information collected by the interviews and the observations, and the results that our study concluded. there is both confirmation and denial to the hypotheses that we have made in the beginning of our study.

✓ **The National Cultural Museums in Algiers lags behind the digitization field.**

this hypothesis is confirmed by the study results, because other museums in the world are in the phase of the digital transformation but the Algerian national cultural museums are in the beginning of the digitization process, since this process started from the Bardo national museum, that's what makes them late in comparison with the world museums development.

✓ **Lack of necessary expertise within the Bardo museum and the financial resources pose an obstacle to the museum's digitization process.**

this hypothesis is also confirmed , because the main reasons of the delay according to the study results are the lack of the financial resources because the budget of the national cultural museums is limited , in addition to not benefiting from the museum's income, which goes to the state treasury, which in turn causes the lack of the necessary experts in the field of digitization, photography and photogrammetry within the museum, and also leads to the lack of materials and software needed .

✓ **The lack of a well-thought-out national strategy for implementing the digitization process in the cultural field .**

we can't deny or confirm this hypothesis , because the national strategy for implementing the digitization process in the cultural field exists , but it is late ,because only between 2023 and 2024 that the ministry of culture has initiated a national digitization project which is the SIG (Geographic Information System) , that collects all information about cultural heritage, including museums but it is not publicly available since it is still under development, and It represents a first step towards digitizing the national heritage and unifying the database between the cultural institutions including museums , and for the record it is one of the solutions proposed during the interviews in order to improve the level of digitization in Algeria.

PRESENTATION OF THE CASE STUDY AND DISCUSSION OF THE RESULTS

- ✓ **Legal legislation and state policy play a role in delaying the digitization process in museums.**

this hypothesis is denied according to the research findings , because as it mentioned that the Algerian state supports the digitization of all the fields including the cultural field , and this process is an obligatory by presidential decision, besides the cooperation of the cultural ministry with other entities to enhance this process .

In addition , the results confirms **The Diffusion of innovation theory** , because according to this theory the innovation and the adaption of the technologies goes through stages , and the Bardo national museum at the early stage in comparison with other algiers museums because it leads the digitization process , however the Bardo national museums is in the late majority stage in comparison with the developed museums in the rest of the world .

Given that , the results corresponds to the theory's core principles , that are :

- ✓ **Relative Advantage:** The Bardo national museum began using online platforms because of its clear advantages seen in the other international museums.
- ✓ **Compatibility:** The main purpose of integrating the museum's objects into digital form is to preserve, protect them and to facilitate their exchange with other Algerian museum for display.
- ✓ **Complexity:** the lack of trained staff in photogrammetry and photography poses a complexity in using the new material such as the digital camera and the software.
- ✓ **Divisibility and transferability:** the Bardo national museum is a pilot for digitizing and training the other museums.
- ✓ **Observability:** the Bardo national museum is willing to develop the interaction in social media because of the clear advantages in attracting the visitors attention and in promoting to the museum's activities and importance, by trying to provide the 3D model of the objects on Facebook and on the official website despite the technical challenges.

PRESENTATION OF THE CASE STUDY AND DISCUSSION OF THE RESULTS

Conclusion :

Based on the information obtained and the analyses of interviews and observations relied on in this study , we concluded that the Bardo national Museum is still at the beginning of digitizing its collections, it faces many problems, both financial and human, that hinder its progress. And based on these results , there is a proposed solutions that have been mentioned by those working in the field to reduce these problems, and by The analysis of finding, this research facilitated the verification or invalidation of the hypotheses established at the beginning of the investigation.

General Conclusion

GENEREAL CONCLUSION

General Conclusion :

The digitization process of the Algerian national cultural museums , including the bardo national museum is still at it's early stages compared to the other museums in the world as we mentioned in the examples of the digitized museums in the world , and this delay is due to many challenges that hinder their progress of digitization such as the limited financial resources , staffing shortage , lack of experts in the field of digitization within the museum particularly the photogrammetry and the photography in the case of the bardo national museum , the lack of material and software needed , and the lack of cooperation between Algerian museums in developing their online platforms .

The Bardo national museum has taken the lead in digitizing it's collections , with the support of the ministry of culture and art that made a cooperation with the US Embassy , the Egyptian Heritage Rescue Foundation and Antiquities Coalition to train the museum's employees in the field of digitization , however the process have been challenging because of the lack of experts and necessary equipment , and the limitation in using the software provided , as well as the technical issues in using the official website to display the 3D models of the objects to the public .

Moreover, as a support from the Algerian ministry of culture and arts to the cultural institutions, it has initiated a national digitization project called SIG (in French), GIS (Geographic Information System) to unify data related to cultural heritage and safeguard it all over the national territories, but this project is still under development and improvement, it is not accessible yet to the public.

According to the results that we have mentioned , this study concludes supports and confirms two of the hypotheses :

- The National Cultural Museums in Algiers legs behind in the digitization field.
- Lack of necessary expertise within the Bardo museum and the financial resources pose an obstacle to the museum's digitization process.

However, for the results are inconclusive for one of the hypotheses, because we can't deny the efforts of the Ministry of culture in initiating the national project in digitization but it is still in development and not fully implemented.

- The lack of a well-thought-out national strategy for implementing the digitization process in the cultural field .

GENEREAL CONCLUSION

As for the last hypothesis, "Legal legislation and state policy play a role in delaying the digitization process in museums" is denied by the study, which states that the Algerian government supports the digitization process and there are no legal issues hindering it.

The results also align with the Diffusion of Innovation Theory, they confirm that the Bardo National Museum is lagging behind in the digitization field compared to museums in other parts of the world (in the late majority stage). However, it considered as an early adopter among the Algerian national cultural museums, while Algerian museums as a whole are in the late majority stage relative to developed museums globally. The results also correspond to the core principles of the Diffusion of Innovation Theory as we explained in the discussion.

At the culmination of this study, several solutions have been suggested by the respondents to evaluate and accelerate the digitization process:

- the development of a national strategy for digitizing the museums by creating a common server and database.
- providing the necessary technologies, materials and software.
- collaboration with professional tech agencies and digitization experts in training the museum's workers in the field of digitization.
- increasing the museum's budget and collaborating with national and international entities for knowledge, expertise, and strategy sharing.

In conclusion, this study provides a fair amount of information about the main difficulties that faces the Bardo national museums in the digitization procedures, despite the limited resources due to the lack of information about the digitization among the majority of the employees in the museum.

Besides this study is important because it shed lights on the important aspects that hinder the digitization process at the Bardo national museum, it also opens the door to several intriguing questions and complexities like:

- What strategies can be implemented to ensure that the integration of technology in museums does not overshadow or diminish the authenticity and tangible experiences that physical artifacts and exhibits provide?
- Beyond addressing the identified challenges, what additional opportunities and strategies could be explored to enhance the Bardo's digitization efforts?
- How can the digitization process ensure the proper representation of the Bardo's collection?

GENEREAL CONCLUSION

- a more digitized museum would it lead to increase the interest in Algerian cultural heritage, both nationally and internationally?

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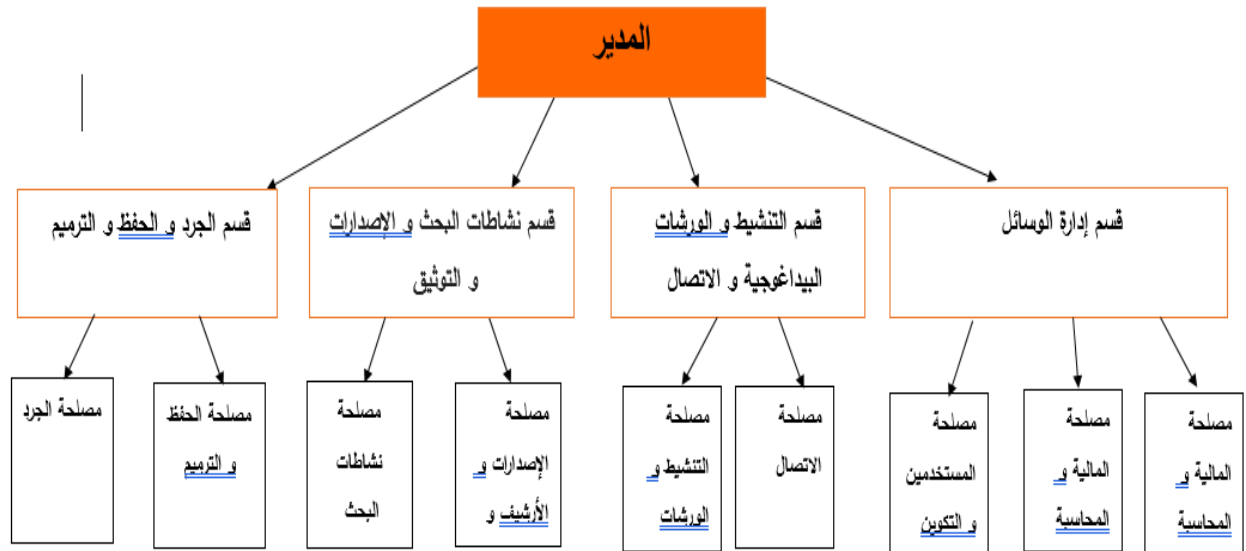
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APPENDICES :

Organizational structure of the Bardo Museum:



The Training Program at the National Bardo Museum :

Digitization of Museum collections		
Training program		
Day one		
Welcoming the participants and workshop introduction		
60 Min	Managing museum collections	Dr. Mohamed Djamel
60 Min	Museum Collections Policies	
60 Min	The Collection and Acquisition Policy of Museum Collections (A Case in practice of the Metropolitaine Museum of Art)	
Q & A		
Day two		
60 Min	Museum Collection Management System (MCMS)	Dr. Tarak Hawas
60 Min	Registration - Data Collection Methods	Dr. Mohamed Attoua
Q & A		
Day three		
60 Min	The use of the new technology, multimedia, and applications in the museum scenario display	Dr. Amira Sadik
60 Min	The approach for preventive conservation and Emergency Stabilization	Dr. Nadjah Radjab
Q & A		



ANTIQUITIES
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لورة تكنولوجية حضورية
رقمنة المجموعات المتحفية
من 21 ماي إلى 01 جوان 2023

برنامج الدورة: الأسبوع الأول

16 : 45-16 : 00	16 : 00-15 : 45	15 : 45-14 : 00	14 : 00-13 : 00	13 : 00-11 : 30	11 : 30-11 : 00	11 : 00 - 09 : 00	
الإستعدادات ودرء الخطار	استراحة القهوة	تقسيم الخطار	استراحة الغذاء	تحديد الخطار التي تهدد المجموعات المتحفية	استراحة القهوة	الإفتاح و تقديم الدورة التكوينية	2023 /05 /21
معايير إدارة المجموعات المتحفية : معايير الملكية المتحدة في إدارة المجموعات Spectrum غورنجا		الرقمنة في مقابل الطرق التقليدية في أنظمة إدارة المتحف : فوائد الإتجاه نحو الرقمنة		تعريفات الرقمنة والتحول الرقمي للراث الثقافي		الرقمنة والتحول الرقمي للراث الثقافي (H-MMS)	2023 /05 /22
توظيف التعليم المتعمق بالذكاء الإصطناعي في التراثي الثقافي	استراحة القهوة	الإجراءات في نظام إدارة المجموعات	استراحة الغذاء	الإجراءات في نظام إدارة المجموعات	استراحة القهوة	مناخج لنظام إدارة المجموعات المتحفية	2023 /05 /23
طرق الجمع والتسجيل الرقمي للبيانات		طرق الجمع والتسجيل الرقمي للبيانات		بناء قاعدة بيانات مترافقة مع طبيعة المجموعات المتحفية		إدارة البيانات للمجموعات المتحفية	2023 /05 /24
التوثيق الفوتوغرافي والفوتوغرامميري		التوثيق الفوتوغرافي والفوتوغرامميري		التوثيق الفوتوغرافي والفوتوغرامميري		التوثيق الفوتوغرافي والفوتوغرامميري	2023 /05 /25



ANTIQUITIES
COALITION



لورة تكيينية حضورية
رقمنة المجموعات المتحفية
من 21 ماي إلى 01 جوان 2023

برنامج الدورة: الأسبوع الثاني

16 : 45-16 : 00	16 : 00-15 : 45	15 : 45-14 : 00	14 : 00-13 : 00	13 : 00-11 : 30	11 : 30-11 : 00	11 : 00 - 09 : 00	2023 /05 /27
التوثيق الفوتوغرافي والفوتوغرامميتري التوثيق الفوتوغرافي والفوتوغرامميتري	استراحة القهوة	التوثيق الفوتوغرافي والفوتوغرامميتري	استراحة الغداء	التوثيق الفوتوغرافي والفوتوغرامميتري	استراحة القهوة	التوثيق الفوتوغرافي والفوتوغرامميتري	2023 /05 /28
التوثيق الفوتوغرافي والفوتوغرامميتري		التوثيق الفوتوغرافي والفوتوغرامميتري		التوثيق الفوتوغرافي والفوتوغرامميتري		التوثيق الفوتوغرافي والفوتوغرامميتري	2023 /05 /29
منهجيات التوثيق المنظورة		إعادة تنظيم الخزان المتحفية		إعادة تنظيم الخزان المتحفية		إعادة تنظيم الخزان المتحفية	2023 /05 /30
إعادة تنظيم الخزان المتحفية		إعادة تنظيم الخزان المتحفية		إعادة تنظيم الخزان المتحفية		إعادة تنظيم الخزان المتحفية	2023 /05 /31
Re-org	الإخلاء الطارئ للمجموعات المتحفية	Re-org	استراحة الغداء	Re-org	استراحة القهوة	Re-org	2023 /06 /01
Re-org		Re-org		Re-org		Re-org	2023 /06 /01



ANTIQUITIES
COALITION



Information about “the jug” :

اسم التحفة : قلة

المصدر: حوض الشلف

التأريخ : بداية القرن 20

- هي أنية فخارية لشرب الماء، بطوق مخروطي الشكل و أعناق متعددة منها ستة صورية , وهي عبارة عن زخرفة مصوبة نحو اتجاهات مختلفة. أما العنقين العمليين فمتقابلين و عموديين . الزخرفة التي تغطي المنكب , الطوق و الأعناق ملونة بالأسود و الأسمر المائل إلى الأحمر على طلاء فاتح (مثلثات متقابلة في مربعات) و أشكال مختلفة.

Name of the object / artifact :

Origin: Chlef Basin

Dating: Early 20th century

- Piece of pottery for water , with a frustoconical neck, bearing six small fictitious (decorative) necks pointing in various directions. The two practical necks are opposite and in a vertical direction. The decoration which covers the shoulder, the collar and the neck is painted in black and red-brown on light background (opposing squared triangles), and various patterns.

Source of the information : Department of Inventory and Conservation

Digitizing the tangible cultural heritage: the stakes of applying digitization in displaying cultural heritage in the Algerian national museums – a study case of The Bardo national musuem–

Period : from February 25 to May 20 , 2024

The interview Guide :

The first Axis : The situation of the museum

- 1 - How would you describe the general condition of the Algerian national museums in terms of working conditions, funding , stuffing ?
- 2 - Do you think that the Algerian national museums and the Algerian private museums have the same conditions ?
- 3 - Do you think that the museums affiliated with the Ministry of Culture have the same conditions as those who affiliated with the ministry of Mujahideen ?
- 4 – Is the Algerian national museums adheres to the general standards of museum design ?
- 5- What functions are the Algerian national museums committed to?
- 6 - Do you think that the Algeria national museums receive sufficient attention from the Ministry of Culture?
- 7 - Do the Algerian national museums cooperate with international museums or cultural institutions?
- 8 - What do you think about the administrative division of the Algerian National Museums ? and is it effective in achieving it's main goals?

The second Axis : The digitization in the bardo museum

- 1- How and when did the Bardo national Museum digitization process begin?
- 2 - How was the initiative of the Bardo national museum in digitizing it's collection?
- 3 - Could you identify who initiated these collaborations, and what were the primary objectives?
- 4 - What are the objectives set by the Bardo national Museum for the digitization process ?
- 5 - What strategy do the Bardo national museum follow in the process of digitizing it's collections ?
- 6 - What are the tools and equipments used in the digitization process ?
- 7 - How do you prioritize which objects to digitize first?
- 8 - How do you achieve high quality digitization?
- 9 - How has museum digitization impacted different stakeholders, including visitors, researchers, local communities, and government entities?
- 10 - Is there any future plans for developing and expanding digitization at the Bardo Museum ? what are those plans ?
- 11 - Which entities does this museum collaborate with to achieve its goals in the process of digitization ?

The third Axis : The impact of digitization on the process of displaying museum collections to the public online

- 1 - What platforms do the Bardo National Museums use in displaying it's collections ?
- 2 - Is there a special team responsible for managing the Museum's platforms ?
- 3 - Why did you choose to use these platforms in particular ?
- 4 - Do you keep these platforms updated with the latest museum news and events?
- 5 - How the digitized objects are displayed online to the public ?
- 6 - How do you ensure that the online content reflects the real atmosphere of the museum ?

7 - Do you think that online platforms attract visitors more than the display inside the museum ? and how do you engage with them ?

8 - Do you have any collaborative projects with other museums or institutions considering the online content ?

9- Do you consider using other online platforms to enhance the museum's mission ?

The fourth Axis : The role of the Ministry of Culture in supporting the digitization of Algerian national museums

1 - How does the Ministry of Culture support the digitization process in Algerian museums?

2 - What strategy do the Ministry of Culture follow in supporting the digitizing process in the National museums?

3 - Which entities the Ministry of Culture cooperates with in the digitization process ?

4 - Are there recent projects that the Ministry of Culture is working on in the field of digitizing museums?

5 - Does the Ministry of Culture collaborate with other governmental or international organizations to enhance the digitization capabilities of Algerian national museums?

6 - How does the Ministry of Culture ensure that digitization efforts in Algerian national museums are accessible to the public and contribute to educational and cultural purposes ?

The fifth : The stakes and the challenges in digitizing the museum

1- What challenges and stakes faced during the digitization process (internal and external) ?

2 - What are the factors that led to the delay in digitizing the museum despite the technological development in the world?

3 - Did you face any technical or legal problems in the process of digitizing the museum ?

4- Are there specific strategies to deal with the technical or legal challenges facing the digitization process?

5 - Are there any specific issues related to security and protection of museum collections?

6 - What challenges does the museum face in displaying its collections online ?

7 - Are there any issues related to public engagement online ?

8 – Do you face any difficulties in dealing with the entities you cooperate with in the digitization process

9 - In your opinion , What are the proposed solutions to enhance the digitization process and overcome the difficulties faced by the museum in digitization ?