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Digital Transformation in Italian Museums: How Digitalization Contributes to Value Creation in the Cultural Heritage Sector

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Abstract

This thesis examines the role of digitalization in the transformation of Italian museums and its contribution to value creation within the cultural heritage sector. The research combines an analysis of the Italian museum environment with a comparative study of three institutions: Gallerie degli Uffizi, Palazzo Barberini, and Pinacoteca di Brera. Special attention is given to the evolution of the Italian museum sector in recent years, considering the effects of the Franceschini Reform, changes in funding structures, tourism dynamics, and the growing relevance of digital technologies following the COVID-19 pandemic.

The study adopts a qualitative case study methodology based on secondary data collected from academic literature, institutional reports, official statistics, museum documentation, and publicly available information. The analysis is conducted through historical, organizational, financial, and strategic perspectives, allowing an assessment of how digital initiatives have been integrated into different institutional contexts.

The results indicate that digitalization generates value beyond the enhancement of visitor experiences. Digital technologies contribute to organizational efficiency, support decision-making processes, facilitate the preservation of the patrimony and management activities, strengthen educational functions, and expand access to cultural resources. The findings also show that digitalization can support economic sustainability through improved visitor management, audience development and the diversification of revenue opportunities. While the three museums display different priorities and levels of digital maturity, all of them demonstrate how technological innovation can be integrated into cultural institutions without compromising their core mission of heritage conservation.

The thesis concludes that digitalization represents a strategic enabler of institutional development, allowing museums to create economic, organizational, cultural, and social value while adapting to the challenges of an increasingly digital environment.

Keywords: Digital Transformation; Cultural Heritage; Value Creation; Italian Museums; Digital Platforms; Business Model Innovation.

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1. Introduction

Over the last decades, digitalization has reshaped how organizations operate, communicate, and deliver value. Digitalization can be understood as the integration of digital technologies into organizational processes, enabling new ways of producing, managing, and distributing information. The diffusion of digital technologies has accelerated significantly over time, transforming user expectations, organizational practices, and the nature of interactions between institutions and their stakeholders. As a result, digitalization has become a strategic phenomenon for organizational change and value creation.

This digital evolution has also reached the cultural sector, pushing museums to reconsider their traditional modes of operation. Museums were primarily guardians of physical collections of artwork but nowadays are expected to offer interactive, personalized and accessible experiences. At the same time, cultural institutions face growing pressure to diversify their sources of funding, strengthen audience engagement, improve organizational efficiency, and demonstrate their social relevance.

For museums, digitalization represents a technological improvement that leads to strategic and cultural changes. It affects internal processes as well as the relationship with visitors and partner institutions. Digital platforms enable dissemination of cultural heritage, creation of communities around it, and also support the development of new educational practices. Thanks to digitalization, museums started to digitize the artwork, create virtual exhibitions, use immersive media (e.g. virtual reality, augmented reality, 360 projections) and implement visitor management systems using big data.

However, the importance of digitalization extends beyond the adoption of technological tools. Its relevance lies in its capacity to transform the mechanisms through which museums create, deliver, and capture value. Digital technologies influence how institutions organize their internal processes, interact with stakeholders, manage cultural assets, design visitor experiences, and generate economic and social benefits.

It also affects the business models of museums, encouraging them to rethink traditional approaches to management, communication and resource generation. As digital channels expand and modify audience behaviours, museums face new opportunities but pressures and new challenges such as the need for staff training, sustainable investments and appropriate governance.

The Italian museum landscape provides a relevant context for studying the impact of digitalization. Italy holds one of the world's richest patrimonies, and its museums are different in size, resources, and digital evolution. Every year, millions of domestic and international visitors are attracted by the country's museums, galleries, archaeological sites, and historical monuments.

In recent years, especially because of COVID-19 pandemic, the growing demand for digital access has been even more accelerated and this pushed Italian museums to evolve by strengthening their digital capacity, using innovative and digital formats. The Franceschini Reform introduced new governance structures while the pandemic sped up the adoption of digital technologies and highlighted the strategic importance of digital infrastructures for maintaining public access to culture. These developments created an environment in which museums had to balance their traditional mission of conservation with new expectations related to accessibility, participation, financial sustainability, and innovation.

From both an academic and managerial perspective, understanding how digitalization contributes to value creation within museums has therefore become particularly important. While a considerable body of literature has examined digital transformation in private organizations, comparatively less attention has been devoted to understanding how these processes reshape cultural institutions and influence their ability to generate economic, organizational, cultural, and social value. Museums represent an interesting context because they pursue multiple objectives simultaneously, combining cultural missions with managerial, educational, and tourism-related functions.

This thesis seeks to answer the following research question: *How is digitalization contributing to the evolution of Italian museums, and how does it influence their processes of value creation?* Drawing upon the literature on business model innovation, digital transformation, and digital platforms, the study explores the relationship between technological change and organizational development within cultural institutions.

To do so, the research examines three case studies in detail: Palazzo Barberini in Rome, Uffizi Galleries in Florence, and Pinacoteca di Brera in Milan. These cases allow a better understanding of how different museums approach digital transformation, the strategies they adopt and the challenges they face in integrating digital technologies into their missions as institutions that used to be mainly "conservative". Through the analysis of their historical evolution, financial performance, and digital strategies, the thesis also seeks to understand how these technologies contribute to broader processes of institutional transformation and value creation.

By making use of existing literature on value creation by digital transformation, this thesis aims to offer an analytical framework of the transition of museums toward a more connected cultural environment. This work pays attention to the technology, organizational change, and cultural goals of museums, showing how digitalization redefines their role in contemporary society.

Ultimately, this research intends to contribute to the growing debate surrounding the future of museums in the digital age. By examining the Italian museum sector, the study provides insights into how cultural institutions can leverage digitalization not only to improve efficiency and accessibility but also to strengthen their capacity to create value for visitors, communities, and society as a whole.

1.1 Methodology

This research adopts a qualitative case study approach to investigate how digitalization is transforming Italian museums and influencing their processes of value creation, organizational development, and audience engagement. A qualitative methodology was considered particularly appropriate because the phenomenon under investigation involves complex interactions between technology, organizational structures, managerial practices, institutional objectives, and visitor experiences. These dimensions cannot be fully understood through quantitative indicators alone and require a contextualized analysis of individual institutions.

The study combines insights from the literature on business model innovation, digital transformation, digital platforms, and cultural management with an empirical examination of three Italian museums: the Uffizi Galleries in Florence, Palazzo Barberini in Rome, and the Pinacoteca di Brera in Milan. The selection of these institutions was based on several criteria: all three museums are among the most important cultural institutions in Italy and attract significant numbers of visitors every year, they represent different organizational realities and all three institutions were directly affected by the Franceschini Reform and subsequently developed digital initiatives that make them particularly relevant for analysing processes of institutional transformation.

The empirical investigation is structured around three analytical dimensions for each case study. The first dimension examines the historical and institutional evolution of the museum in order to contextualize its contemporary development. The second dimension focuses on financial performance and organizational development, analysing how resources have evolved over time and how institutions have adapted to changing environmental conditions. And the third dimension investigates their digital strategies. Finally, a comparative analysis is conducted across the three case studies to identify common patterns, significant differences, and alternative approaches to digital transformation and value creation within the Italian museum sector.

In addition to the case study analysis, the research includes a broader examination of the Italian museum and tourism landscape. This contextual analysis aims to situate the selected museums within the wider national environment in which they operate. Particular attention is devoted to the territorial distribution of cultural heritage and the role of major museums and cultural attractions. By analysing official statistics, governmental reports, and sectoral data, the study reconstructs the main characteristics of the Italian museum ecosystem and identifies the structural factors that influence museum development and digital transformation. This broader perspective allows the case studies to be interpreted as part of a national cultural system shaped by common opportunities, constraints, and policy frameworks, not just as isolated institutions.

The research relies primarily on secondary data collected from multiple sources. These include academic literature, institutional reports, museum annual reports, official publications from the Italian Ministry of Culture, statistical data from ISTAT and the Ministry's Ufficio di Statistica, official museum websites, strategic plans, and publicly available documentation regarding digital projects and organizational initiatives. The use of multiple sources allows for triangulation of information and contributes to increasing the reliability of the analysis.

To assess financial and organizational evolution, a longitudinal analysis was conducted using four reference years: 2016, 2019, 2020, and 2024. These years were selected because they correspond to significant phases in the recent development of the Italian museum sector. Also, this temporal perspective makes it possible to identify changes in institutional priorities, revenue structures, investment patterns, and organizational resilience over time.

Thus, the thesis operates on two complementary levels: the first level focuses on the Italian museum sector as a whole, examining its institutional framework, tourism dynamics, territorial characteristics, and recent evolution. The second level consists of an in-depth comparative analysis of three museums selected as case studies. The integration of these two levels allows the research to combine a macro-level understanding of the Italian cultural environment with a micro-level examination of organizational strategies and digital transformation processes.

2. Contextualized theoretical framework

This chapter establishes the conceptual framework underpinning the analysis developed in this thesis, focusing on two fundamental and closely interrelated dimensions: business model innovation and digital transformation, applied specifically to the context of museum institutions.

The first section develops the concept of the business model as a framework for understanding how organizations create, deliver, and capture value, as well as its evolution toward the notion of business model innovation (BMI) as a strategic capability in dynamic environments.

The second section examines the phenomenon of digital transformation as an organizational process that extends beyond mere technology adoption, involving the development of new dynamic capabilities, managerial and cultural change and a redefinition of the relationship between cultural institutions and their audiences. Paying special attention to the emergence of digital tourists and to the growing relevance of digital platforms as the central infrastructure of this transformation.

Finally, the chapter reviews the main applications of digital platforms within the cultural heritage sector, organized into four key areas: digital preservation and archiving, site management, environmental monitoring, and restoration planning; community engagement and visitor participation; and virtual exhibitions together with their educational and research functions.

Through these sections, the chapter aims to lay the theoretical foundations necessary to understand, in the following chapters, how museums are reshaping their business models and organizational strategies in response to the challenges and opportunities posed by digitalization.

2.1 Business Model Innovation

Over time, there has been an increasing importance attributed to the business model in the fields of innovation and management studies. This increase in importance can largely be attributed to how digital transformation has changed both organizational structures and competitive dynamics. With globalization and a technology-based economy, it is now necessary for organisations to rethink how they create, deliver, and capture value; in addition to innovating products/services. Therefore, business models provide a basis of analysis to understand how companies respond to technological, economic and social changes.

A business model (BM) is the "design or architecture of the value creation, delivery, and capture mechanisms" of a firm (Teece, 2010 p. 172). As stated by David J. Teece (2010), a business model describes the mechanisms by which an organization provides value to its customers, motivates their willingness to pay, and translates revenues into profit. It provides a conceptual framework that explains how an organization operates and supports itself over time.

The Business Model goes beyond focusing just on financial results to also consider the processes and relationships within an organization that help maintain competitiveness in changing environments. This more comprehensive definition of a business model becomes increasingly important as the value created by a business depends upon its ability to operate progressively using a large number of networks amongst people, exchanging information and integrating technology.

Value can be understood as the economic or monetary worth assigned to a product, service, or asset reflecting its perceived importance in a market . From this perspective, value is not determined just by the price that customers ultimately pay, but rather by their perception of the benefits they receive (Grant, 2019). Different users may perceive value in different ways depending on their expectations, personal interests and cultural background. In digital contexts, value is often associated with personalization, interactivity and the quality of the overall user experience.

Consequently, value creation involves both tangible and intangible dimensions. While traditional economic approaches tended to associate value with physical goods and monetary exchange, contemporary perspectives started to give more importance to the experiential, emotional and symbolic elements.

According to Robert M. Grant (2019), the fundamental objective of any business is to generate value for its customers and it is the basis for long-term success and competitiveness. Nowadays, value creation increasingly involves intangible elements such as user experience, digital engagement, and personalized services. Firms and institutions invest more and more in communication strategies and digital and interactive experiences capable of strengthening engagement and reinforcing relationships with users during time.

Amit and Zott (2001) define the business model as a framework that structures how transactions are designed and managed in order to unlock value from available business opportunities. This perspective underlines the importance of networks, partnerships, and interactions between different actors in a digital and interconnected environment.

This interpretation is particularly relevant for digital environments where values are created in collaboration with many different entities through interactions and not just on the inside of a single organization's boundaries. The use of technology to facilitate the sharing of data,to collaborate and communicate between various stakeholders, including end-users, institutions, suppliers, and all other external partners, has led to the formation of interrelated ecosystems that include an increasing number of members interconnected by numerous points of connection.

Although this structural point of view is important, for a business model to be effective, it must be aligned with the firm's general strategy and sustained objectives (Zott & Amit, 2008). The BM acts as a bridge between strategy formulation and operational execution, ensuring coherence between what a firm wants to achieve and how it organizes its activities to do so. It is the overall logic that explains how a firm operates and generates value. It involves defining what the company offers, who it serves, how its activities are organised, and how it results in income, as well as how it positions itself within a network of actors (Landoni et al., 2020).

When there is a change in technology, there is a greater need to understand how a strategy and a business model work together. Frequently, organizations have to find a way to integrate digital tools into existing structures while ensuring that they are aligned with their institutional objectives and that the organisational identity is not lost. In this regard, the business model serves to translate the strategic objectives into specific operational mechanisms.

The BM is recognized as a driver of innovation because it enables organizations to rethink and redesign how value is created and delivered (Zott et al., 2011). This aspect is relevant to rapid technological change contexts where digital transformation is experimenting with new ways of engaging audiences, delivering experiences, and generating revenue streams.

Nowadays, firms are expected to continuously adapt their structures and processes in order to remain competitive and technologically updated. Therefore, business models should not be interpreted as static configurations, but rather as evolving systems that respond to organizational learning and environmental change.

Digital transformation has rapidly increased the speed by which an organization can experiment. As such, many organizations are now using various forms of communication, interacting with their customers differently and delivering services in a number of ways. Innovation is no longer just about products; it now incorporates changing how an organization's entire process functions and how customers experience the company. In addition to this, digital technology supports both flexibility within an organization and adapting to the strategic objectives of the organization.

Based on this, we can introduce the concept of business model innovation. BMI can be understood as the introduction of meaningful modifications to the core components of a firm's business model or to the relationships between them (Foss & Saebi, 2017). These modifications can be modular, affecting isolated elements of the model, or architectural, altering the way components interact with each other.

Business model innovation often involves redefining value propositions, revenue mechanisms, and the roles of different stakeholders. From a strategic point of view, the implications of BMI extend beyond internal reorganization. When a new business model is original and difficult for competitors to imitate, it can be used as a durable source of competitive advantage: provide long-term benefits and protect firms from new entrants (Teece, 2010). Innovating the business model becomes a key mechanism for exploiting entrepreneurial opportunities and sustaining growth, especially in environments characterized by uncertainty and fast changing consumer preferences (Landoni et al., 2020).

In digital servitization contexts, BMI also requires the development of new relationships with external actors. Firms often lack the necessary capabilities to fully implement these transformations independently and have to complement their internal resources with external expertise. This leads to the creation of new organizational networks that support innovation processes and facilitate access to specialized knowledge, digital technologies, and managerial competences. In consequence, business model innovation (BMI) emerges as a collaborative process, shaped by the interaction between internal capabilities and external partnerships (Paiola et al., 2024). This collaborative dimension is particularly visible in sectors where organizations combine cultural, educational, and technological objectives, such as museums.

Moreover, business model innovation evolves across the firm’s life cycle to develop efficient strategies. In early stages, firms focus on building reputation and legitimacy by configuring their business models to attract and retain customers. As they grow, BMI shifts toward leveraging new distribution channels, strengthening relationships and engaging users using different platforms. In more mature phases, firms innovate their business models, continuously experimenting and generating new outputs. It is an evolutionary process that allows firms to overcome structural constraints (Landoni et al., 2020).

Overall, business model innovation represents a critical capability for organizations operating in dynamic environments, as it allows them to adapt to changing market conditions and evolving customer expectations. The dynamic nature of business models demonstrates how organizations keep adapting their structures according to technological opportunities, competitive pressures and user expectations. In consequence, flexibility and experimentation become essential capabilities for ensuring long-term sustainability.

A number of scholars studying digital business models have identified mechanisms which digitally-based companies generate value through. Among the most influential approaches, Amit and Zott's framework provides a useful interpretation of value creation processes in digital environments and how technological innovation, organizational structures and user engagement interact.

Amit & Zott's model identifies four interrelated mechanisms used by digitally enabled business models to create value: efficiency, complementarities, lock-in and novelty. Their combined implementation contributes to reinforce organizational competitiveness and improve the overall user experience.

1. Efficiency: digital technologies reduce transaction, search and coordination costs, and improve scalability. Allows faster and more informed decision making, increasing process reliability. An efficient e-business can enhance value creation through scalability (the ability of a business to adapt and expand its operations or output in response to market changes or growth opportunities).

Digital platforms are especially conducive to scalability because they allow organizations to serve larger audiences, manage higher transaction volumes, and deliver content or services at minimal marginal cost. By reducing information asymmetries between providers and users, digital channels improve the speed and ease of transactions, shortening delivery times and lowering barriers to access (Fu et al., 2021). This not only improves operational efficiency but also the overall user experience, reinforcing the value generated for customers.

Efficiency generated through digital technologies can enrich accessibility and operational coordination. Automated systems, digital databases, and integrated communication platforms facilitate information exchange and reduce organizational complexity allowing institutions to allocate resources more effectively.

2. Complementarities: a set of goods or services exhibits complementarity when their combined offering produces greater value than the sum of each element considered individually (Amit & Zott, 2001). By bundling resources, services or information, organizations can increase revenues and upgrade the overall value proposition because the user perceives more benefits from the integrated offerings. When users gain access to a broader range of content or services through a single platform or experience, they perceive higher utility. This increases their satisfaction and willingness to pay.

Complementarities can be vertical or horizontal. The vertical ones link activities across different stages of the value creation process, and the horizontal ones combine resources or services at the same level. Digital businesses often combine online and offline components. This integration is called the "click-and-mortar model" in which digital and physical channels enrich their offerings to the user.

The inclusion of multiple services and channels also contributes to creating more immersive experiences for users. In digital ecosystems, complementarities frequently emerge through the interaction between physical experiences, online platforms, mobile applications and digital content.

3. Lock-in: it refers to the capacity of a digital business model to foster sustained engagement from both customers and strategic partners, reinforcing and expanding its value-creating potential over time. On the customer side, lock-in is achieved when users develop strong incentives to return to a platform or service repeatedly, rather than switching to alternatives (Amit & Zott, 2001). This pattern of repeat engagement is really valuable in digital contexts, as it increases the number of transactions and leads to higher overall revenues over time. The more consistently users interact with a platform, the more embedded it becomes in their routines and workflows, making substitution costly or inconvenient.

Because organizations compete more and more for users' attention and participation, sustained engagement became particularly important. And personalization strategies, interactive content and the creation of digital communities turned out to be an extremely important instrument for securing long-term relationships and loyalty.

Lock-in prevents the migration of customers and strategic partners to competitors. By personalization, memberships, exclusive digital content and platforms, digital businesses create engagement and partner incentives. Also, loyalty programs develop design standards and establish trustful relationships with customers and virtual markets enable e-business firms to create virtual communities.

Beyond the customer relationship, lock-in also operates at the level of strategic partnerships. When partners (suppliers, distributors, or collaborators) perceive clear incentives to maintain and deepen their association with a platform, the overall ecosystem becomes more stable and competitive (Amit & Zott, 2001). This stability produces a dual benefit: it intensifies customers' willingness to pay while reducing opportunity costs for the firm, which can invest in lasting value creation rather than continuously renegotiating partnerships.

4. Novelty: emerges from the capacity of organizations to reconfigure the way transactions are structured, to attract new audiences. To do so, firms introduce innovative ways of organizing interactions within a business model and explore alternative approaches to value creation. Originality and new approaches are the key to capture the attention of new users. Also, organizations capable of introducing innovative forms of communication are often better positioned to differentiate themselves from competitors and expand their audiences.

When novelty is reinforced by complementarities and by lock-in mechanisms, the result is powerful competitive advantage. As mentioned by Sautet (2014), such combinations can lead to the generation of Schumpeterian rents (temporary surplus returns that exceed the costs required to deploy and utilize a resource). These rents reward firms that are first to introduce innovative configurations before competitors are able to imitate or replicate them.

Although these mechanisms were initially conceptualized in relation to e-business contexts, their implications can also be extended to cultural and public institutions that increasingly rely on digital technologies to improve. In recent years, museums have adopted digital strategies that reflect many of the characteristics associated with digitally oriented business models.

To bring up the theme surrounding the thesis: museums and cultural heritage. We can exemplify each of the value drivers. Efficiency could be achieved with faster visitor flow management, cheaper distribution of digital content and lower costs per user interaction. Complementarity services could include tickets, audio guides, and souvenir shops for a complete visitor experience.

For the novelty aspect, museums can innovate by the introduction of new forms of interaction with the visitors. This can be achieved with immersive experiences, virtual guided tours and high resolution and remote licensing of digital reproductions (for educational purposes, investigations or creative use). Lastly, digital platforms allow museums to develop relationships with visitors by offering personalized content based on interests such as specific newsletters. Also by creating digital communities on social media and websites, memberships and apps that can provide information during the visit at the museum (online-offline integration).

The application of these mechanisms within museums shows how cultural institutions are transforming their organizational and communicative strategies through digitalization. Thanks to digital technologies it is possible to improve operational efficiency as well as expand the possibilities for participation and interaction with audiences at both local and global levels. As museums keep using and investing in digital tools, they evolve from spaces primarily dedicated to conservation into interactive environments.

2.2 Digital Transformation

The growing diffusion of digital technologies has deeply transformed the competitive market in which organizations operate. Nowadays, in a world that is constantly interconnected, firms are expected to do more than adopting technological tools, but also adapting their structures and their strategic approaches in response to evolving consumer expectations. Digital transformation therefore represents a broader organizational phenomenon that extends beyond the implementation of technology itself.

The fast adoption of the Internet by businesses has become an extensive phenomenon and has transformed the way organizations perform across industries (Amit & Zott, 2001). Digitalization has not only contributed to the expansion of markets, allowing firms to reach different audiences, but has also intensified the level of competition.

As organizations are no longer limited by geography, the pressure on firms to differentiate themselves and continuously innovate has increased. As a result, many traditional companies with 'bricks and mortar' models have been compelled to rethink their strategic approaches. According to David J. Teece (2010), firms must reconsider their value propositions, rethink their distribution strategies, and restructure their relationships with customers.

The elimination of geographical barriers has also modified the relationship between organizations and users, enabling continuous interaction through digital channels. In many industries, competitiveness depends on the ability to rapidly respond to market changes, to provide a personalized service and maintain the user engaged for a long time through digitally mediated experiences.

Because of the rapid changes brought by technology evolution, the organizations needed to develop capabilities. An organizational capability is a "firm's capacity to deploy resources for a desired end result." David Teece and his colleagues introduced the term dynamic capabilities to refer to a "firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." (Grant, 2019). It emphasizes processes of adaptation, transformation and learning.

Dynamic capabilities are extremely important because today's context is characterized by technological change and uncertainty, such as digital transformation, and the ability to take advantage of new opportunities and transform organizational structures is essential to create value. Organizations are required to modify internal processes, acquire new competencies, reorganize existing resources and keep themself updated in order to remain competitive and technologically updated.

In this scenario, organizations capable of integrating innovation into their operational activities are generally better positioned to sustain long-term growth. Technological change creates challenges but also opens opportunities to redesign their activities and develop new forms of relating with users and stakeholders. Based on this, the concept of digital transformation is essential to explain.

Digital transformation can be defined as the process through which organizations use digital technologies in order to reshape their operations and become more reactive to evolving market expectations. This process leads to efficiency improvements and better customer experiences; and it must be accompanied by changes in management and cultural aspects (Pellicelli, 2022). The ability to guide internal transformation is just as important as the adoption of the technologies themselves.

And its implementation frequently requires a flexible managerial approach to do an organizational restructuring and make changes in decision-making processes. Without cultural adaptation, the integration of digital technologies may fail to generate meaningful impact. In consequence, organizations had to develop new strategic competencies. Firms must integrate digital technologies, innovate continuously and incorporate new and more flexible managerial practices to respond to changing environments. As Michaela Pellicelli (2022) argues in *The Digital Transformation of Supply Chain Management*, "companies have had to rethink most of their businesses and to develop new competencies." This involves the capacity to manage digital infrastructures, analyze data and coordinate online interactions.

Innovation and learning processes become central dimensions of organizational competitiveness. Traditional principles still retain some relevance but they are no longer sufficient on their own for organizations to succeed (Pellicelli, 2022, p. 9). Companies must complement established practices with new skills and capabilities. Updating their knowledge base, reconfiguring resources and adaptability are key aspects to survive in the market.

In the heritage tourism market, visitors' expectations evolve and competition intensifies, leading to a rethinking of how cultural institutions engage with audiences and deliver value. Museums and cultural institutions are influenced by the same technological and competitive pressures affecting other sectors. Digitalization has opened new opportunities for museums to strengthen the preservation of cultural heritage and its accessibility to more users (Agostino & Costantino, 2021).

As visitors expect more accessible and unique experiences, institutions are encouraged to diversify their communication channels and extend their cultural reach beyond physical spaces. Digital technologies have become essential for transformation of museum activities, offering new forms of interaction such as virtual exhibitions, online collections, and interactive platforms; and enabling these institutions to remain relevant while exploring new opportunities (Navarrete, 2019). Institutions now operate as communicative environments where users can access digital content remotely, connect with collections and participate in educational experiences through multiple platforms.

The need for extending physical boundaries has altered the relationship between museums and their audiences. Thanks to digital platforms, different forms of cultural engagement, that are no longer constrained by geography or opening hours, have emerged (Rijksmuseum, 2018, as cited in Navarrete, 2019). This shift can be observed in the growing importance of online engagement, social media interaction, digital storytelling and participatory formats that allow audiences to comment, share, reinterpret or extend institutional narratives. The relationship between museum and visitor becomes less linear, since digital platforms create spaces where cultural meaning can circulate through institutional content and user interaction at the same time (Armstrong & Patti, 2020).

The transformation led to the rise of digital tourists. A digital tourist is a new type of cultural consumer who engages with museum content remotely through different digital interfaces. Museums that embrace the digital transformation by introducing ways for tourists to access the exhibits and participate in the experience without the limitations of physical presence, can remain relevant in the cultural heritage market (Navarrete, 2019). The ability of museums to captivate and maintain audiences from anywhere is a core dimension of the value proposition.

The appearance of digital travelers are also a part of the larger trend in cultural consumption habits in both culture and tourism sectors. Consumers are wanting more flexible, instant, and technology-mediated ways of consuming culture due to the individualization of these experiences as well as geographical constraints.

Digital transformation within the Italian cultural sector specifically, has always been associated with accessibility and the expansion of participation. But digitalisation is not only a technical process of data conversion, but also as a strategy capable of broadening access to cultural heritage through online platforms, digital services and interactive tools designed for different categories of users (Nappi et al., 2024). In this sense, digitalization serves a dual purpose: it drives technological modernization while simultaneously opening cultural access to larger audiences. Through digital infrastructures, museums can potentially reach those who might otherwise face geographical, economic, or physical barriers to participation.

As mentioned, digital innovation in the museum sector has to focus on the technologies that provide a fulfillment experience for the visitor, but also on the internal organizational management. On the experiential front, cultural institutions have increasingly incorporated immersive and interactive tools to enrich the cultural content and attract new audiences. These tools transform the museum visit from a passive encounter with objects into an active and participatory experience. It allowed visitors to interact with collections in ways that used to be impossible within the physical constraints of traditional exhibition spaces.

This shift reflects a fundamental reconceptualization of the museum's role: institutions are no longer regarded merely as exhibition spaces, but are increasingly expected to become sites of active engagement where visitors can participate, interact, and construct their own interpretations of cultural heritage (Arnaboldi & Diaz Lema, 2021).

As a result, museums see themselves moving toward a hybrid setting that includes educational, cultural, technological and experiential dimensions. For museums that are transitioning to a hybrid model, the scope of their function is now broader than just conserving things; it now includes communication, engagement, and audience development also through the support of digital infrastructures.

At the managerial level, museums reshaped how they operate and make decisions thanks to technologies like big data and artificial intelligence (Xu et al., 2024). They are useful for strategic planning, visitor behavior and flow analysis, and also for resource optimization. Digital data make possible for museums to improve decision-making processes and better understand audience preferences and similar conduct patterns. Thanks to data analytics and artificial intelligence, institutions can optimize resource allocation, personalize services and upgrade visitor management strategies.

These innovations in the way museums operate are possible because of digital platforms (DPs), which represent the primary infrastructure of digital transformation in the sector (Fu et al., 2021). These platforms take multiple forms: websites, digital collection platforms, mobile apps, on-site digital tools, social media channels, and databases. Each of them contribute within the museum's digital ecosystem in different ways but all of them allow the institutions to be more connected, accessible and to provide the visitors with a personalized experience.

As intermediaries between museums and the audience, digital platforms provide museums with the ability to communicate with, interact with, distribute content to, and otherwise reach out to audiences through a number of different channels. They are able to do this because of their flexibility in allowing institutions to provide promotional strategies, and educational and interactive experiences, all in one cohesive digital ecosystem.

Digital infrastructures have redefined value creation itself using collaborative processes between them. By fostering sustained interaction between cultural institutions and visitors, the platforms enable museums to achieve a greater operational efficiency while expanding the scope of their cultural offering, also generating the conditions for innovation (Fu et al., 2021). For example, a single digital platform can host permanent collections, temporary exhibitions, virtual tours, and educational content, leveraging the same infrastructure. Also, a virtual exhibition can be visited by millions of people without significant additional cost.

The scalability of these platforms is thus an important characteristic of digital transformation within museums. The ability to copy and share cultural material easily and with limited costs worldwide is unique to the digital world (as opposed to the non-scalable nature of traditional physical exhibitions). In this way, the global reach of museums is increased and the museums' roles within global cultural networks are strengthened.

As well as helping to enhance museums' operational efficiencies and enhance their engagement with audience members, digital platforms have also helped to provide new means of producing, organizing, and distributing cultural content. As museums develop and make use of greater degrees of digital infrastructure, new types of digital platforms have developed with specific functions related to communication, preservation, education and interaction. The existence of multiple digital platforms within the same museum reflects the complexity involved in the process of digitally transforming the cultural sector.

Digital platforms can be categorized into several types: institutional websites, which serve as the primary point of online presence and information; digital collection platforms, which enable the cataloguing and public accessibility of museum holdings; mobile applications, which enhance the on-site and remote visitor experience; on-site digital tools, such as augmented reality installations. Also databases to support internal knowledge management and research; and social media platforms, which facilitate two-way communication between institution and virtual visitor, and engagement beyond the museum's physical boundaries (Fu et al., 2021). Each of these platform types contributes differently to the museum's overall digital strategy, and their combined use reflects the complexity of cultural institutions in the digital age.

Among these, social media platforms have emerged as particularly significant, given their capacity to foster participation, wider access and redefine the relationship between museums and their audiences. The growing pressure on museums to embrace participatory practices has found a natural point of convergence in social media platforms, which serve as powerful instruments for what scholars have termed the "participatory turn" (Arnaboldi & Diaz Lema, 2021).

The participatory dimension of social media has increasingly transformed the traditional communication model historically associated with museums. Instead of museums only communicating with the public in a one-way manner, they now use digital channels to foster conversation, grow user engagement through interaction, and create opportunities for users to generate their own content.

Social media platforms play a central role in this transformation by enabling museums to democratize access to their collections and communicate with audiences far beyond their physical boundaries (Arnaboldi & Diaz Lema, 2021). They have become key tools for museums to engage audiences, measure social impact and foster community interaction. These channels allow institutions to create shared environments for collaboration and communication with users (Wilson-Barnao, 2018). Through platforms such as Instagram, Facebook, TikTok and others, museums can disseminate cultural content in more accessible and immediate formats, adapting communication strategies to the habits and expectations of digital audiences. This contributes to reinforcing institutional visibility, audience engagement and online participation.

Engaging visitors through social media channels to create shared spaces for collaboration and dialogue is an important mechanism through which cultural institutions can measure their social impact and strengthen their community outreach (Wilson-Barnao, 2018). But it's important to clarify that social media engagement alone does not directly increase visitation, the overall online presence of museums influences visitor behaviour and decision-making processes (Bunea et al., 2024).

Digitalization has changed the communicative language of cultural institutions. Museum communication increasingly combines texts, images, videos, interactive interfaces and digital archives within the same cultural ecosystem. This integration allows heritage institutions to construct more layered narratives around collections, where the artwork or object is no longer communicated only through the exhibition space but also through multiple digital formats that extend and reshape the visitor's encounter with cultural heritage (Armstrong & Patti, 2020).

Digital visibility therefore becomes part of the broader value proposition of museums. Even when online interaction does not immediately translate into physical attendance, it contributes to strengthening institutional reputation and maintaining long-term relationships with audiences. Also digital tools such as interactive displays, mobile applications and QR codes enhance the in-person experience by providing dynamic content, encouraging longer and didactic visits. These technologies improve visitor satisfaction and increase the likelihood of repeat visits and recommendations as well, strengthening museums' attractiveness and reinforcing their role within cultural tourism (Bellocchi et al., 2026).

The integration of interactive technologies inside exhibition spaces also reflects the increasing convergence between physical and digital experiences. Visitors at museums today have moved beyond observing passively - they can interact through personalized and technology-enabled methods of engagement, enhancing both their experience of learning and their engagement as an audience.

Bellocchi (2026) points out that tools such as online ticketing, virtual tours and digital catalogues allow museums to reach wider and international audiences, facilitate access, and implement more efficient visitor management strategies. However, their impact is not uniform because, while online ticketing is strongly associated with increased revenue, virtual tours may partially substitute physical visits, highlighting the need for balanced digital strategies. Overall, the effectiveness of digitalisation depends on how these technologies are integrated with institutional characteristics and local contexts, particularly in relation to accessibility and governance structures.

In addition to their own individual institutional platforms, museums are joining global digital environments as part of a collaborative effort to preserve and share cultural heritage. For instance, digital cultural heritage initiatives such as Europeana and Google Arts and Culture provide aggregated access to digital cultural heritage content from institutions in many countries throughout the world. These platforms allow people to access and explore museum collections online, promote the use of museum collections for educational purposes, give institutions increased visibility on an international scale and have a positive impact on the preservation and circulation of cultural heritage resources through a network of participants.

The growing relevance of these collaborative platforms demonstrates how digital transformation in museums increasingly depends on interconnected networks rather than isolated institutional initiatives. By participating in collaborative digital infrastructures, museums can expand their audiences, increase their accessibility, and enhance their ability to effectively engage with the global cultural and educational community.

2.3 Digital Platforms applications

In the cultural heritage sector, DPs are used for different purposes, such as: digital preservation and archiving of physical artifacts, documents and artworks; site management, environmental monitoring and restoration planning. Also for community engagement and participation of visitors, to have online access and create virtual exhibitions for remote users all over the world, and as an education and research tool. <u>For a better understanding, we will elaborate on each of these uses in museums today.</u>

These applications illustrate that digital platforms have matured into complex infrastructures that provide integration across multiple purposes: preservation, communication, management, engaging with audiences. As museums proceed with the digitization of their activities, DPs are becoming multifunctional systems linking cultural heritage to larger educational, organizational and social objectives.

1. Digital preservation and archiving

Digital platforms have progressively reconfigured the ways in which cultural heritage is managed, accessed, and experienced. In particular, the role of digital preservation and archiving can be understood as part of the broader evolution of digitalization processes within the sector. As noted by Pesce and Franzè (2025), early research in cultural heritage digitalization focused on the preservation of artworks and remote access through the Internet, marking the initial stage of the sector's digital transformation. In this sense, digitization enables cultural institutions to create digital surrogates of physical artifacts, ensuring their accessibility beyond spatial and temporal constraints.

Digital preservation also plays a crucial role in mitigating the risks of deterioration, material loss, and restricted handling of fragile objects. In this respect, the creation of digital models does not merely reproduce artefacts visually; it also supports their long-term documentation, conservation, and potential restoration by preserving geometric, material, and contextual information in digital form (Raco, 2023). As Raco (2023) argues, integrated digital technologies such as 3D surveying, photogrammetry, photomodelling, and immersive tools can be used not only to document museum heritage, but also to protect, conserve, and promote it. This is particularly relevant in the Italian museum context, where digitalisation has increasingly extended from basic digitization practices to the production of digital databases, semantic archives, and 3D models that support different phases in the life cycle of cultural assets.

Once digitized, artefacts are not simply stored as images, but are transformed into structured digital entities through the creation of metadata and contextual information. According to Pesce, Neirotti, and Paolucci (2019), the digitization process involves attaching descriptive metadata and narrative content to each object, which allows it to become a "digital artefact" that can be indexed, searched, and retrieved within a digital platform. This step is fundamental for archiving, as it ensures that digital objects are not only preserved, but also interpretable and reusable over time.

Metadata systems therefore play a strategic role within digital archiving processes because they transform isolated digital reproductions into interconnected and searchable cultural resources. Without structured metadata, digitized collections would remain difficult to organize and preserve effectively over time.

Digital archiving is a structured and multi-phase process that begins with the acquisition and creation of data. This initial stage involves the digitization of physical artefacts through two-dimensional and three-dimensional techniques, as well as data capture methods such as imaging, scanning, and measurement, accompanied by initial documentation. Once digital representations are created, the process continues with data structuring and metadata organization. In this phase, different types of metadata are assigned to each digital object, including descriptive metadata (such as title, author, date, and material), technical metadata (including file format and resolution), and administrative metadata (such as rights and ownership information).

Following this, the final stage focuses on storage, preservation, and access. This phase involves the use of digital repositories, databases, and online platforms designed to manage and disseminate cultural heritage data. Additionally, long-term preservation strategies are implemented to ensure that digital content remains usable despite technological changes. As a result, digital archives are designed to guarantee data integrity, preventing corruption or loss of information, while also ensuring accessibility over time and interoperability between different systems and platforms.

In this regard, digital preservation requires continuous institutional commitment because technological obsolescence can compromise access to digital resources fastly. Museums must therefore constantly update storage systems, preservation protocols and digital infrastructures in order to maintain the long-term usability and accessibility of cultural data.

Digital preservation and archiving involve a set of complex technical and organizational processes as well. These processes are aimed at ensuring the accessibility, integrity, and usability of digital cultural assets for long time periods. In museums and cultural institutions it is understood as a lifecycle process, in which digital objects must be curated, maintained, and adapted over time to remain accessible and meaningful.

According to Yap (2024), digitalisation enhances access and educational value in museums, but also requires institutions to rethink how digital resources are managed and preserved to ensure long-term sustainability and stay relevant. "Preservation of digital materials is key in order to preserve current culture for future generations" (Corrado & Moulaison, 2014). To do so, digital preservation strategies must address technological change by implementing sustainable infrastructures and policies capable of maintaining access to digital materials across time (Corrado & Moulaison, 2014).

Preservation and archiving have also evolved through the development of large-scale digital platforms that aggregate, structure, and disseminate cultural heritage data. A key example in the European context is *Europeana*, a digital platform developed by the European Commission that provides access to millions of digitized cultural objects from museums, libraries, and archives across Europe. As highlighted by Pesce, Neirotti, and Paolucci (2019), Europeana operates as a centralized and public infrastructure that collects metadata and digital representations of cultural artefacts, making them searchable and accessible through a single online gateway.

The platform has brought many advantages for museums because it creates an environment in which cultural organisations can increase the visibility and accessibility of their collections. For many institutions, particularly smaller ones, participation in Europeana offers opportunities to reach audiences that would otherwise remain inaccessible through local digital initiatives alone. Consequently, digital heritage platforms can be understood as mechanisms that amplify the social and cultural impact of museum collections beyond their physical and geographical boundaries (Borin & Donato, 2023).

Digitalization initiatives rely on collaborative infrastructures that enable cultural institutions to manage the technical and financial complexity associated with the preservation and dissemination of digital heritage. Platforms such as Europeana show how digital transformation increasingly depends on interoperable infrastructures capable of connecting institutions across national boundaries.

It has encouraged the adoption of shared standards and professional practices across museums, libraries, and archives. By coordinating institutions operating under different national systems, the platform has contributed to greater consistency in the documentation, management, and accessibility of cultural heritage resources, facilitating collaboration on a European scale (Capurro et al., 2023).

Also, Europeana proves the importance of collaborative governance. The initiative relies on a network of cultural institutions, aggregators, and specialised professionals who collectively contribute to the management and enhancement of digital collections. Through this structure, expertise, technological knowledge and best practices circulate among participating organisations, fostering a more coordinated approach to digital transformation across the cultural sector (Borin & Donato, 2023).

Due to the above, the development of transnational digital heritage infrastructures has required cultural institutions to coordinate their procedures and information systems beyond national boundaries. As museums increasingly operate within interconnected digital environments, interoperability has become a key requirement for ensuring the exchange and integration of cultural data. The emergence of shared infrastructures has therefore encouraged institutions to align aspects of their workflows and organisational practices, creating the conditions for more effective cross-border collaboration and access to cultural heritage collections (Capurro et al., 2023).

The digitization of collections then creates value that extends beyond public access to cultural resources. Digital images and cataloguing records improve the organization, management, and dissemination of information associated with museum holdings. By increasing the availability and quality of collection data, digitalization supports essential institutional activities such as collection management, curatorial practices, and academic research (Bertacchini & Morando, 2013). At the same time, digital collections enhance visibility and allow museums to share cultural content with audiences who may not have direct access to physical exhibitions. The integration of digital resources into museum operations therefore contributes simultaneously to organizational efficiency and to the broader cultural mission of the institution.

2. Site management, environmental monitoring and restoration planning

Digital technologies play an important role in the operational and managerial dimensions of museums. The management of cultural heritage sites requires an integrated approach that combines site management strategies, environmental monitoring, and restoration planning. These dimensions are increasingly influenced by digital transformation processes, which reshape how heritage assets are preserved, interpreted, and made accessible to the public.

Effective site management in museums involves coordinating internal resources while adapting to external environmental conditions. Museums can be conceptualized as production systems where inputs such as staff and infrastructure are transformed into service outputs like exhibitions and visitor access.

Managerial performance is significantly influenced by contextual and environmental variables, such as regional income levels and the development of tourism infrastructure, which directly affect efficiency (Guccio et al., 2020). At the same time, museums are undergoing a transformation toward more visitor-centered models. This shift requires redefining service offerings to meet evolving audience expectations while maintaining heritage preservation (Palumbo, 2023).

In environmental monitoring, digital technologies play a central role by enabling the continuous assessment of artefacts and their surrounding conditions through structured data acquisition and modelling processes. Key parameters such as temperature, humidity, and light intensity must be carefully controlled, as adverse environmental conditions can contribute to the deterioration of museum collections, both in storage and on display (Laohaviraphap & Waroonkun, 2024).

Compared to traditional manual inspection methods, digital systems based on Internet of Things (IoT) technologies allow for more continuous and distributed monitoring across different areas of a museum (Perles et al., 2024). In this context, IoT facilitates the collection of environmental and structural data, while artificial intelligence (AI) supports data processing and contributes to more informed risk assessment and management (Laohaviraphap & Waroonkun, 2024).

The merger of predictive analytics and the IoT reflects a shift in conservation methods away from reactive measures and towards being data-driven and proactive. Instead of intervening only after visible deterioration occurs, museums can increasingly anticipate environmental risks and optimize preservation strategies through continuous monitoring systems. The combination of continuous monitoring and analytical modelling is an advancement in conservation practices, as it supports more proactive approaches to preservation and enables institutions to better understand and manage potential risks over time (Perles et al., 2024).

Restoration planning in the cultural heritage is increasingly supported by integrated digital workflows that combine both digital and physical reconstruction techniques. Beyond the digital reconstruction, it also involves the use of physical models that serve as tools for dimensional verification and give the resources for precise restoration procedures that cannot be directly applied to original artefacts (Raco, 2023).

The integration of digital and physical reconstruction methods allows museums and conservation professionals to create an experimental model of the restorations that do not result in interfering directly with the physical artifact. This method reduces options for conservators in terms of the potential for damage to an object. In addition, this process enables conservators to more accurately plan how to restore an object, particularly for objects that have a high degree of fragility or are historically significant.

Furthermore, restoration processes are supported by the development of structured protocols that integrate digital documentation, conservation strategies, and museum display objectives. These protocols are designed to address the diversity of materials, preservation conditions, and technological requirements associated with cultural heritage. However, significant challenges remain, especially in relation to the availability of technical skills, the management of digital data, and the long-term preservation and maintenance of digital models (Raco, 2023).

For digital restoration planning to be effective, it requires interdisciplinary collaboration between conservators, curators, engineers, digital specialists, and information managers. The complexity of digital heritage management demonstrates that technological innovation alone is insufficient without the organizational competencies necessary to sustain these processes over time.

3. Community engagement and participation of visitors

While some digital technologies are mainly oriented toward conservation and internal management, others are specifically designed to strengthen interaction between museums and audiences. In recent years, community engagement and visitor participation have become central priorities for museum digital strategies, conducting a transformation toward more inclusive cultural models focused on the audience.

The “participatory turn” is a new concept of the role of the users as active participants in the cultural experience. It reflects a more inclusive and interactive form of engagement (Arnaboldi & Diaz Lema, 2021). This requires institutions to adopt a visitor-centred approach, placing audiences at the core of their mission and facilitating access to knowledge on more flexible and personalized terms (Arnaboldi & Diaz Lema, 2021). When museums place audience engagement at the center of their strategy, they create a cultural space where all visitors feel valued and motivated to deepen their connection with the institution over time (Gartnerová, 2025).

Changes in public culture are leading to an increase in participatory modes that allow people to be involved in what they consume and how they engage with it. People want their experiences to be more interactive and customizable, as well as provide a two-way interaction. Museums are developing new ways to connect with their audience by enabling collaboration, providing ways for people to offer feedback, and encouraging people to actively participate in a digital world.

Visitors are able to interact with institutions, contribute their perspectives, and participate in the creation and dissemination of cultural content. This reflects a more horizontal relationship between museums and their audiences, where users are empowered to “talk back” to institutional narratives (Wilson-Barnao, 2018). Also, the individuals can engage with museum collections remotely through websites, social media, and other digital platforms, independently of physical presence (Navarrete, 2019).

Through social media platforms and online communication channels, museums are able to disseminate information, promote events, and maintain continuous contact with visitors. These digital tools provide opportunities for users to engage with content related to museums, shape their perceptions and plan cultural visits more effectively (Bunea et al., 2024).

Additionally, the continuity of online interaction enables museums to maintain visibility and audience engagement beyond the duration of the physical visit itself, and digital communication becomes an extension of the museum experience, allowing institutions to remain constantly present within users' everyday digital environments.

Moreover, the development of a strong online presence permits museums to extend their communication and support both virtual and in person interactions with diverse audiences. Museums that adapt to the digital habits and preferences of the visitors are more likely to see increased engagement, particularly through the creation of interactive, immersive and inclusive experiences that are meaningful for them (Bunea et al., 2024).

This is particularly useful for younger generations, whose cultural consumption habits are strongly influenced by digital media, personalization, and interactive communication. Museums compete not only with other cultural institutions, but also with other digital entertainment ecosystems that shape users' expectations.

Contemporary approaches consider a more integrated view of audiences which includes not only external visitors but also internal stakeholders such as staff, volunteers, and collaborators (Gartnerová, 2025). In this context, effective community engagement relies on the integration of multiple organizational elements such as: audience research, communication strategies, content development, and initiatives to build a community. By aligning these components museums can create more participatory experiences.

Community engagement is, in this respect, as much an organizational challenge as it is a communicative one. Sustaining meaningful participation requires that digital strategies, institutional objectives and audience expectations remain in dialogue with one another. To this end, museums have incorporated audience analytics, feedback mechanisms, and interaction metrics into their practice by using data not merely to measure reach, but to iteratively improve the quality of engagement.

It is worth noting that there is no universal model for engagement. Successful strategies must be adapted to the specific sociocultural context of each museum. This flexible approach, focused on the audience, enables museums to reduce barriers to participation and to create loyal relationships (Gartnerová, 2025).

The success of participatory strategies ultimately hinges on how well museums grasp the diversity of their audiences and adjust their communication methods accordingly. Rather than erasing contextual differences between institutions, digital transformation demands precisely the opposite: more flexible, differentiated approaches to audience development that are sensitive to each institution's particular circumstances.

4. Virtual exhibitions

Because of the expansion of digital participation and online accessibility, museums have been encouraged to experiment with new exhibition formats capable of overcoming physical limitations and extending access to cultural heritage through immersive digital environments. Among these innovations, virtual exhibitions represent one of the most visible examples of digital transformation within the museum sector.

Virtual exhibitions, particularly those based on replica-based virtual museum systems, offer a realistic alternative to physical museum visits by accurately reproducing exhibition layouts and artefacts within digital environments. These systems preserve the spatial configuration of real museums while eliminating physical constraints such as overcrowding, limited visibility, and restricted interaction with objects. As a result, users can access exhibitions remotely and explore cultural content more freely, benefiting from increased accessibility and flexibility compared to traditional museum settings (Xu et al., 2024).

By innovating in the way the museums show the content through visual, textual, interactive, and immersive formats, they are able to stimulate users' curiosity and sustain their interest in cultural content. In this sense, the effectiveness of digital museums depends also on how information is organized, contextualized, and presented to users (Liu & He, 2025).

More and more often, immersive technologies help museums achieve both educational goals and experiential/entertainment objectives by providing multisensory environments and interactive storytelling, which produces a higher level of emotional engagement between the audience and their connection to heritage.

Emerging technologies such as virtual reality, augmented reality, and other interactive tools contribute to deeper and more sensory experiences. By creating virtual environments, interactive models, personalized tours and contextualized narratives, museums allow users to engage with artefacts in relation to their historical background. These elements can strengthen users' sense of presence and encourage a deeper interaction with digital cultural heritage (Liu & He, 2025).

Nowadays, virtual reality is increasingly used in museums to recreate historical environments, simulate past events and provide interactive access to cultural heritage that may be damaged or no longer existing. Through immersive 3D environments, users can explore artefacts within their original contexts. These applications are particularly valuable in cases where preservation constraints limit physical interaction, as VR allows institutions to offer rich experiences without compromising the integrity of the original objects.

Heritage sites that are geographically distant from urban centres or are inaccessible due to their location have much to gain from these types of technology as they allow people to engage with culture that might otherwise not be experienced by a wider audience. Therefore, through the use of virtual reality (VR), these types of technologies play an important role in the preservation, access to and educational dissemination of culture.

VR is a key technology in transforming museum exhibitions. Through the creation of multisensory digital environments, it allows visitors to explore cultural artefacts and historical contexts in ways that go beyond traditional display methods. Users can interact with virtual reconstructions, navigate 3D environments, and participate more actively in the exhibition experience to increase accessibility across diverse audiences. In addition to enhancing interaction, virtual reality also plays a significant role in supporting learning and knowledge acquisition (Li et al., 2023).

Virtual reality environments incorporate experiential elements such as entertainment, education, escapism, and aesthetics, which encourage active participation and enhance users' sensory and cognitive engagement (Chang & Suh, 2025). Interactive environments allow users to closely observe, manipulate, and even virtually handle artefacts, leading to longer observation times. In contrast to physical museums, where movement and observation are often constrained by space and crowds, interactive virtual systems not only replicate but also extend traditional exhibition experiences (Xu et al., 2024).

Although, for virtual museum experiences to be effective, immersive technologies such as VR must be complemented by guidance mechanisms that help users interpret the content. Without structured support, users may experience disorientation despite the availability of advanced interactive features (Zhao, 2019). Also, the quality of the user experience depends on the effective integration of technological capabilities with user-centered design principles (Chang & Suh, 2025).

5. Education and research tool

Beyond preservation, communication and exhibition purposes, digital platforms contribute to the educational and research functions traditionally associated with museums. Through digital infrastructures, institutions can support autonomous learning and academic research, propagating the knowledge across audiences.

Digital platforms have transformed museums into key environments for education and research by expanding access to cultural content beyond their walls. Through virtual museums and online platforms, users can explore digital collections, access to exhibitions and engage with a wide range of educational resources. In this context, museums are no longer limited to their traditional role of preserving and displaying artefacts, but they become interactive learning environments that support knowledge construction (Kayaalp et al., 2024).

Their interactive and multimedia features allow users to navigate content autonomously, create personalized learning paths, and engage with information in a more dynamic way. This increases motivation, deeper understanding and the development of critical thinking and digital competencies, especially useful for younger generations who tend to engage less with traditional museum formats. At the same time, the accessibility of digital resources facilitate research activities by enabling users to analyse, compare, and interpret cultural information more effectively in a global context (Kayaalp et al., 2024).

In addition, the integration of multimedia content, interactive interfaces, and personalized recommendations contributes to making cultural learning more accessible and engaging for diverse audiences. Museums are therefore increasingly positioned as active educational actors within digital knowledge ecosystems.

DPs and personalised technologies contribute to education by featuring digital tours, gamified experiences and AI-driven recommendations to shape users' learning paths according to their interests and needs. At the same time, online collections and open-access platforms allow global audiences to make use of museum content, including students and researchers. These developments reinforce the role of museums as inclusive educational institutions within the digital age (Ozdemir & Zonah, 2025).

Personalization technologies also contribute to expanding accessibility by adapting content to different categories of users, educational backgrounds, and levels of familiarity with cultural heritage. This flexibility reinforces the inclusive dimension of digital museum experiences and broadens opportunities for participation and learning.

A relevant example of digital platforms used for educational purposes is Google Arts & Culture, which provides access to high-resolution images, virtual exhibitions, and curated collections from museums worldwide. The platform has interactive tools, thematic narratives and autonomous learning paths. By offering open and global access to museum content, it reinforces the role of digital platforms as key instruments for academic purposes and knowledge dissemination in the cultural sector.

Originally launched as the Google Art Project, Google Arts and Culture has evolved into one of the most expansive digital aggregators of art and cultural heritage worldwide. The platform brings together collections from museums, libraries, and archives in partnership with the Google Cultural Institute, offering users a range of interactive tools including high-resolution image zoom, virtual walkthroughs of physical museum spaces, curated video content, and the ability to build and share personalised collections. Available in 18 languages, the platform functions as a globally accessible cultural interface that bridges institutional collections and general audiences without requiring physical presence (Wani et al., 2019).

Collections can be explored through categories such as artists, museums, artistic movements, historical events, and geographical locations, allowing users to navigate large volumes of cultural material and identify resources that align with their individual interests (Wani et al., 2019).

Google Arts & Culture offers new ways of learning while simultaneously entertaining. The platform uses high-resolution digital imaging to grow the educational value of online interactions because it allows users to explore artworks in detail and zoom in on elements that would not be visible to the naked eye during an in-person visit. Whereas in the past such detailed analysis was limited to specialists with access to laboratory tools and direct interaction with artefacts, this technology is now accessible to everybody. As a result, access to specialised knowledge has become more democratic, reducing the gap between experts and general users (Pesce, Neirotti & Paolucci, 2019). By providing contextual information, multimedia resources, and links to related content, platforms like Google Arts & Culture facilitate the interpretation of artworks and historical objects. These resources support informal learning processes and allow users to access cultural information independently, contributing to wider public engagement with heritage, and strengthening the educational role of museums. (Wani et al., 2019).

The expansion of digital environments has encouraged museums to adopt more flexible approaches to the distribution of cultural content. Traditional image licensing systems were designed primarily for specialized users such as publishers and researchers, whereas contemporary digital ecosystems are characterized by rapid circulation, sharing practices, and collaborative content production. In response to these changes, some institutions have adopted open licensing models that facilitate the reuse and redistribution of digital resources while maintaining attribution requirements (Bertacchini & Morando, 2013). By reducing legal and administrative barriers, these initiatives can increase the visibility of collections, promote educational uses of cultural heritage, and support wider forms of public engagement with museum resources.

The democratization of access to specialized cultural knowledge represents one of the most significant implications of digital transformation within museums. By making collections, archives, and interpretative resources accessible through digital platforms, institutions contribute to reducing traditional barriers associated with geography, expertise, and physical accessibility.

But, it is important to notice that while digitalization increases opportunities for dissemination and participation, it also raises important governance challenges for museums. Institutions must determine how to balance the benefits associated with wider access against the need to preserve control over digital assets, intellectual property, and the contextual integrity of cultural content. The digital environment has intensified this tension because digital images can be reproduced, shared, and reused with unprecedented ease (Bertacchini & Morando, 2013). Consequently, museums are increasingly required to develop strategies that simultaneously support accessibility and protect their role as trusted providers of authoritative cultural information.

3. The Italian Case

Museums do not implement digital technologies in isolation; their transformation is shaped by governance systems, funding structures, public policies, tourism dynamics, and broader socio-economic conditions. And Italy offers a particularly relevant setting for investigating these processes. The country possesses one of the largest concentrations of cultural heritage assets in the world and hosts a museum ecosystem characterized by considerable diversity in terms of size, governance models, financial resources, and technological maturity. At the same time, museums occupy a strategic position in the Italian economy, contributing not only to cultural preservation and education but also to tourism development, territorial attractiveness, and local growth.

Over the last decade, the Italian museum sector has undergone significant structural changes. The implementation of reforms introduced new governance mechanisms that encouraged museums to adopt more strategic approaches for a better institutional performance. And, parallel to these reforms, digital technologies progressively became integrated into their activities.

The COVID-19 pandemic further accelerated these dynamics. The temporary closure of museums highlighted both the vulnerabilities of traditional operating models and the importance of digital infrastructures for ensuring institutional continuity.

Against this background, this chapter examines the widespread Italian context. It first analyses the Franceschini Reform and its implications for museum governance, funding structures and managerial autonomy. It then examines public and private funding sources in order to understand how the economic sustainability of museums has evolved over time.

The chapter subsequently analyzes the Italian tourism landscape, comparing 2019 and 2024 data to highlight the impact of the pandemic and the subsequent recovery, as well as the transformations in international tourist flows and visitor preferences. Finally, the chapter explores the visitor's journey, showing how digitalization has redefined the different stages of the museum experience, from trip planning to post-visit engagement.

This chapter therefore provides the institutional, economic and tourism context necessary to understand the digital strategies adopted by the three museums analyzed in the following chapters.

3.1 Franceschini Reform

In the Italian context, digitalization processes have been influenced by different reforms with the purpose of modernizing museum administration, improving institutional autonomy and making cultural heritage accessible to everyone. Of all these initiatives, the Franceschini Reform represents one of the most significant turning points in the contemporary evolution of the Italian museum sector.

Italy's cultural heritage sector has historically been one of the richest and most complex in the world, containing thousands of state and local museums, archaeological sites, libraries, and archives. This extraordinary wealth, however, has also represented a governance challenge, as the sheer volume and diversity of institutions made centralized administration difficult to sustain effectively over time. The need for a structural overhaul had therefore been debated for decades before the Franceschini Reform provided a concrete legislative framework for change.

The Franceschini Reform is the name given to a set of structural and legislative changes introduced in Italy beginning in 2014 by Dario Franceschini, then Minister of Culture. The reform's core aim was to modernize Italy's cultural administration and to adapt it to the challenges of the 21st century. It looked-for to make cultural institutions more autonomous, efficient, and internationally competitive.

The reform was created in an international context characterized by increasing pressure on cultural institutions to become more efficient and financially sustainable. Italian museums were therefore encouraged to adopt managerial and organizational models more closely aligned with international standards and contemporary cultural policies.

One of the central elements of this reform was the creation of a national museum system designed to foster coordination and dialogue among museums at different territorial levels, for a more integrated cultural offer for the public. In addition, the reform introduced a distinction between museums with special autonomy and regional museum networks, redefining the institutional framework of the sector and strengthening managerial structures (Ministero della Cultura, 2014).

The reform was formally introduced through Ministerial Decree No. 171/2014, which redefined the organisational structure of the Italian museum system and established new governance mechanisms. A central element of the reform was the identification of 32 state museums granted special autonomy (Alfano et al., 2023) such as the Uffizi Galleries, the Galleria Borghese, the Pinacoteca di Brera, the Museo di Capodimonte, and the Reggia di Caserta, among others (Ministero della Cultura, 2014). The selection of these 32 institutions was based on criteria related to visitor numbers, cultural significance, capacity to generate revenue, and territorial importance. This differentiated approach acknowledged that not all public museums possessed the same institutional conditions or infrastructure required to operate with full managerial and financial independence.

Traditionally, museums were centrally managed with limited decision-making power and no financial autonomy. With the reform, Franceschini redefined this structure by granting selected institutions organisational, financial, and scientific autonomy, transferring main responsibilities to museum directors. This change meant to improve accountability and strategic orientation, and allowed museums to balance their conservation role with a stronger focus on accessibility and public engagement (Alfano et al., 2023).

Before the Franceschini Reform, the Italian museum system was characterised by a highly centralised and bureaucratic administrative structure in which museums depended heavily on the Ministry of Culture and its territorial branches for financial, organisational and scientific decisions. Many institutions operated just as local offices of the ministry, without autonomous budgets or managerial control over revenues and resources (Bonini Baraldi et al., 2023) . At the same time, growing attention to participation, promotion and revenue generation since the 1990s exposed the limitations of this traditional model in terms of flexibility, institutional coordination and the ability to attract new visitors (Bonini Baraldi et al., 2023). The reform represented an attempt to modernise the governance of Italian museums by redefining the way they were organized.

Museum directors were appointed through internal administrative processes, with no competitive selection involved. This changed after the Franceschini Reform by introducing open international recruitment procedures and establishing three supporting bodies for each director: a board of trustees, a scientific committee, and a college of auditors, to ensure quality and accountability in institutional management. In terms of operations, all autonomous museums gained direct control over their conservation activities, exhibition programs, opening hours, and ticket prices, within the limits set by the central administration. This independence, however, operates within a structure of two tiers: first-level museums report directly to the Minister, while second-level museums report to the Museums Directorate (Cavalieri et al., 2025).

The reform also reshaped accountability practices by introducing new performance measurement systems. The central government placed strong emphasis on quantitative indicators such as visitor attendance and financial performance, to evaluate the progress and the effectiveness of the reform and the level of public engagement achieved. (Agostino & Arnaboldi, 2020).

Because of the introduction of the reform Italian state museums were expected to start to operate as more structured and professionally managed institutions, with explicit institutional goals, autonomous financial management, and qualified staff aligned with international museum standards. At the same time, digital development becomes part of this broader modernisation agenda: communication, social media, online visibility and technologies oriented to tourism are presented as strategic areas for future investment (ICOM Italia, 2018).

The alignment between institutional modernization and digital investment reflected the growing consensus among cultural policymakers that digital tools were no longer supplementary to museum operations but had become integral to their core functions. Digital technology includes not only front-end visitor engagement tools, such as mobile applications, virtual tours, and online collections, but also back-end infrastructure for managing collections, coordinating operations, and connecting institutions. Digitalization, therefore, is seen as part of a larger effort to reform museums rather than as separate technological initiatives.

In the later stages of the reform, digitalisation became a key instrument to support participation and accountability. Museums were encouraged to adopt digital tools not only to enhance online interaction and immersive experiences for the visitors. Also to generate new forms of performance data, like engagement metrics and online reputation. Digital technologies are means of extending cultural participation beyond physical spaces and a mechanism for monitoring and evaluating museum performance in real time (Agostino & Arnaboldi, 2020).

The rise in engagement metrics and digital analytics shows that data-driven management practices are becoming more influential in museums' operations. Institutions can now assess audience behavior, examine their own marketing techniques and obtain data for informing decisions about their organizations through the use of digital platforms to monitor audience behavior in real time and record the audience's preferences, engagement levels, etc. At the same time, this data provided evidence for institutional reporting and contributed to the legitimacy of cultural investments in the eyes of public funders and private partners.

The use of digital technologies in Italian museums aligns with the government's broader objective of establishing a coordinated National Museum System (*Sistema Museale Nazionale*), designed to connect both public and private institutions through a shared digital infrastructure. As highlighted by Agostino and Arnaboldi (2020), this approach assigns a dual function to digital tools: they enhance visitor engagement by supporting the entertainment dimension of museums and enable the collection and transmission of data to central authorities, as well. Shared digital systems facilitate institutional coordination while simultaneously improving public accessibility and contact between museums and audiences.

Empirical evidence accumulated since the reform's implementation supports its effectiveness in revitalizing the Italian museum sector. Research confirms that both internal organizational features and governance characteristics impact positively on their growth over time as museums gain more exposure to autonomous management. Furthermore, the introduction of internationally competitive director selection procedures generated measurable improvements in museum revenues, with studies estimating increases in the range of 17–26% (between 2014 and 2017) for treated institutions (Bergantino & Intini, 2022).

These results suggest that organizational autonomy and managerial modernization can positively influence financial performance and also institutional visibility and audience attractiveness. Greater flexibility allowed museums to experiment more actively with communication strategies, partnerships and digital initiatives.

Official data from the Italian Ministry of Culture reported a significant increase in museum attendance and revenues during the first years of implementation. According to data published by the Ministry in 2014, the new pricing policies, extended opening hours and the introduction of free admission on the first Sunday of each month (The Domenica al Museo initiative) contributed to a 10% increase in visitors and an 11% rise in revenues compared to the previous year (Ministero della Cultura, 2014). Some of the major museums and archaeological sites, including the Colosseum, Pompeii, Brera and the Uffizi, recorded considerable growth in visitor numbers following the reform measures.

The Domenica al Museo illustrates well the tension the reform sought to manage between financial sustainability and social inclusion. Although the measure came at the cost of reduced per-visit revenue, it helped broaden the visitor base and repositioned museums in the public imagination as community-oriented institutions. In this way, its symbolic and reputational value operated as a complement to the economic objectives pursued through other instruments of the reform.

The advantages that the Franceschini reform brought to museums did not go unnoticed during the Covid-19 pandemic as well. Thanks to the reform that had already encouraged institutions to expand participation and develop new forms of engagement, when museums were forced to close, they shifted their activities online, relying primarily on social media to deliver cultural services and maintain contact with audiences. As Agostino et al. (2020) explain, public service delivery could not be suspended and had to be moved online using available digital tools, particularly social media, which allowed museums to reach broader audiences. This suggests that the rapid digital response observed during the pandemic was built on pre-existing pressures to adopt digital strategies within the cultural heritage sector.

The pandemic therefore accelerated trends that had already emerged in previous years, highlighting the strategic importance of digital infrastructures for ensuring institutional continuity and resilience.

Museums that had already invested in online communication and digital platforms were generally better prepared to maintain interaction with audiences during periods of closure.

At the same time, institutions had to balance their traditional educational mission with the need to produce engaging online content, while also dealing with uncertainties related to planning and financial sustainability. Questions about whether digital services should remain free or become monetised arose, particularly in a context where revenues from physical visits decline . These challenges highlight that the digital transformation of museums is not only a technological shift, but also a continuation of the managerial and organisational changes initiated by the Franceschini reform, requiring new skills, strategies and governance approaches (Agostino et al., 2020).

The pandemic period then functioned as an involuntary laboratory for revenue model innovation. Some museums charged for their online experiences, and between them, several distinct monetisation approaches emerged: the direct sale of individual or packaged experiences, subscription and membership models granting ongoing access to digital content, donation-based mechanisms that positioned users as active supporters of the institution, freemium models offering basic free content with premium paid tiers, and advertising-supported provision targeting corporate rather than individual users. As Agostino (2024) notes, the significance of this diversification lies both in the revenue streams themselves and in the different relationships each model establishes between the institution and its audiences, transforming passive visitors into members, donors, and sponsors with varying degrees of institutional affiliation.

During the COVID-19 pandemic, digital initiatives became essential to ensure continuity in cultural service delivery, as museums were forced to shift their activities entirely online. Given these circumstances, digital tools, particularly social media, were vital in maintaining public access to culture. The Ministry later reinforced this vision through funding lines within the National Recovery and Resilience Plan (PNRR) and the National Plan for the Digitalisation of Cultural Heritage (PND), which supports further digitalization and sustainability projects. Aligned with European strategic priorities, the PNRR pursues three core objectives: fostering digital innovation, advancing ecological transition, and promoting social inclusion, while simultaneously addressing both the immediate economic damage caused by the pandemic and the deeper structural challenges facing the Italian economy (MEF, 2021).

A significant impulse to the digital transformation of the Italian cultural sector has been thanks to the National Recovery and Resilience Plan (PNRR) was introduced by the Ministry of Culture within Mission 1 and Component 3, Tourism and Culture 4.0, the programme places digital innovation at the centre of cultural heritage policies. Through dedicated investments, it promotes the modernization of cultural institutions and supports the development of digital infrastructures, platforms, and services aimed at improving accessibility and the use of cultural resources (Ministero della Cultura, n.d.).

Within the Investment 1.1 (Strategies and Digital Platforms for Cultural Heritage), the Ministry of Culture aims to reduce the technological gap affecting cultural institutions and accelerate the digital transition of museums, archives, libraries, and archaeological sites (Ministero della Cultura, n.d.). A key objective of the investment is the development of a national digital infrastructure capable of ensuring the long-term preservation and accessibility of cultural resources. The programme supports the creation of digital archives, interoperable platforms, and technological systems designed to facilitate the management and sharing of cultural information. Through these initiatives, digital technologies are expected to strengthen the visibility and usability of cultural heritage while enabling wider access for researchers, institutions and of course, the general public (Ministero della Cultura, n.d.).

Particularly relevant for museums is the large-scale digitization of cultural collections. The programme seeks to expand the availability of digital cultural resources through the systematic digitization of artworks, museum collections, archival records, and library materials. This process is intended to increase access to heritage assets, facilitate knowledge democratization, and support educational and research activities. By making collections available in digital formats, museums can extend their reach beyond physical visits and provide new opportunities for cultural participation (Ministero della Cultura, n.d.).

The PNRR also recognizes that digital transformation requires organizational adaptation and professional development. For this reason, the programme includes initiatives aimed at strengthening digital competencies among cultural heritage professionals. Training activities are intended to support the adoption of innovative technologies and provide museum staff with the skills necessary to manage digital resources and implement new services effectively. Consequently, digitalization is conceived not only as a technological challenge but as a process of organizational change within cultural institutions as well (Ministero della Cultura, n.d.).

The inclusion of cultural digitalization in the plan represented a political recognition of culture as a driver of economic recovery and territorial development. By positioning cultural heritage alongside infrastructure, education, and health as a priority sector for national investment, the Italian government signaled a deeper understanding of culture's role in post-pandemic reconstruction.

Embedding cultural digitalization within national recovery strategies reflects a growing institutional recognition of culture as a driver of both economic development and social inclusion. In this framework, digital heritage projects are no longer seen as ends in themselves, but as investments connected to technological modernization and territorial development.

As outlined in the PND, digital transformation is conceived as a long-term process aimed at creating an integrated cultural ecosystem based on shared data infrastructures, interoperability and expanded access to heritage (Ministry of Culture, 2022). The plan intends to eliminate one of the most consistent barriers to successful digital management of Italian cultural institutions: the fragmentation of data systems and incompatibility between platforms used by various institutions; by stipulating compliance with commonly used technical standards for digital systems and for collections. In this framework, public investment supports technological development and new organisational models, with the goal of accessibility, and ensuring the sustainable management of digital cultural resources over time (Ministero della Cultura, 2022).

The Italian National Recovery and Resilience Plan (PNRR) allocates €49.2 billion to the broader mission of "Digitisation, Innovation, Competitiveness and Culture" (MEF, n.d.). Within this framework, approximately €500 million is specifically dedicated to the digitalisation of cultural heritage through the investment initiative "National Plan for the Digitalisation of Cultural Heritage" (European Commission, n.d.).

The National Plan promotes the expansion of digital availability to cultural heritage for inclusion, audience diversification and increase the participation of users traditionally excluded from conventional forms of cultural consumption (Nappi et al., 2024). It promotes the creation of an interconnected ecosystem in which cultural resources can be shared, reused and explored, positioning digitalisation as a strategic tool for public availability and sustainability within the cultural sector (European Commission, n.d.). The emphasis on inclusion highlights another central aspect of digital transformation, which is the possibility of reducing obstacles that historically limited participation in cultural activities.

This initiative aims to develop a national digital infrastructure capable of collecting, integrating and making cultural resources accessible through dedicated platforms, while also supporting the digitisation of museums, archives and libraries. These objectives can be achieved by expanding the availability of digital cultural resources and improving their organisation in order to facilitate access, consultation and sharing. At the same time, attention was also given to the quality of digital experiences to reduce the barriers affecting audience accessibility (Nappi et al., 2024).

This experience highlighted the importance of digital tools for communication and engagement, but also the need for more structured digital infrastructures capable of supporting cultural services in the long term. In this sense, the pandemic acted as a turning point, accelerating a transformation that had already begun in previous years and demonstrating the strategic role of digitalisation in ensuring continuity, availability and resilience within the cultural sector (Agostino et al., 2020).

The infrastructural and inclusion-oriented ambitions outlined above do not exist in isolation, they intersect directly with questions of institutional governance and economic performance. A digitally interconnected cultural ecosystem requires more than the technical capacity to collect and share resources, it also needs the organizational structures capable of sustaining and deploying them effectively. In this respect, the outcomes observed in autonomously governed museums are particularly telling, the administrative reform and digital strategy emerge as complementary forces, each reinforcing the conditions under which the other can succeed. Institutions equipped with greater governance flexibility appear better positioned to translate digital investment into tangible gains in both accessibility and economic performance.

Autonomous public museums have been shown to consistently outperform traditional institutions in terms of local impact. There was a visible upward trend in both visitors and revenues after the implementation of the reform directly affected by the new governance model (Bergantino & Intini, 2022). The findings suggest that the reform contributed not only to administrative restructuring, but also to improving the economic performance and attractiveness of Italian museums.

Despite its modernising ambitions, the Franceschini reform also received criticism regarding the way the reorganisation process was implemented. Some observers argued that the reform prioritised administrative restructuring and bureaucratic reclassification over the development of a long-term cultural strategy capable of addressing structural issues within Italian cultural institutions, including insufficient funding, staff shortages and organisational fragmentation (Manenti, 2015). These critics reflected deeper concerns about the capacity of the reform to produce effective and sustainable institutional transformation beyond formal administrative change. Also, while having more autonomy created new opportunities for innovation, several museums continued to face structural limitations linked to staffing shortages, uneven financial resources, and administrative complexity.

As previously mentioned, museums gained more flexibility in allocating resources to operational activities, cultural events, collaborations and research projects. However, even though they became more independent in staffing decisions, museums remained financially dependent on the state for personnel funding and were therefore unable to expand their staff as much as needed. Within this context, many museums intensified their international activities through collaborations, exhibitions and digital initiatives to reach wider audiences. The reform therefore encouraged museums to adopt a more internationally oriented approach, even while financial and bureaucratic constraints continued to limit institutional resources and operational capacity (Francioni & Vissak, 2025).

The capacity to attract external funding became a differentiating factor because it reflected the strategic competencies of their management teams. Organizations that were able to leverage European and international funding opportunities tended to have a greater infrastructure for administration than those that have a higher quality of their collections.

The new incentive structure introduced by the reform to encourage Italian state museums to adopt a more proactive approach and secure external funding. By granting managerial and financial autonomy, the reform enabled museum directors to independently manage additional resources, increasing the attractiveness of participating in competitive funding schemes. But obtaining international project funding is not only a financial strategy but also a signal of managerial capability and institutional visibility, as it requires strategic planning, administrative capacity, and the ability to operate in competitive and uncertain environments (Cavalieri et al., 2025)

In summary, the main objectives pursued by the reform were four: first, a selected group of major state museums were granted full administrative and financial autonomy, enabling them to independently manage their budgets, staffing, and exhibition strategies without requiring ministerial approval for operational decisions. Second, the Ministry itself was restructured to improve coordination between central and regional offices and to reduce the bureaucratic layers. Third, the reform placed emphasis on cultural valorization, directing museums to prioritize audience engagement, education, tourism promotion and the development of partnerships between the public and private sectors. Fourth, and particularly relevant to the focus of this thesis, the reform established a long-term institutional commitment to digitization, open data, and the adoption of new technologies as essential instruments for the conservation and the dissemination of cultural heritage. When combined, the four objectives represent a unified and ambitious outlook for the future of Italian state museums, where each of the four interrelate and enhance one another rather than conflict. Thus, the Franceschini Reform marks a turning point in Italian policies for culture.

Beyond its institutional and governance implications, the Franceschini Reform can also be understood as an important enabler of business model innovation in Italian museums. By granting greater managerial and financial autonomy, the reform encouraged museums to move beyond a predominantly administrative model and adopt a more strategic approach to value creation. Institutions increasingly needed to develop new ways to create, deliver and sustain value not only for their visitors but for a greater number of stakeholders as well, including local communities, researchers, educational institutions, public authorities, and private partners.

In this regard, the reform created conditions that favoured the gradual evolution of museum business models. Greater autonomy encouraged museums to experiment with new sources of revenue, develop new strategies, establish partnerships and expand the range of services offered to visitors. The objective was to improve their capacity to fulfil their cultural mission through innovative organizational models.

Many of the developments that followed can be explained through the value creation mechanisms discussed in the previous chapter. Efforts to improve operational efficiency became visible through investments in digital infrastructures, online ticketing systems and other advanced visitor management procedures. Complementarities emerged through the integration of physical visits with educational activities, digital content, cultural events and online platforms. New forms of audience engagement contributed to create relationships between museums and visitors, while innovative digital initiatives expanded the ways in which cultural heritage could be experienced. Then, the reform provided museums with greater flexibility to redesign elements of their business models while remaining aligned with their institutional objectives.

3.1.1 Public and private funding of Italian museums

Alongside the governance reforms introduced by Minister Dario Franceschini from 2014 onwards, Italy also implemented initiatives aimed at strengthening the financial sustainability of cultural institutions. While the reform increased museum autonomy and introduced new managerial practices, it also highlighted the importance of diversifying revenue sources. As museums became responsible for increasingly complex activities, ranging from conservation and restoration to digital transformation and audience development, the search for complementary funding mechanisms became a central component of cultural policy.

Traditionally, the Italian government's intervention is a huge part of funding for museums. The role of the State in conserving cultural heritage, managing museums and promoting museums has historically been acknowledged. Yet as heritage management becomes more complicated and more funding is needed for preservation of heritage projects, many other sources are needed to supplement public funds; as a result it has become increasingly easier to create alternative sources of financing and to encourage private investment in museum related projects.

In this scenario, Italy introduced the Art Bonus, a policy instrument aimed at stimulating private participation in the financing of cultural heritage through a system of fiscal incentives. By granting tax benefits to donors who support museums, archaeological sites, libraries, archives, and other public cultural institutions, the initiative seeks to strengthen the economic sustainability of the sector while fostering more involvement of private actors in heritage conservation and enhancement (Ministero della Cultura, n.d.).

The scope of the Art Bonus extends beyond the conservation of cultural heritage assets, encompassing a wide range of cultural institutions and activities. Through this mechanism, private contributions can support the protection, maintenance and restoration of public heritage, while also financing museums, archaeological complexes and other publicly owned cultural organizations. In addition, the programme supports investments in new cultural facilities as well as the conservation of existing infrastructures, contributing to the development and sustainability of Italy’s cultural sector (Art Bonus, n.d.).

Beyond its fiscal dimension, Art Bonus represented an important organizational innovation because it combined tax incentives with a national digital platform that connects potential donors and cultural institutions. Through this system, museums can present projects, disclose funding needs, and publicly report the resources received. The initiative therefore seeks to increase transparency while facilitating access to private funding opportunities for institutions of different sizes (Donelli et al., 2022).

The introduction of this platform transformed fundraising from a largely bilateral relationship into a more transparent and publicly visible process. Museums can communicate their projects directly to potential donors, while contributors can monitor fundraising progress and verify how resources are allocated. These mechanisms reduce information asymmetries and strengthen accountability, two factors frequently associated with successful fundraising strategies.

The initial results of the programme suggest that the reform significantly increased private participation in cultural financing. During its first two years of operation, donations channelled through Art Bonus reached approximately €123 million. Compared with the period preceding the reform, the total value of donations almost doubled, while the number of donations increased by more than 60%, indicating a substantial expansion of private support for cultural heritage and performing arts institutions (Donelli et al., 2022).

Since its introduction, the Art Bonus programme has experienced a continuous expansion in private participation, reflected in the steady increase in both the number of donors and the overall volume of contributions. By 2021, the initiative had mobilised approximately €435 million through more than 14,000 patrons, suggesting a growing willingness among private actors to support cultural heritage projects. This trend also highlights the importance of transparency and accountability in fundraising activities, as donors are more likely to contribute when cultural institutions clearly communicate the objectives of funded projects and provide information regarding the allocation of financial resources (Donelli et al., 2022).

The evidence also reveals that the Italian funding model relies also on organizational donors. Although individuals accounted for the majority of donation transactions, most financial resources originated from companies, banking foundations and nonprofit organizations. This finding suggests that private support for culture in Italy is driven less by small-scale individuals and more by institutional actors capable of making substantial contributions to heritage conservation and cultural activities (Donelli et al., 2022).

Despite the growing relevance of private contributions, public funding continues to represent the foundation of the Italian museum system. State transfers remain essential for supporting conservation activities, personnel costs, infrastructure maintenance, and the operation of institutions that may have limited capacity to generate their own revenues or attract private donors. It can then be stated then, that the objective of post-reform cultural policy was not to replace public financing with market-based mechanisms, but rather to build the resilience of cultural institutions through a more diversified funding structure.

Overall, the development of Art Bonus should be understood as complementary to the objectives of the Franceschini Reform. While the reform focused on improving governance, managerial autonomy, and organisational efficiency of museums, Art Bonus addressed the financial dimension of sustainability by encouraging the mobilisation of additional private resources. Together, these initiatives contributed to the emergence of a more flexible and diversified management model in which public funding remains the primary source of support, but private participation provides supplementary resources for conservation, innovation and infrastructure development. The Italian experience illustrates that organisational reforms and funding policies can operate in parallel to strengthen the sustainability of cultural institutions.

3.2 Analysis of the Italian tourism landscape

After the Franceschini Reform, the Italian museum sector entered a phase of progressive institutional modernization, greater managerial autonomy, and stronger attention to public engagement. Visitor flows and museum revenues became increasingly important indicators for evaluating the capacity of museums to attract audiences, generate economic value and contribute to the cultural tourism system.

The year 2019 represents a relevant benchmark because it was the last full year before the disruption caused by the COVID-19 pandemic. In that year, Italian state museums, monuments, and archaeological areas attracted approximately 54.8 million visitors and generated more than €242 million in gross revenues (ISTAT, 2020; Ministero della Cultura, 2025). These figures show the strong attractiveness of Italian cultural heritage before the pandemic and reflected the role of museums as central components of the national tourism economy.

The closure of museums and cultural sites during the first national lockdown caused significant losses for the sector, both in terms of public participation and economic performance. According to ISTAT (2020), between March and May 2020 alone, state cultural institutions lost approximately 19 million visits and around €78 million in revenues.

By 2024, the sector had not only recovered but also exceeded pre-pandemic levels. According to the Italian Ministry of Culture, state museums and archaeological parks recorded 60,850,091 visitors in 2024, compared with 54.8 million in 2019. This corresponds to an increase of approximately 11% over the pre-COVID benchmark. Revenues grew even more significantly: from around €242.2 million in 2019 to €382 million in 2024, an increase of approximately 58% (Ministero della Cultura, 2025). The distinction between increased visitorship and increased income indicates that recovery after the pandemic has occurred both through quantitative measures and in relation to new directions in the methodologies for establishing price, ticketing, the general makeup of demand, and the economic value assigned to cultural institutions.

The data show that Italian museums have become relevant also as economic actors within the tourism system. Increased revenues are indicative of the wider business model transformation occurring within museums, mainly due to ticketing, visitor services, digital booking systems, temporary exhibitions and the increased demand for international tourism which all also generate value.

Italy's museum industry has developed in close connection with the recovery and expansion of the international tourism industry. The cultural heritage of Italy attracts many international visitors. Cities with high densities of museums, archaeological sites, historic centres and monuments are especially likely to draw in international tourists. Hence, when analysing museum attendance, it must also be considered within the overall international tourist flow. International tourism generated a significant economic impact. According to the Bank of Italy, foreign travelers spent €44.3 billion in Italy in 2019 (Banca d'Italia, 2020). In 2024, international travel revenues increased in both nominal and real terms, and the tourism balance surplus reached €21.2 billion, equal to 1% of GDP, the same ratio recorded in 2019 (Banca d'Italia, 2025), suggesting that international tourism regained a central role in the Italian economy after the shock of the pandemic world problematic.

The recovery of international tourism occurred in a highly uneven manner throughout the country, with certain regions and cities benefiting more than others because they have an abundance of cultural assets, established tourism infrastructures and more international visibility. Therefore, understanding the territorial distribution of tourism demand is critical for explaining why museums throughout Italy have performed differently.

From a territorial perspective, 2024 also marked the return of Central Italy as the leading destination area for tourism revenues, accounting for 27.4% of total international tourism expenditure. This result is particularly significant because Central Italy includes major cultural destinations whose museums, archaeological sites and heritage institutions benefited from the renewed prominence of cultural tourism. (Banca d'Italia, 2025).

While the growth of cultural tourism brought important economic benefits, it also reinforced one of the most persistent features of the Italian tourism system: the concentration of visitors within a narrow number of destinations. As demand increased after the pandemic, this territorial imbalance became even more pronounced.

The problem with the high tourism in the country is the uneven distribution of cultural tourism across the territory because it represents a structural imbalance. Visitor flows are heavily concentrated in a small number of cities that combine great heritage density with strong international name recognition and well developed tourism infrastructure. The most well-known cities with the highest concentration of tourists are: Rome, Florence, Venice, Milan and Naples.

Rome draws millions through its archaeological and museum complex anchored by the Colosseum, the Pantheon, and Castel Sant'Angelo. Florence attracts visitors because of Renaissance masterpieces concentrated from the Uffizi Galleries and the Accademia to Palazzo Pitti and the Boboli Gardens. Venice's unique urban landscape and its museums continue to position it as one of the world's most recognisable heritage destinations. Milan, by contrast, offers a more diversified cultural profile combining historic institutions such as the Pinacoteca di Brera and the Cenacolo Vinciano with a dynamic contemporary offer centred on the Triennale. And lastly, Naples and its surrounding area with the archaeological sites of Pompeii, the National Archaeological Museum. Together, these five cities absorb the vast majority of Italy's cultural tourist flows, leaving much of the country's equally significant but less internationally visible heritage largely outside the primary circuits of global tourism.

Attendance and revenue data make the consequences of this concentration difficult to ignore. Visitor flows are unequal not only in geographical terms, but in economic ones as well because a handful of destinations absorb a disproportionate share of both admissions and income across the Italian museum system.

In 2024, the concentration of museum demand in Italy was especially evident in a limited number of cultural destinations. Rome remained the country's leading cultural hub, with the Colosseum Archaeological Park alone attracting more than 14.7 million visitors and generating over €101.9 million in revenues. Florence also confirmed its position among the most important cultural destinations, as the Uffizi Galleries welcomed approximately 5.3 million visitors and produced more than €61.9 million in revenues. In southern Italy, the Archaeological Park of Pompeii recorded more than 4.2 million visitors and revenues exceeding €55.2 million (Ministero della Cultura, 2025).

Official data published by the Ufficio Statistica of the Italian Ministry of Culture show a strong territorial concentration of museum demand within a limited number of regions. In 2024, state museums, monuments and archaeological areas recorded more than 60.8 million visitors nationwide and generated approximately €382 million in gross revenues. Among all Italian regions, Lazio attracted the largest number of visitors, with almost 29.7 million admissions, corresponding to nearly half of the national total. Tuscany ranked second with more than 9.1 million visitors, followed by Campania with 10.3 million visitors. Together, these three regions accounted for approximately 80% of all museum visits recorded by the Italian state museum system, highlighting the central role of Rome, Florence and Naples within the national cultural landscape (Ministero della Cultura, 2025).

Revenue generation follows a similar pattern. Lazio alone produced approximately €154.8 million in museum revenues in 2024, representing around 40% of all revenues generated by state cultural institutions in Italy. Tuscany generated €94.8 million, while Campania contributed over €80.3 million. At the provincial level, Rome recorded the highest economic performance, with more than 28.5 million visitors and revenues exceeding €152.5 million. Florence ranked second with 8.6 million visitors and approximately €93.5 million in revenues, while Naples attracted more than 8.6 million visitors and generated over €70.6 million (Ministero della Cultura, 2025).

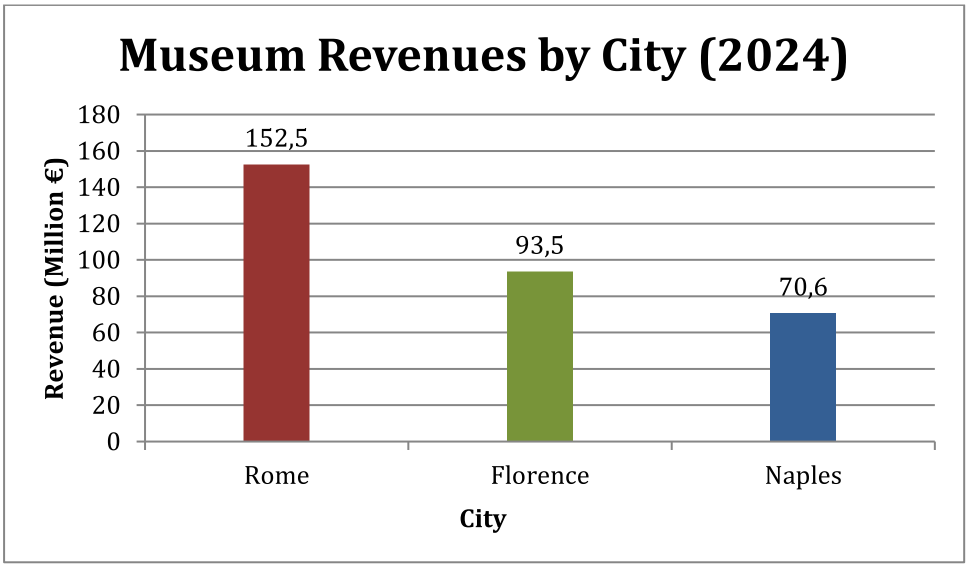

Figure 1. Museum revenues by city.

The data also reveal that visitor concentration is greater than institutional concentration. While Lazio hosts approximately 20% of all state museums included in the survey (90 institutions out of 453), it attracts almost 49% of all visitors and generates more than 40% of total revenues. This suggests that the success of the Italian museum system depends not only on the number of institutions available, but also on the international visibility and cultural attractiveness of specific destinations (Ministero della Cultura, 2025).

If we analyze tourism in Italy, we can also see that the pattern repeats itself and that the cities with the highest incomes are indeed the cities with the highest number of visitors. Rome recorded the highest visitor numbers among Italian cultural destinations. The city's leading attraction was the Parco archeologico del Colosseo which welcomed 14.733.395 visitors in 2024. Another major attraction was the Pantheon, which attracted 4.086.947 visitors and Castel Sant'Angelo that received 1.315.063 visitors (Ministero della Cultura, 2025).

Florence ranked among the country's leading cultural cities thanks to the exceptional performance of its major museums. The most visited attraction was the Galleria degli Uffizi complex, with 5.294.968 visitors, followed by the Galleria dell'Accademia, which attracted 2.189.103 visitors (Ministero della Cultura, 2025). Naples also emerged as one of Italy's most important cultural tourism hubs. The city's strongest attraction was the Archaeological Park of Pompeii, which recorded 4.267.233 visitors and the Capodimonte Park that welcomed more than 1.5 million visitors (Ministero della Cultura, 2025).

To provide a better understanding of the relationship between cultural heritage and territorial performance, *Table 1* presents the Italian cities with the strongest tourism-related economic performance in 2024, together with their principal cultural attractions and the corresponding number of visitors recorded by each site.

City	*Attraction*	*Visitors (2024)*
Rome	Archaeological Circuit of the Colosseum, Roman Forum and Palatine Hill	8,674,935
Rome	Pantheon	4,086,947
Rome	Castel Sant'Angelo	1,315,063
Florence	Galleria degli Uffizi and Vasari Corridor	2,599,581
Florence	Galleria dell'Accademia	2,189,103
Florence	Boboli Gardens	971,675
Florence	Palazzo Pitti	403,575
Naples	Archaeological Park of Pompeii	4,137,637
Naples	Royal Palace of Caserta	902,410
Naples	National Archaeological Museum of Naples	532,985
Naples	Archaeological Park of Herculaneum	521,514
Naples	Royal Palace of Naples	427,630

Table 1. Italian cities with the highest tourism performance in 2024, their principal cultural attractions and visitor numbers.

Overall, the data reveal a highly concentrated pattern of cultural visitation in Italy, where a small number of internationally renowned cities account for a substantial share of museum and archaeological tourism. The dominance of Rome, Florence, and Naples suggests that iconic cultural assets continue to function as key drivers of tourism demand, generating significant visitor flows and reinforcing the strategic importance of heritage management and digital innovation in enhancing accessibility and visitor experiences (Ministero della Cultura, 2025).

This concentration has important implications for museum strategy. On the one hand, major cultural cities benefit from strong international visibility and high visitor demand. On the other hand, they also face challenges related to overcrowding, conservation, visitor management and tourist flows distribution. Thus, the concern goes far beyond tourism data. Museum management and policymakers face difficult questions about accessibility and conservation because of the concentration of visitors. The challenge is not simply attracting additional visitors but also ensuring that the increase continues to be compatible with heritage preservation and quality of visitor experience.

To solve the problem of overcrowding, in addition to reducing the accumulation of tourists in certain cities of the country, an important point would also be to lower the concentration of tourism in certain times of the year. To do so, investing in cultural tourism promotion, understood as the set of public and institutional strategies aimed at attracting visitors motivated primarily by heritage, museums, and cultural experiences, is a necessary but insufficient condition for reducing the seasonal concentration of tourist flows. Effective seasonality management requires differentiated audience strategies: younger visitors, whose travel is constrained by work and study calendars, can be encouraged toward off-peak visits through targeted pricing incentives, while older tourists that are structurally freer to travel year-round, require culturally tailored programming designed around their specific interests and needs (Vergori & Arima, 2020).

One dimension of this sustainability challenge concerns the temporal spread of tourism demand. Even within highly visited destinations, visitor flows tend to accumulate during specific periods of the year, creating additional pressures on museums and cultural sites. For example, the seasonal distribution of visitor flows to Italian state cultural institutions in 2019 reveals a pronounced peak concentrated in the spring months of March, April, and May, which together accounted for nearly a third of the year's total attendance, approximately 17.5 million visits at an average of 6 million per month. This pattern was consistent across all Italian regions and had characterised the system for multiple years, confirming the structural challenge of seasonality that cultural tourism policy seeks to address (ISTAT, 2020).

The discussion above shows that museums occupy a central position for Italy's tourism. Their capacity to attract visitors generates effects that extend well beyond the boundaries of the institutions themselves, influencing economic activity at either local and national levels. Museum attendance contributes to economic value creation through several channels. Ticket revenues represent the most direct source of income, but cultural tourism also generates some effects through accommodation, restaurants, transport, guided tours, retail, cultural services and local employment. Then cultural heritage becomes a driver of local and national economic development, and it is a certainty to say that museums contribute to value creation beyond their own institutional revenues.

3.2.1 Evolution of International Tourism in Italy between 2019 and 2024

The comparison between the 2019 and 2024 editions of the International Tourism Survey published by the Bank of Italy reveals both continuity and significant changes in the structure of international tourism in Italy. While the tourism balance remained equivalent to approximately 1% of GDP in both years, tourism expenditure by foreign visitors increased substantially, rising from €44.3 billion in 2019 to €54.2 billion in 2024. This growth confirms the sector's recovery after the disruption caused by the Covid-19 pandemic and highlights the resilience of Italy’s tourism industry. (Banca d’Italia, 2020; Banca d’Italia, 2025).

During these years the cultural heritage sector has had to make changes and adapt due to the pandemic. The economic consequences of the COVID-19 pandemic on Italian museums were severe and immediate. Between 2019 and 2020, onsite visitor numbers fell by 57% and ticket revenues declined by 52%, reflecting the combined effect of three months of complete physical closure and the subsequent reopening under strict capacity restrictions. While 2021 brought a partial recovery, with visitor numbers rising by 35% and revenues following a similar upward trajectory, neither indicator had returned to pre-pandemic levels by the end of that year, underscoring the structural fragility of a funding model overwhelmingly dependent on physical attendance (Agostino, 2024).

Faced with the impossibility of welcoming visitors in person, the vast majority of Italian museums turned to digital channels to maintain their relationship with audiences. A survey conducted across more than 500 Italian cultural institutions found that 80% offered at least one form of online cultural experience during 2020, experimenting with a wide range of formats including educational laboratories, virtual tours, online workshops, and training courses. This rapid and largely unplanned deployment of digital tools represented an unprecedented acceleration of digital experimentation within a sector that had historically been slow to embrace online provision (Agostino, 2024).

The effects of the pandemic were not evenly distributed across the Italian territory. Destinations characterised by a strong concentration of cultural attractions experienced particularly severe reductions in international arrivals, suggesting that tourism linked to museums, historic centres, monuments, and artistic heritage was especially vulnerable to mobility restrictions and changing visitor behaviour (Della Corte et al., 2023). This trend is particularly relevant in the Italian context, where cultural tourism represents one of the main drivers of international demand. The reduction in visitor flows affected not only local tourism economies but also the institutions responsible for managing and promoting cultural heritage, creating additional pressure to develop alternative forms of access and audience engagement.

The sharp decline in international tourism demonstrated the extent to which cultural destinations depend on the mobility of foreign visitors. Areas specialised in heritage-related tourism suffered more substantial losses than provinces characterised by stronger business tourism activities, revealing significant differences in resilience across tourism models (Della Corte et al., 2023). This situation exposed the vulnerability of cultural ecosystems whose economic sustainability relies heavily on physical visitation and international demand. The pandemic accelerated debates surrounding diversification strategies, audience development, and the use of digital technologies to maintain visibility and engagement during periods in which access to cultural sites was restricted.

The disruption caused by the pandemic was not merely temporary. As visitor flows and tourism expenditure gradually recovered, the sector they returned to had shifted, demand patterns had changed, visitor expectations had evolved, and digital technologies had become more deeply embedded in the travel experience than ever before.

A major transformation for museums during the years, concerns the type of tourism driving international demand. In 2019, growth was firstly supported by seaside and mountain holidays, while cultural tourism and visits to art cities, despite representing the largest category of expenditure among foreign tourists, expanded at a more moderate pace. By contrast, in 2024 cultural tourism became the dominant driver of growth. Cultural and art-city travel accounted for 56.4% of total holiday expenditure, reinforcing its position as the preferred form of tourism among international visitors. This shift is particularly relevant for museums, as it indicates that cultural heritage has now become a central motivation for travel to Italy. (Banca d’Italia, 2020; Banca d’Italia, 2025).

Cultural tourism's rising prominence has direct consequences for the strategic environment in which museums operate. When cultural heritage becomes a primary motivation for travel, museums become active contributors to destination attractiveness and tourism competitiveness.

The traditional image of the cultural tourist as an older, highly educated, and affluent individual has long dominated the tourism literature. However, evidence presented by Vergori and Arima (2020) indicates that cultural tourists are more diverse than this conventional portrayal suggests. Nowadays, cultural tourism attracts visitors across all age groups, with the highest concentration falling in the 20–30 age bracket, a finding with significant implications for how cultural institutions design their audience development and communication strategies. This can be seen as the emergence of a "new and younger cultural tourism", a development with direct implications for how institutions like Brera position their digital communication and audience engagement strategies toward younger, internationally mobile visitor segments (Vergori and Arima, 2020).

Changes in visitor profiles took place with transformations in the geographical origins of international demand. In both years, Germany remained one of the most important source markets. However, whereas the 2019 expansion was largely driven by visitors from Germany, Austria, the United States and Canada, in 2024 the strongest contribution came from Germany, Spain and several Asian markets, particularly the Gulf countries, South Korea, China and Hong Kong. This diversification reflects the progressive reopening of long-haul markets and the growing importance of non-European visitors for Italy's tourism economy. (Banca d'Italia, 2020; Banca d'Italia, 2025).

Cultural institutions, such as museums, face both opportunities and challenges when trying to attract more varied audiences from multiple source markets. Attracting visitors from diverse cultures and languages means these institutions must develop more sophisticated communication strategies, provide multilingual content, and utilise a range of digital tools to support international audiences before, during and after their visit. As such, digital technology is a way of increasing international accessibility and creating an international presence through additional types of programmes and events.

The transformation of tourist behavior also reinforced the importance of digital technologies throughout the travel experience. They become part of how tourists discover destinations. Access to online information, digital booking systems, virtual services, and real-time communication became important for travelers seeking to reduce uncertainty and make informed decisions. As a result, digital tools assumed a more central role in supporting interactions between visitors and tourism providers, contributing to the modernization of tourism services and cultural institutions (Corbisiero & Monaco, 2021).

For example, Italy has embraced digital platforms such as Google Arts & Culture to make their cultural heritage more accessible and visible. The analysis conducted by Wani et al. (2019) shows that Italy ranked among the ten countries with the highest number of cultural items represented on the platform, with 37,566 artworks and heritage resources available online. This result suggests that Italian cultural institutions have actively taken digital dissemination initiatives, using online platforms to extend access to collections beyond the physical boundaries of museums.

Digital technologies are becoming more central to the tourism industry, which has considerable significance for museums due to the fact that the majority of visitors engage with their cultural experience well before an in-person visit and continue to do so after the visit has occurred. Museums can use websites, social media platforms, digital collections, and virtual experiences to attract potential visitors, support trip planning, and maintain engagement beyond the museum visit itself.

The resurgence of tourism and the growth in digital engagement create new opportunities for museums but also increase discussion on whether sustained growth is sustainable in the future. Cultural destinations that are becoming more popular will offer benefits to local economies by providing cultural experiences for visitors to enjoy while generating revenue from tourism and digital engagement but will generate new managerial and conservation challenges at the same time.

Overall, the comparison between 2019 and 2024 suggests that Italy has experienced a qualitative transformation in demand after the pandemic. Cultural tourism has an important role as the principal attraction for international visitors, while the increasing relevance of heritage-oriented travel highlights the strategic importance of museums and cultural institutions in Italy's tourism ecosystem. These trends provide an important context for understanding the growing investment in museum digitalization and innovative cultural experiences across Italian museums.

However, the economic growth of cultural tourism also creates managerial challenges. High visitor concentration can generate pressure on historical centers, increase maintenance and conservation costs, and produce tensions between tourism development and residents' quality of life. Therefore, the economic success of cultural tourism must be balanced with sustainability because the objective is also to improve the quality of the experience, distribute flows more effectively, and ensure the long-term conservation of cultural heritage; not only to increase visitor numbers.

These tensions highlight that there is an overall change occurring in the way that cultural destinations are viewed and managed. Where previously the objective of contemporary tourism policy has been solely 'growth' there has now been an increasing focus on reconciling heritage conservation, visitor satisfaction and long-term sustainability with economic development. This change is evident in the changing patterns of visitor behaviour, particularly in terms of the type of accommodations that visitors choose.

Another change worth to be noticed is the concerns about accommodation preferences. In 2019 the strongest growth was observed in rented accommodations offered through digital intermediation platforms, reflecting the expansion of the sharing economy and online booking services. In 2024, however, growth was concentrated in hotels, tourist villages, bed and breakfasts, and agritourism facilities. This suggests a partial rebalancing of accommodation demand after the pandemic, although digital platforms continue to play an important role in tourism distribution and visitor planning. (Banca d'Italia, 2020; Banca d'Italia, 2025).

Alongside the recovery of international arrivals, recent debates have focused on the sustainability of tourism growth. The objective switches from attracting higher numbers of visitors to managing tourism flows in ways that preserve cultural assets, improve visitor experiences and generate benefits for local communities.

Furthermore, emerging tourism trends indicate a growing interest in more sustainable, localized, and experience-oriented forms of travel. The preference for less crowded destinations, open-air experiences, and proximity tourism has created new opportunities for cultural institutions to strengthen their connections with local communities and develop forms of cultural tourism that are less dependent on mass visitation. Within this context, museums can contribute to the diversification of tourism offerings while promoting a more sustainable use of cultural heritage resources (Corbisiero & Monaco, 2021).

3.2.2 Customer journey of visitors

The growing emphasis on visitor experience reflects an important transformation in museum management, characterised by a shift from product-centred approaches towards models that prioritise the visitor. Within this perspective, the value of cultural institutions is more associated with their capacity to facilitate meaningful interactions between visitors and heritage assets than displaying collections (Elgammal et al., 2020).

Museum experiences are often embedded within destination experiences, meaning that visitors do not evaluate museums on their own, but as part of their overall perception of a city or cultural area. Consequently, museums are part of the cultural consumption but also of destination attractiveness, influencing how visitors perceive and remember the places in which they are located (Elgammal et al., 2020).

This evolution has been noticeably significant in Italy because museums are closely connected to the identity and attractiveness of cultural destinations such as Florence, Rome, Venice, and Naples. A visit to the museums forms part of an experience involving urban heritage, public spaces, local traditions, and other cultural attractions. As a result, the quality of the museum experience makes a difference in the perception of the destination and can influence visitor satisfaction at the city level. From a managerial perspective, this expands the role of museums beyond the conservation and exhibition of collections, positioning them as strategic actors within tourism ecosystems.

One of the principal sources of value, generated by museum experiences, is the opportunity for learning and intellectual stimulation. Visitors use museums to access information, acquire new knowledge, satisfy curiosity, and interpret historical artefacts to better understand different social contexts. Consequently, museums continue to fulfil an important educational function, even when digital technologies transform the ways in which cultural content is delivered and consumed (Zhu et al., 2024).

Digital technologies can support museums in reaching visitor segments that may otherwise experience difficulties engaging with traditional exhibition formats. Interactive and immersive environments can facilitate access to cultural content for younger audiences and individuals with limited prior knowledge, thereby expanding the social reach of cultural institutions and strengthening their educational role (Elgammal et al., 2020).

Visitor satisfaction is closely associated with the emotional dimension of museum experiences. Feelings of enjoyment, recreation, fulfilment of expectations, and personal gratification influence how visitors evaluate their interactions with cultural institutions. Therefore, successful museum experiences are determined by the transmission of knowledge and by the institution’s capacity to create enjoyable and emotionally rewarding encounters that respond to visitors’ expectations and personal interests (Zhu et al., 2024).

Satisfaction represents one of the principal indicators through which museums can evaluate the effectiveness of the experiences they provide. Instead of being determined just by the quality of exhibitions or collections, satisfaction emerges from visitors’ overall assessment of the benefits obtained during the visit in relation to the resources invested. And perceptions regarding learning opportunities, emotional engagement, time commitment, and financial expenditure all contribute to shaping visitors’ evaluations of the museum experience (Elgammal et al., 2020).

High visitor numbers alone do not necessarily indicate successful performance if visitors perceive excessive waiting times, limited access to artworks, poor orientation, or inadequate services. To avoid this, museums complement traditional attendance indicators with measures related to visitor perceptions, satisfaction, and overall experience quality. This reflects an intentional shift from output-oriented management approaches towards models that place greater emphasis on outcomes and public value creation.

Satisfaction should not be viewed as an immediate reaction occurring at the end of a museum visit. Instead, it forms part of a process through which visitors evaluate their overall experience and determine whether the visit met or exceeded their expectations. As a result, satisfaction can influence future behaviours, including recommendations to others, willingness to engage with the institution again, and the perception of the place in which the museum is located (Elgammal et al., 2020).

For museums operating in highly competitive cultural destinations, satisfaction has strategic implications that extend beyond a single visit. Positive experiences can strengthen visitor loyalty, encourage repeat visits, and generate positive word-of-mouth through both personal recommendations and digital platforms. In Italy, museums often function as flagship cultural attractions and play a significant position in shaping visitors' general impressions of cities such as Florence, Rome, and Venice.

Although digital technologies have expanded access to cultural content, they do not always succeed in reproducing the social dimensions traditionally associated with museum visits. Opportunities for interaction, shared experiences, and the perception of being part of a cultural community remain limited in many digital environments. This suggests that museums face the challenge of balancing accessibility and technological innovation with the creation of meaningful social experiences capable of fostering engagement and a sense of belonging among visitors (Zhu et al., 2024).

This observation highlights an important managerial consideration. While digitalisation can improve the availability of cultural content, the physical museum experience continues to offer forms of social interaction that remain difficult to replicate online. Encounters with other visitors, participation in guided tours, educational activities, and shared cultural experiences contribute to the overall value generated by museum visits. For this reason, digital initiatives are most effective when they complement rather than replace the social and experiential dimensions that characterise in-person cultural consumption.

Admission prices can influence museum accessibility and visitor demand, particularly when cultural consumption is not yet deeply embedded within local habits. In these contexts, pricing policies become an important managerial instrument because they affect both the financial sustainability of museums and the willingness of potential visitors to engage with cultural experiences (Elgammal et al., 2020).

Pricing strategies may be employed not only to generate revenue but also to stimulate participation and broaden access to cultural institutions. Temporary discounts and promotional initiatives can reduce barriers to entry, encourage first-time visits, and attract audiences that might otherwise be reluctant to engage with museum experiences (Elgammal et al., 2020).

In the Italian museum system, pricing policies have traditionally been linked to public objectives concerning cultural participation. Reduced admission fees for students, young visitors, senior citizens, and specific categories of users are widespread across state museums. In addition, initiatives such as Domenica al Museo, prove that pricing can be used as a policy instrument to encourage access to cultural heritage and expand participation among wider segments of the population.

From a managerial perspective, however, pricing decisions involve trade-offs that extend beyond revenue generation. Lower admission prices and free-entry initiatives may attract new audiences, but they can also generate substantial fluctuations in visitor demand. As attendance rises, museums may face operational challenges related to capacity constraints, visitor circulation, service provision, and overall experience quality.

Contemporary approaches to overtourism define the phenomenon in experiential terms rather than purely numerical ones. High visitor volumes become problematic when they generate conditions that diminish the quality of the experience, reduce accessibility or compromise the ability of visitors to get involved meaningfully with cultural heritage (De Luca et al., 2020).

The quality of cultural experiences is closely linked to the carrying capacity of heritage sites and museums. Excessive visitor concentrations can generate congestion, longer waiting times, reduced accessibility to exhibits, and lower levels of visitor satisfaction. Consequently, visitor management became a strategic instrument for preserving the quality of the cultural experience and ensuring that access remains compatible with the physical and organizational limits of the institution (Bertocchi et al., 2020).

This issue is particularly relevant in Italy, where some museums and cultural attractions experience exceptionally high levels of demand. Institutions such as the Uffizi Galleries, the Colosseum Archaeological Park, the Vatican Museums, and the archaeological site of Pompeii regularly attract large visitor volumes concentrated within limited spatial areas. In such contexts, the challenge is to ensure that visitors can be captivated by cultural heritage without excessive congestion or operational inefficiencies.

Certain cultural assets possess intrinsic spatial limitations that prevent visitor capacity from expanding indefinitely, for example Piazza San Marco in Venezia (Bertocchi et al., 2020). In these situations, unrestricted access policies may generate overcrowding and reduce the ability of visitors to fully engage with artworks and exhibitions. Designing organisational solutions capable of balancing inclusion with experience quality became decisive.

Managing visitor flows requires a combination of operational, technological, infrastructural, and regulatory interventions. These interventions may include improvements in visitor services, the redistribution of visitor flows across time and space, the adoption of digital monitoring tools, and the introduction of differentiated access mechanisms designed to reduce pressure on sensitive cultural sites (EENCA, 2019).

Aspects like visibility of artworks, mobility within exhibition spaces, opportunities for contemplation, access to interpretative materials, and interactions with museum staff can all be compromised when visitor concentrations exceed manageable levels. Recent approaches to visitor management place growing emphasis on the temporal and spatial redistribution of visitors rather than simply limiting access (EENCA, 2019). By encouraging attendance during less crowded periods, promoting alternative routes, or directing visitors towards less congested attractions, institutions can reduce pressure on heavily visited areas while maintaining accessibility.

This principle has important implications for Italian museums, particularly those operating within cities characterised by strong tourism seasonality. Encouraging visitors to explore alternative cultural attractions, promoting less congested time slots, and integrating museums into different or less popular cultural itineraries can help reduce pressure on iconic sites while simultaneously promoting the visibility of other institutions.

Integrated ticketing systems can contribute to a more seamless visitor journey by connecting multiple cultural services within a single access mechanism. These systems can encourage visitors to explore a wider range of attractions while improving the overall convenience of the experience. From a managerial perspective, integrated cultural passes therefore represent both a visitor service and a demand management instrument (De Luca et al., 2020).

Some regulation measures may involve investments in supporting infrastructure, improvements in transport accessibility, the development of alternative cultural routes, and the expansion of cultural offerings capable of dispersing visitors across a broader geographical area. Such measures can help alleviate congestion at highly visited attractions while simultaneously enhancing the utilisation of less frequented cultural resources (EENCA, 2019).

Also, the management of cultural destinations requires a balance between visitor satisfaction and the well-being of local communities. While tourism generates economic benefits and supports cultural institutions, excessive visitor concentrations may negatively affect residents through congestion, housing pressures, and disruptions to daily life. In consequence, sustainable visitor management should seek to preserve positive experiences for tourists while protecting the social conditions that contribute to the long-term attractiveness of cultural destinations (De Luca et al., 2020).

These challenges have become particularly visible in several Italian cultural destinations where museums, monuments, and historic centres attract millions of visitors each year. In cities such as Florence, Venice, and Rome, visitor management is no longer limited to the boundaries of individual museums but forms part of an important effort to balance cultural accessibility, tourism development, urban sustainability, and heritage conservation. As a result, museums started to operate within interconnected systems in which decisions concerning visitor flows affect not only institutional performance but also the wider urban environment.

Reservation systems can help with visitor flow management by distributing demand more evenly across time and reducing congestion during peak periods. Advance booking mechanisms also allow institutions to improve operational planning, provide priority access, and develop differentiated service offerings that enhance visitor convenience while protecting the overall quality of the experience (Bertocchi et al., 2020).

From an operational perspective, reservation systems represent one of the most effective tools for reducing uncertainty in visitor demand. By encouraging visitors to select specific entry times before arrival, museums can anticipate attendance levels, allocate resources more efficiently, and reduce the likelihood of excessive queues at entrances. This improves organisational efficiency and visitor satisfaction, as waiting times and congestion are among the factors most frequently associated with negative cultural experiences; and is really meaningful in countries characterized for tourism, such as Italy.

These systems are typically implemented through digital channels such as institutional websites, online ticketing platforms, and mobile applications. These services provide visitors with access to time slots for their visits in advance, up-to-date information about the services and their availability; and an opportunity to buy tickets before their arrival at the museum. Beyond simplifying the booking process, digital reservation systems provide museums with valuable data regarding expected attendance patterns, enabling managers to forecast demand, optimize staffing levels, and adjust operational decisions according to anticipated visitor flows.

The city of Firenze, for example, has encouraged the adoption of data-driven management approaches aimed at improving the understanding of tourism dynamics within the historic centre. Through the use of mobile analytics, local authorities collect data from mobile network operators to monitor population movements and analyse how different areas of the city are used by residents and visitors (De Luca et al., 2020). This information can support more informed decision-making processes, allowing managers to identify congestion patterns, evaluate the effectiveness of visitor management policies, and create strategies to redistribute tourist flows across the urban area.

Not depending exclusively on historical attendance statistics and making use of mobility data illustrates allowed managers to analyse real-time information regarding visitor movements and concentrations. Such tools make it possible to identify emerging bottlenecks, evaluate visitor behaviour, and assess whether management interventions are achieving their intended outcomes. This represents a significant evolution in the management of cultural tourism, bringing analytical capabilities traditionally associated with business operations into the cultural sector. Nowadays, museums seek to anticipate visitor behaviour through planning, monitoring, and demand forecasting mechanisms.

The collection of audience information has become an important component of museum management. Data concerning visitor profiles, behaviours, expectations, and patterns of participation provide cultural institutions with valuable insights that can support decisions related to programming, communication, accessibility, and service provision (Direzione Generale Musei, 2016). In this scenario, audience research contributes to a deeper understanding of public needs and supports the development of management practices grounded in empirical evidence rather than assumptions.

The Direzione Generale Musei highlights the value of establishing permanent systems dedicated to the observation and analysis of museum audiences. Continuous monitoring allows institutions to collect information over time, identify emerging trends, and evaluate changes in visitor behaviour. The resulting evidence can support a wide range of managerial decisions, including communication strategies, accessibility initiatives, service improvements, and the allocation of organisational resources. Consequently, audience observatories contribute to the creation of a more structured and systematic approach to museum management (Direzione Generale Musei, 2016).

The assessment of visitor experience extends beyond internal monitoring systems. Digital platforms allow museums and cultural sites to collect large volumes of user feedback that can provide valuable insights into perceived service quality, overcrowding, and visitor satisfaction. Reviews published on platforms such as TripAdvisor or Google can therefore function as indirect indicators of experience quality, helping institutions identify operational issues and monitor changes in visitor perceptions over time (EENCA, 2019).

The growing availability of digital feedback has expanded the range of information available to museum managers. Visitor reviews often contain detailed observations concerning waiting times, accessibility, staff interactions, navigation difficulties, crowding, and overall takes.

Between 2019 and 2024, Italian museums accelerated the adoption of digital ticketing and reservation systems. A significant milestone was the introduction of the *Musei Italiani* platform, which connects hundreds of state museums and archaeological parks through a unified digital ecosystem that allows visitors to access information, plan visits and purchase tickets online (Ministero della Cultura, 2024). It includes a mobile application and a web platform that provide information, facilitate online ticket purchases and support visit planning through different service filters. The system also incorporates a back-office portal to assist museums in managing e-ticketing and digital content, while social media channels help maintain communication with visitors and promote cultural initiatives (Ministero della Cultura, 2024).

Traditionally, many interactions occurred only once visitors arrived at the museum but, with digital platforms, museums expanded this relationship by supporting multiple stages of the visitor journey. Before the visit, users can search for information, compare destinations, purchase tickets, and plan itineraries. During the visit, digital services can facilitate orientation and access to information. After the visit, social media channels and digital communication tools enable museums to maintain engagement and collect feedback.

From the perspective of strategic and organisational management, digitalisation therefore contributes to much more than technological modernisation. Reservation systems, mobility analytics, integrated ticketing platforms, online reviews, and digital communication tools collectively support the planning, monitoring, and optimisation of visitor flows. By reducing uncertainty, improving information availability, and facilitating data-driven decision-making, these technologies help museums address challenges related to overcrowding and service quality while preserving the cultural and educational value of the visitor experience.

4. Case studies: Gallerie degli Uffizi, Palazzo Barberini and Pinacoteca di Brera

The selection of the Gallerie degli Uffizi, Palazzo Barberini and the Pinacoteca di Brera, as italian museums to study, was guided by the objective of analysing digitalization within three institutions that differ significantly in terms of historical origins, organisational structure, scale of operations and strategic priorities; and examine how digital transformation can support different institutional models.

The three museums occupy important positions in the national cultural landscape but represent distinct approaches to museum management. The Gallerie degli Uffizi constitutes one of the most visited museums in the world and operates in an intense international tourism flow context, with large visitor volumes. Palazzo Barberini, while preserving collections of exceptional artistic value, operates on a smaller scale. The Pinacoteca di Brera occupies an intermediate position, combining the functions of an art museum with those of a broader cultural ecosystem that includes educational, research and cultural institutions.

These differences make the three museums suitable for a comparative analysis. They allow the observation of how digitalization strategies are shaped by different organisational objectives, financial structures and relationships with audiences. Furthermore, all three institutions experienced significant transformations following the Franceschini Reform, making them relevant cases through which to examine the interaction between managerial autonomy, institutional development and digital innovation.

By analysing their historical evolution, financial trajectories and digital strategies, this study seeks to understand not only how museums adopt digital technologies, but also how these technologies contribute to broader processes of value creation, institutional transformation and audience engagement within different organisational contexts.

The analysis of the annual financial statements provides an additional perspective on the evolution of the three museums selected as case studies. Financial data allows for an assessment of the economic resources that supported these processes and of the institutions' capacity to adapt to changing environmental conditions.

To capture different stages in the recent development of the Italian museum sector, four reference years were selected. The year **2016** represents the initial phase following the implementation of the Franceschini Reform, when museums were adapting to new governance structures and greater managerial autonomy. The year **2019** reflects the peak of museum activity before the COVID-19 pandemic, characterised by strong visitor flows and favourable economic performance. The year **2020** was chosen to evaluate the effects of the health emergency on museum operations and financial sustainability. Finally, **2024** offers insight into the recovery period, highlighting how museums have responded to post-pandemic challenges while continuing processes of institutional and digital transformation.

By comparing these four years, it is possible to identify changes in revenue structures, expenditure patterns, investment priorities and an overall financial performance. This longitudinal perspective contributes to a better understanding of the relationship between economic resources, institutional resilience, and transformation strategies pursued by the museums under analysis.

To ensure a consistent comparison across the three case studies, the analysis focuses on a set of financial indicators that capture different dimensions of museum performance. Together, these indicators provide insight into revenue generation, expenditure structures, investment capacity and overall financial sustainability, allowing for a comprehensive assessment of how each institution has evolved across the selected years.

Total Revenues: The museum's overall economic capacity and total income generated during the year.
Self-generated revenues: The museum's ability to generate autonomous income through tickets, services and commercial activities, reducing dependence on public funding.
State funding: The level of financial support received from public institutions, including transfers from the State and other public entities.
Current expenditures: Operational costs necessary for the daily functioning of the museum.
Capital investments: Long-term investments related to infrastructure, renovation and institutional development.
Infrastructure and heritage investments: Long-term investments related to infrastructure, durable assets and heritage enhancement activities. Museum's investment capacity and its commitment to institutional development, conservation and modernization processes.
Economic surplus: The difference between revenues and costs, indicating whether the museum ended the year in a financially positive or negative situation.

According to the data from the Ufficio di Statistica of the Ministry of Culture, The Uffizi Gallery recorded 2,599,581 visitors in 2024. In the same year, the Galleria Nazionale d'arte antica, which includes Palazzo Barberini and Palazzo Corsini, attracted 322,173 visitors. The Pinacoteca di Brera, on the other hand, was visited by 546,517 people. In terms of scale, we can observe that the Uffizi has a much higher visitor flow compared to the other two museums selected for analysis.

4.1 Gallerie degli Uffizi

4.1.1 History

The Gallerie degli Uffizi, located in Florence, represents one of the oldest and most significant art museums in the world. The building was originally commissioned in 1560 by Cosimo I de' Medici and designed by architect Giorgio Vasari as administrative offices for Florentine magistrates, for this reason the name "Uffizi" meaning "offices" (Gallerie degli Uffizi, n.d.). Over time, the building progressively evolved beyond its bureaucratic function as the Medici family began to display parts of its artistic collections in the palace.

During the rule of Francesco I de' Medici, the upper floor of the complex was transformed into a gallery displaying paintings, sculptures and artistic objects belonging to the family collections, while spaces such as the Tribuna became early examples of museum display practices (Battista, 2022). This gradual transition marked the beginning of the transformation of the Uffizi from a political-administrative structure into one of the earliest public museum institutions in Europe.

Although the gallery was gradually acquiring cultural functions, its development remained closely linked to the political objectives of the Medici family. The expansion of the exhibition spaces and the increasing visibility of the collections were part of a strategy to show representation and power. The decision to move the collection from the intimate and restricted studiolo of the Palazzo Vecchio to the more open Galleria degli Uffizi was not driven by personal preference alone, but represented a deliberate political strategy: the larger and more visible space allowed Francesco to communicate dynastic authority and legitimacy more effectively to the visiting dignitaries and foreign rulers who constituted his primary audience (Alberts, 2018).

The political role of the Uffizi was further strengthened by the fact that the gallery did not exist independently from the governing structures of Florence. Instead, it remained integrated to an environment where administration, culture and knowledge production coexisted.

The cultural function of the Uffizi Galleries was reinforced by their strategic location within the political center of Florence. The museum remained physically connected to the Palazzo Vecchio and integrated with the administrative core of the Medici state (Alberts, 2018). Workshops, scientific spaces and governmental offices were part of the same institution, demonstrating the close relationship between artistic production, scientific knowledge and political authority. Within this context, collecting practices also acquired an important symbolic function. The organization and display of artworks and objects was also designed to communicate the cultural prestige of the ruling dynasty.

The progressive transformation of the Uffizi into a museum was closely connected to the cultural and political strategies of the Medici dynasty. During the sixteenth century, the collections displayed within the gallery were not organised just for aesthetic purposes, but also functioned as instruments of legacy representation and political legitimacy. In particular, Francesco I de' Medici promoted the arrangement of artworks, antiquities and scientific objects according to an encyclopaedic logic typical of Renaissance collections, combining artistic prestige with the symbolic celebration of Medici power (Alberts, 2018). The development of exhibition spaces such as the Tribuna contributed to establishing new forms of artistic display that anticipated some characteristics of the modern museum institution.

Over time, the collections themselves continued to expand, transforming the gallery into one of the most important repositories of artistic heritage in Europe. Nowadays, the Uffizi Galleries contain one of the most significant artistic collections in Italy, featuring works by major Italian Renaissance painters as well as numerous European artists such as Giotto, Botticelli, Leonardo da Vinci, Michelangelo . In addition to its paintings, the museum preserves a large group of classical sculptures inherited from the Medici collections, including ancient Roman reproductions inspired by Greek originals (Gallerie degli Uffizi, n.d.).

Over the centuries, the collections expanded through acquisitions, donations and transfers from religious institutions, eventually forming a museum of exceptional artistic importance. Opened to the public in 1769 under Pietro Leopoldo di Lorena, the Uffizi progressively evolved according to more modern museological principles and today preserves masterpieces by major Italian and European artists, alongside one of the world's most important collections of drawings and prints (Istituto della Enciclopedia Italiana, n.d.).

Between the eighteenth and nineteenth centuries, the Uffizi strengthened its role as a public museum and an important destination for European cultural tourism. The opening of the collections to visitors during this period reflected the acquisition of principles centred on education, public accessibility and the diffusion of knowledge. During the Grand Tour era, the gallery became an essential cultural destination for European intellectuals, artists and aristocrats travelling through Italy, reinforcing

Florence's international reputation as a centre of art and culture (Istituto della Enciclopedia Italiana, n.d.). The Grand Tour was an extended journey through Europe, with Italy as its essential destination, undertaken by young British aristocrats and educated elites in the eighteenth century as a form of cultural and artistic formation (Black, 1996).

Currently, it forms part of the "Gallerie degli Uffizi" system, which also includes Palazzo Pitti, the Boboli Gardens and the Vasari Corridor, while continuing to promote activities related to research, conservation and cultural dissemination. It represents not only a repository of artistic heritage, but also a complex cultural institution characterised by organisational, managerial and public-oriented functions that have continued to evolve over time (Gallerie degli Uffizi, n.d.).

The transition from an elite destination of the Grand Tour to a complex, publicly oriented institution was a gradual process of institutional consolidation. It had to expand its collections, modernise its infrastructure, and redefine its relationship with diverse audiences. This evolution culminated in the museum's integration into an institutional framework that reflects the ambitions of contemporary cultural governance.

4.1.2 Financial and organisational analysis of Gallerie degli Uffizi

Indicator	**2016**	**2019**	**2020**	**2024**
Total Renevues	**43.718.379**	**72.880.310**	**22.620.674**	**64.212.933**
Self-generated revenues	**23.901.465**	**51.416.747**	**11.563.507**	**61.950.143**
State funding	**19.774.222**	**20.308.794**	**10.075.909**	**14.160.417**
Current expenditures	**16.475.208**	**34.606.737**	**44.616.412**	**51.520.132**
Capital investments	**23.330.495**	**12.768.391**	**19.030.961**	**60.176.403**
Infrastructure and heritage investments	**14.801.206**	**7.053.056**	**16.239.747**	**54.309.523**
Economic surplus	**4.177.275**	**26.903.476**	**-25.695.761**	**9.396.443**

Table 2. Financial performance indicators of the Uffizi Galleries (2016–2024).

2016

The 2016 financial statements capture a transitional moment for the Uffizi Galleries, shortly after the introduction of the Franceschini reform and the creation of the new autonomous museum system in Italy. Unlike smaller national museums that depended strongly on ministerial structures, the Uffizi already possessed a highly international profile and a great capacity to attract visitors, which immediately positioned the institution among the most economically strategic museums within the Italian cultural sector.

The museum recorded very high levels of self-generated revenues, which exceeded public funding and confirmed the importance of ticket sales for the financial structure. At the same time, the institution invested heavily in heritage and infrastructural projects connected to the "Nuovi Uffizi" modernization programme, aimed at reorganising exhibition spaces, improving accessibility and expanding visitor circulation.

The positive economic surplus recorded in 2016 reflected the early success of the autonomous governance model applied to one of the most internationally recognised museums in the world.

2019

By 2019, the Uffizi Galleries had reached a phase of strong economic consolidation, international visibility and managerial expansion. The museum benefited from the high levels of international tourism, which increased self-generated revenues linked primarily to ticket sales, concessions and other services linked with visitors' experience.

The institution recorded its highest economic surplus among the analysed years, reflecting the peak of the museum’s pre-pandemic expansion. This result demonstrates the effectiveness of the autonomous management model introduced after the Franceschini reform within a context characterised by growing global tourism demand and increasing international recognition of the Uffizi Galleries.

During this period, the Uffizi also intensified its international cultural positioning through temporary exhibitions, communication initiatives and audience engagement strategies. The high economic surplus reflects a phase of exceptional institutional growth.

2020

The 2020 financial statements clearly show the severe impact of the COVID-19 pandemic on the Uffizi Galleries and on the museum sector in general. Prolonged closures, travel restrictions and the collapse of international tourism drastically reduced visitor numbers and caused a dramatic decline in self-generated revenues compared to 2019.

The transition from an economic surplus of approximately €26.9 million in 2019 to a deficit of approximately €25.7 million in 2020 highlights the structural vulnerability of a museum model strongly dependent on physical attendance and tourism income. Unlike museums characterised by a greater balance between public funding and autonomous revenues, the Uffizi Galleries were particularly exposed to the interruption of international tourist flows due to their strong dependence on ticketing revenues and high visitor volumes.

However, the museum continued maintaining significant investment activity despite the crisis. Infrastructure and heritage investments remained particularly high during 2020, suggesting that restoration projects, conservation and modernization initiatives were not entirely suspended during the pandemic period.

The pandemic also accelerated broader institutional transformations related to digital communication, online accessibility and virtual audience involvement. During this phase, the Uffizi intensified its digital presence through social media strategies, such as online exhibitions, to maintain public engagement despite physical closure. Consequently, the crisis contributed to reinforcing the strategic importance of digitalization within the museum’s management model.

2024

By 2024, the Uffizi Galleries had largely recovered their capacity to generate revenue, exceeding even some pre-pandemic operational indicators. The museum continued benefiting from the recovery of international tourism and visitor attendance.

However, the institution recorded a substantial increase in expenditures and long-term investments. Current expenditures, capital investments and infrastructure investments all reached significantly higher levels compared to previous years.

The lower economic surplus compared to 2019 does not necessarily indicate weaker economic performance. Rather, it reflects a strategic shift toward institutional investment in heritage upgradings. After the pandemic, the Uffizi increasingly focused on modernization processes connected to accessibility, conservation technologies, visitor management systems and digital transformation initiatives.

Overall analysis

The financial evolution of the Uffizi Galleries between 2016 and 2024 highlights the transformation of the museum into an autonomous and internationally competitive cultural institution whose economic structure became more and more connected to global tourism and large-scale institutional investment strategies.

One of the most evident trends emerging from the analysis concerns the growing importance of self-generated revenues within the museum's financial model. Already in 2016, the Uffizi demonstrated an exceptional capacity to generate autonomous income compared to other Italian museums. This tendency intensified further in 2019, when the museum reached extremely high levels of visitor revenue and economic performance, confirming the strategic role of cultural tourism in its growth trajectory.

At the same time, the analysis also reveals the structural risks associated with a model that rely too much on tourism. The financial deterioration observed in 2020 illustrates how strongly the museum depends on international mobility and in-person attendance. The pandemic therefore functioned as a stress test for the autonomous museum model, exposing the vulnerability of institutions whose economic sustainability depended heavily on ticketing revenues and mass tourism flows.

Nevertheless, the post-pandemic period suggests that the crisis did not simply interrupt the museum's development trajectory, but rather accelerated a process of institutional change. By 2024, the Uffizi had mostly recovered its capacity to create its own revenue, increasing infrastructural expenditures and investment activities at the same time. This indicates a strategic shift toward modernization and a changeover in the management of large autonomous museums.

4.1.3 Gallerie degli Uffizi's digital strategy

Since being granted special autonomy under the Franceschini Reform, the Gallerie degli Uffizi have pursued an extended institutional strategy to modernize their operations, expand their audiences and strengthen their cultural and social impact. Rather than limiting their efforts to the preservation and exhibition of their collections, the museum developed a series of concrete initiatives designed to address challenges such as tourist overcrowding, financial sustainability and audience diversification.

The *Nuovi Uffizi* project was launched in 1989 by the Italian Ministry for Cultural Heritage and Activities as part of a strategy aimed at modernizing the Uffizi Galleries and adapting the museum complex to contemporary museological standards. Far from being limited to architectural restoration, the intervention involved a wider institutional transformation that redefined the internal organization of the museum, reorganized exhibition spaces and improved visitor circulation systems and public services (Fortino et al., 2021). The project therefore reflected a transition within the museum sector, where infrastructural redevelopment increasingly became connected to accessibility, institutional modernization and long-term cultural valorisation.

Particular attention was dedicated to improving the usability of the museum and facilitating visitor movement throughout the complex. Entrances, exits and vertical circulation systems were redesigned in order to create a more coherent visiting route, while new services oriented to visitors and functional areas progressively transformed the Uffizi Galleries into a more accessible and strategically managed institution (Fortino et al., 2021).

At the same time, the modernization process incorporated advanced technological infrastructures aimed at strengthening both conservation standards and museum functionality. Climate control systems, environmental monitoring mechanisms, LED lighting technologies and updated security infrastructures were gradually integrated into the museum complex in order to improve environmental safety conditions and guarantee the preservation of artworks (Fortino et al., 2021).

From a deeper perspective, the *Nuovi Uffizi* project also reflected an evolving conception of the museum within contemporary society. Modernization was not interpreted as a rupture with the historical identity of the institution, but rather as a process of institutional evolution through which the museum progressively adapted itself to changing cultural, technological and managerial expectations. In this sense, the Uffizi Galleries emerged as a dynamic institution continuously transformed through organizational, infrastructural and technological innovation.

The development of these modernization strategies became particularly relevant within the broader context of overtourism in Florence. The city presents an especially critical situation due to the extraordinary concentration of artistic and architectural heritage in a very limited geographical area, a condition that intensifies congestion, visitor pressure and the saturation of public spaces (Masini et al., 2025).

The growth in international visibility and visitor numbers has generated new managerial challenges for the institution, like overcrowding. One of the most innovative projects developed with the purpose of managing this issue in cultural centres such as Gallerie degli Uffizi, was the "Uffizi Diffusi" initiative, aimed at decentralising cultural heritage through collaborations with smaller museums and cultural sites across Tuscany. By redistributing artworks beyond the main gallery spaces, the project sought to reduce tourist overcrowding in Florence, strengthen local cultural development and promote more sustainable forms of tourism (Giusti, 2024). The initiative sought to connect the Uffizi Galleries with museums, villages and cultural institutions located in less-visited areas, encouraging the development of alternative cultural itineraries and a more sustainable model of tourism management, to avoid the concentration of visitors in Firenze.

Digital infrastructures also started to take a strategic role within contemporary cultural governance. The FirenzeCard system, for example, records museum sequences, visiting times and tourist movements across the city, generating behavioral data connected to museum accessibility and visitor preferences (Masini et al., 2025). Although originally conceived as a tourist service, the platform is an informational resource capable of supporting visitor management and territorial planning. Through the analysis of museum sequences and mobility patterns, institutions can identify congested routes, under-visited cultural sites and differentiated tourist profiles, demonstrating how digital platforms increasingly can be mechanisms of institutional monitoring and strategic planning.

Since the implementation of the Franceschini Reform and the subsequent appointment of Eike Schmidt as director in 2015, the Gallerie degli Uffizi developed a comprehensive online communication strategy aimed at engaging the most diverse audience possible. To operationalize this strategy, the museum established an IT and Digital Strategies department in 2016, tasked with overseeing digital innovation and managing the institution's online presence across its website, social media platforms, and press relations (Beccherle et al., 2024).

The results of this strategy were measurable and significant. By 2021 the Uffizi had become the most followed Italian museum on social media, with approximately 963,000 followers across its platforms, a figure that continued to grow, reaching over 1,179,000 by the end of Schmidt's tenure in 2023 (Beccherle et al., 2024). These outcomes confirm that the museum's online communication strategy generated a strong and internationally recognized institutional reputation, reinforcing the Uffizi's position as one of the most visible cultural institutions in the world.

But even before the Franceschini reform, the Uffizi Galleries had already started to invest in digital innovation and technological modernization processes. Since the late twentieth century, the museum progressively developed digital infrastructures aimed at improving collection management, conservation practices and public accessibility (Bertacchini & Morando, 2013). These early initiatives demonstrate that the digital transformation of the institution preceded the governance changes introduced by the reform and was already becoming part of the museum’s modernization strategy.

One of the most significant examples was the development of Uffizi Touch, an interactive digital platform launched in 2010 that allowed users to explore artworks through high-resolution images, thematic searches and interactive navigation systems (Bertacchini & Morando, 2013). The project expanded access to the collections beyond the physical limits of the museum and reflected a growing institutional interest in virtual accessibility and digital dissemination. The post-reform phase can be interpreted less as the beginning of digitalization and more as an expansion of pre-existing modernization trajectories.

The Gallerie degli Uffizi have incorporated mobile technologies to improve visitor experience and manage the large number of tourists that characterize one of the most visited museums in Italy. The official Uffizi application provides digital audio guides, interactive maps and multimedia content that allow visitors to access information about artworks directly from their smartphones. Through these features, the museum seeks to facilitate navigation, improve access to interpretative content and reduce dependence on traditional guided services. The application therefore functions not only as an informational resource but also as a tool for optimizing visitor flows and enhancing the overall museum experience. This approach reflects the specific needs of a museum that receives millions of visitors every year and must balance accessibility, learning and efficient crowd management (Gallerie degli Uffizi, 2024).

The Uffizi have also expanded the use of digital technologies through the implementation of integrated ticketing systems and QR-based services. In recent years, visitors have been able to access museum tickets and reservation services through digital platforms, reducing waiting times and improving operational efficiency. Digital tools contribute to enhancing both the quality of the visitor experience and the efficiency of museum operations, supporting the institution's capacity to manage high levels of attendance (Gallerie degli Uffizi, 2024).

4.2 Palazzo Barberini

4.2.1 History

Palazzo Barberini represents one of the most significant examples of Baroque architecture in Rome and reflects the political and cultural ambitions of the Barberini family during the seventeenth century. The construction of the palace was commissioned in 1625 by Pope Urban VIII, born Maffeo Barberini, after the family acquired a villa previously belonging to the Sforza family on the Quirinal Hill (Gallerie Nazionali Barberini Corsini, n.d.). Rather than demolishing the existing structure, Carlo Maderno incorporated it into a broader architectural project characterized by an innovative "H"shaped layout surrounded by gardens, courtyards and monumental open spaces designed to reinforce the prestige of the Barberini family (Gallerie Nazionali Barberini Corsini, n.d.).

Palazzo Barberini was intended for more than just a private residence from its inception. The scope of the architecture, its prominent location, and the vast artistic program were all meant to communicate to the world the power, prestige, and cultural influence of one of the most powerful families in 17th century Rome.

The palace became both a political symbol and a major artistic center in Rome. Following Maderno's death in 1629, the project was continued by Gian Lorenzo Bernini and Francesco Borromini, whose interventions transformed the building into one of the most emblematic architectural collaborations of the seventeenth century (Gallerie Nazionali Barberini Corsini, n.d.). The decorative program of the palace further reinforced its representative function through the participation of artists such as Andrea Sacchi and Pietro da Cortona. In particular, Cortona's fresco *The Triumph of Divine Providence* celebrated the power and legitimacy of the Barberini family while simultaneously becoming one of the defining masterpieces of Baroque illusionism (Ministero della Cultura, n.d.).

The artistic and symbolic functions of the palace remained closely linked throughout its history. Architecture, decoration and artistic patronage worked together to create a space that simultaneously communicated political authority and cultural refinement, reinforcing the position of the Barberini family within Roman society.

For centuries, Palazzo Barberini preserved its close association with aristocratic patronage and elite cultural life. The building remained the residence of the Barberini family until the mid-twentieth century, before being acquired by the Italian State in 1949 and transformed into the seat of the Galleria Nazionale d'Arte Antica in 1953 (Ministero della Cultura, n.d.). This institutional transition marked the progressive transformation of a former noble residence into a public museum dedicated to the preservation and dissemination of artistic heritage.

Today, the museum preserves more than 5,000 works ranging from the thirteenth to the eighteenth century, including paintings, sculptures, sketches and decorative arts originating from important Roman collections such as the Chigi, Torlonia, Mattei, Odescalchi and Sciarra families (Ministero della Cultura, n.d.). Among the museum's most internationally recognized masterpieces are Raphael's *La Fornarina*, Caravaggio’s *Judith Beheading Holofernes* and Filippo Lippi’s *Annunciation* (Ministero della Cultura, n.d.), works that contributed to consolidating Palazzo Barberini as one of the principal institutions preserving Baroque and Renaissance artistic heritage in Italy.

Beyond its pictorial collections, the palace also preserves extraordinary decorative ensembles that bear witness to the artistic refinement of its eighteenth-century interiors, including the *Salotto delle sete dipinte,* a drawing room whose walls are entirely covered with painted silk panels depicting scenes of American Indian life, based on sixteenth-century drawings by the English naturalist John White (Pelosi et al., 2013). The palace itself constitutes an important historical and artistic asset, where the architectural setting and decorative elements form an integral part of the visitor experience.

The coexistence of architectural heritage, decorative environments and artistic collections distinguishes Palazzo Barberini from many traditional museum institutions. The palace offers visitors the opportunity to experience the historical context in which aristocratic collecting, artistic patronage and political representation originally developed.

Unlike institutions whose identity is primarily associated with a single collection or artistic movement, Palazzo Barberini combines multiple heritage dimensions. Visitors' experience include the collection of paintings and decorative arts, the architectural environment, historical spaces and symbolic narratives that shaped the palace throughout its history. This mix of architectural, artistic and historical heritage contributes to the distinctive character of the museum and influences contemporary strategies of conservation.

The contemporary museum therefore operates simultaneously on several levels. It preserves and exhibits works of art, safeguards one of the most important Baroque palaces in Rome and promotes research activities related to the history of art, architecture and cultural patrimony. The collection itself is not the primary attraction, since the historical building forms an integral component of the museum experience.

4.2.2 Financial and organisational analysis of Palazzo Barberini

Indicator	2016	2019	2020	2024
Total Renevues	2.538.713	4.022.240	4.006.588	5.481.010
Self-generated revenues	730.709	987.313	319.699	1.935.909
State funding	2.041.540	3.328.558	3.779.125	36.676.541
Current expenditures	1.765.143	3.391.736	3.140.720	4.392.500
Capital investments	439.076	573.767	2.044.372	6.888.897
Infrastructure and heritage investments	439.076	573.767	2.044.372	6.888.897
Economic surplus	589.494	1.085.573	534.818	1.626.842

Table 3. Financial performance indicators of Palazzo Barberini (2016–2024).

2016

The 2016 financial results of Palazzo Barberini reflect the early phase of institutional consolidation following the implementation of the Franceschini reform. During this period, the museum still relied predominantly on public funding, which represented the principal source of financial support. State funding exceeded €2 million, while self-generated revenues remained relatively limited at approximately €730 thousand. This suggests that the museum had not yet fully developed a strong autonomous revenue-generating structure based on ticketing and commercial activities.

At the same time, operational expenditures and capital investments remained relatively contained. This indicates a phase focused more on organisational stabilisation than on expansion projects. Nevertheless, the museum closed the year with a positive economic surplus of approximately €589 thousand, demonstrating overall financial stability during the first years of post-reform autonomy.

From an institutional perspective, Palazzo Barberini was progressively strengthening its role within the Gallerie Nazionali d'Arte Antica system, consolidating its exhibition activities and public accessibility while continuing the enhancement of its permanent collections and Baroque heritage.

2019

The 2019 financial statements show a phase of growth for Palazzo Barberini before the COVID-19 pandemic. Total revenues increased compared to 2016 and state funding also grew moderately, indicating a better institutional capacity and governmental support.

At the same time, self-generated income increased to approximately €987 thousand, reflecting an improvement in attracting visitors. This period corresponded with an expansion of temporary exhibitions, cultural programming and visitor engagement initiatives promoted by the museum. During these years, Palazzo Barberini strengthened its position in Roma through exhibitions dedicated to Baroque art and public accessibility initiatives.

Current expenditures also increased, reflecting the expansion of museum operations and services. However, despite higher operational costs, the museum recorded a larger economic surplus than in 2016, reaching more than €1 million. This suggests institutional efficiency.

Infrastructure and heritage investments remained relatively moderate compared to later years, suggesting that the museum's strategy in 2019 focused primarily on operational growth and activities related to visitors.

2020

The 2020 financial results reflect the impact of the COVID-19 pandemic on Palazzo Barberini. The prolonged closure of museums, the collapse of international tourism and severe mobility restrictions caused a dramatic reduction in self-generated revenues, which fell to €320 thousand.

Despite this situation, the institution maintained relative financial stability thanks to continued public funding, which increased compared to previous years. Governmental support played a fundamental role in compensating for the collapse in autonomous revenues during the pandemic period.

One of the most notable aspects of 2020 was the significant increase in capital investments and infrastructure-related expenditures, which rose to more than €2 million. Palazzo Barberini continued pursuing restoration works, conservation projects and infrastructural interventions despite the pandemic emergency. Rather than suspending institutional development entirely, the museum used the closure period to continue heritage enhancement and maintenance activities.

Although the economic surplus decreased compared to 2019, the museum still maintained a positive financial result. This demonstrates institutional resilience during one of the most critical periods experienced by the contemporary museum sector.

2024

The 2024 financial statements show a major transformation in the financial structure of Palazzo Barberini. Total revenues reached their highest level among the analysed years, while self-generated revenues increased dramatically compared to the pandemic period, exceeding even the values recorded before COVID-19. This indicates a strong recovery in visitor attendance and engagement following the reopening and normalization of cultural tourism, as well as showing that the investments in improvements paid off.

The most significant element of the 2024 financial results, however, concerns the extraordinary increase in public funding. Unlike previous years, this growth is associated with investment programmes connected to heritage enhancement, infrastructural modernisation and restoration activities.

Capital investments increased to almost €7 million, because of interventions related to conservation, restoration and institutional upgrading. In this context, Palazzo Barberini appears to have entered a phase characterised by long-term strategic investments.

The museum recorded an economic surplus of approximately €1.6 million. Therefore, although 2024 was characterised by extraordinary public investment flows, the museum also maintained a positive operational economic balance.

Overall analysis

The evolution of Palazzo Barberini observed in the financial statement, reflects a gradual process of institutional reinforcement characterised less by aggressive economic expansion and more by infrastructural consolidation. Throughout the analysed period, the museum developed a more structured and autonomous managerial profile while maintaining a strong connection with public institutional support and cultural investment strategies focused on heritage conservation over time.

During the first post-reform years, the museum primarily focused on organisational stabilisation and on its role in the Italian museum system. Between 2016 and 2019, Palazzo Barberini progressively improved its financial performance and increased its ability to generate autonomous revenues through exhibitions, visitor activities and cultural programming. However, unlike museums whose growth strategies relied predominantly on mass tourism, Palazzo Barberini appears to have followed a more gradual and balanced development trajectory, centred on institutional positioning, boosting of its Baroque heritage and a good quality of the exhibitions.

The pandemic represented a major challenge for the museum sector due to the collapse of tourism. Nevertheless, Palazzo Barberini maintained a relatively stable structure during the crisis period. Although self-generated revenues declined significantly in 2020, the museum continued benefitting from public support and maintained the investment activity related to conservation, restoration and infrastructural interventions. This indicates that the institution was not exclusively dependent on visitors for revenues, but also relied on the public framework to support the museum during periods of external instability.

The most significant transformation emerged in 2024, when public investment and infrastructural development became central elements of the museum's financial structure. The substantial increase in state funding and capital expenditures reflects the importance that the museum management gives to restoration projects and institutional modernization, promoted through public financing mechanisms.

4.2.3 Palazzo Barberini digital strategy

The digital transformation of Palazzo Barberini has developed through initiatives that extend beyond the digitization of individual artworks and reflect broader institutional objectives related to heritage management, accessibility and cultural valorisation. A significant example is represented by the MUSE project (*Museum management, enhancement and accessibility: a Sustainable digital Ecosystem of interactive digital collections*), which was conceived as a digital ecosystem capable of integrating cultural resources, documentation and interactive tools within a unified environment and whose goal is to build a comprehensive digital infrastructure for the Galleria Nazionale d'Arte Antica at Palazzo Barberini (Meschini et al., 2025). This initiative promotes the creation of interconnected information systems that support institutional operations and promote public engagement.

A fundamental premise of this approach is the generation of what the authors describe as a multi-informational digital model: one that captures the geometric, dimensional, and chromatic qualities of each object and feeds into a broader information ecosystem. To contextualise this concept, Meschini et al. (2025) draw on the notion of the Digital Twin (DT), a term whose theoretical origins date back to 2003 with Michael Grieves, and which received a formal definition in 2012 through the work of the engineers Glaessgen and Stargel.

Originally developed in industrial and engineering contexts, a Digital Twin refers to a dynamic virtual representation of a physical asset that integrates real-world data, allowing continuous monitoring, analysis, and management throughout its lifecycle. In the cultural heritage sector, this concept has been progressively adapted to support the documentation, preservation and enhancement of historical assets by combining geometric information with a wide range of descriptive and historical data.

In the case of Palazzo Barberini, rather than functioning as simple digital reproductions, these systems seek to integrate multiple layers of information, including visual, descriptive and documentary data, into comprehensive digital environments (Meschini et al., 2025). Such an approach expands the potential applications of digital resources beyond documentation alone, enabling more structured processes of analysis, management and decision-making. This transforms the model into a strategic tool to facilitate data sharing among different stakeholders and contributing to more informed decision-making processes.

The implementation of these initiatives also reflects broader transformations occurring within the Italian cultural sector. The National Digitalization Plan for Cultural Heritage (*Piano Nazionale di Digitalizzazione*) has provided museums, archives and libraries with common guidelines and methodologies aimed at supporting the creation, management and preservation of digital cultural resources (Meschini et al., 2025). Within this framework, Palazzo Barberini's digital projects can be interpreted as part of a wider process of institutional modernization in which digital infrastructures play an increasingly strategic role in supporting cultural governance and heritage valorisation.

In recent decades, museums have increasingly expanded their traditional functions of preservation and exhibition by becoming active centers of research and knowledge production. This transformation has been facilitated by the integration of scientific investigation, technical analysis and digital technologies into museum activities. Within this context, Palazzo Barberini has participated in research initiatives that combine art historical inquiry with diagnostic methodologies, contributing to a more comprehensive understanding of the artworks preserved in its collections (Cardinali, 2019). The growing interaction between technological innovation and scholarly investigation reflects a broader evolution in the role of museums, which focus even more on the conservation and the production of cultural knowledge.

The integration of digital diagnostic methodologies has also contributed to the study of works preserved in the collections of Palazzo Barberini. Investigations conducted on Caravaggio's *Narcissus* employed technical imaging techniques to examine compositional modifications, painting procedures and material evidence associated with the work (Cardinali, 2019). These analyses provided additional information capable of supporting discussions related to artistic attribution and creative processes. Beyond their value for conservation purposes, such initiatives demonstrate how digital technologies can generate new forms of evidence that complement traditional approaches to art historical research.

Palazzo Barberini has been using digital technology not only for documentation, conservation and research, as is the case with projects like MUSE and the diagnostic investigations performed on an artwork, but also to enhance the visitor experience through digital transformation of the museum. This secondary dimension of digital transformation consists of developing technologies that facilitate access to information and improve public engagement with the collections.

One of the most significant digital initiatives adopted by Palazzo Barberini concerns the use of digital guides and mobile resources designed to enrich the visitor experience. According to the Gallerie Nazionali di Arte Antica, the institution introduced free digital guides that provide visitors with access to interpretative content, information about artworks and orientation tools throughout the museum visit. Through these resources, visitors can autonomously explore the collection while accessing additional contextual information that would otherwise be unavailable through traditional labels alone. Consequently, digital guides function as tools of cultural mediation, supporting visitors in understanding artworks and navigating the museum more effectively (Gallerie Nazionali di Arte Antica, 2024).

Palazzo Barberini's use of digital media is part of a wider project aimed at making cultural heritage more accessible and effective in building visitor engagement. By adding digital resources along with traditional interpretive resources, visitors have greater flexibility to obtain information based on their individual preferences and speed. In this way, visitors enjoy a more singular experience. However, from an institutional standpoint, the use of digital resources also helps to eliminate barriers to access between visitors and artwork, as well as support the overall mission of the museum to be an educational institution. As highlighted by the Gallerie Nazionali, these initiatives form part of a wider strategy aimed at making cultural content accessible to diverse audiences and encouraging more active participation in the museum experience (Gallerie Nazionali di Arte Antica, n.d.).

Although developed specifically for the Galleria Corsini site, the Corsini Digitale project provides valuable insights into the broader digital strategy pursued by the Gallerie Nazionali di Arte Antica. Introduced in 2020, the initiative was designed to help visitors identify artworks within the unique eighteenth-century display arrangement of Galleria Corsini, where paintings are distributed across multiple levels and often lack conventional labels. The platform combines digital guidance, multilingual content and navigational tools, allowing users to explore the history of the collection and access information on more than three hundred artworks. The project demonstrates how digital technologies can be employed to improve interpretation and accessibility while preserving the historical character of museum displays. As such, it illustrates the institution's broader commitment to using digital tools to enhance visitor understanding and engagement (Gallerie Nazionali di Arte Antica, n.d.).

The combination of digital documentation, technical information and scientific analysis facilitates new forms of investigation and knowledge production, reinforcing the role of museums as active research institutions. The digital transformation of Palazzo Barberini illustrates how contemporary museums are increasingly combining preservation, research and management functions within interconnected digital environments that support both cultural accessibility and institutional development.

4.3 Pinacoteca di Brera

4.3.1 History

Palazzo Brera originated from a medieval religious complex that initially belonged to the Humiliati order before being transferred to the Jesuits, who transformed the site into an important educational institution (Biblioteca Nazionale Braidense, n.d.). During the seventeenth century, the architectural structure of the complex was substantially redesigned under the direction of Francesco Maria Richini, contributing to the configuration that largely characterizes the palace today (Biblioteca Nazionale Braidense, n.d.). Over time, the complex evolved into a multifunctional institution hosting artistic, scientific and educational activities, laying the foundations for the later development of the Pinacoteca di Brera as one of the most important cultural institutions in Italy.

The Pinacoteca di Brera has a layered institutional history that predates its formal founding. While the museum was officially established in 1809, its roots lie in an earlier collection assembled from 1776 onwards within the Accademia di Belle Arti, an institution created at the behest of Empress Maria Theresa of Austria mainly to expose students to significant works of art as part of their artistic training (Pinacoteca di Brera, 2024). The educational mission has been a defining characteristic of the Pinacoteca di Brera since its foundation. The museum was originally established to support the training activities of students attending the Academy of Fine Arts, demonstrating that its role extended beyond the preservation and exhibition of artworks (Lucchi, 2020).

This academic vocation shaped both the formation of the collection and the institutional objectives of the museum. Unlike many major European galleries, Brera was not initially conceived as a space for dynastic representation or private enjoyment, but as an instrument for learning, artistic formation and cultural dissemination. Long before the establishment of the museum itself, Brera had already developed a strong educational and intellectual identity. This characteristic would profoundly influence the future evolution of the institution and distinguish it from other museums.

The origins of the Pinacoteca di Brera are closely connected to the educational objectives of the Accademia di Belle Arti, established under Maria Theresa of Austria during the eighteenth century. Before becoming an autonomous museum institution, the collection functioned primarily as a teaching resource intended to support the artistic training of students (Pinacoteca di Brera, n.d.). The gallery was officially established during the Napoleonic period, when numerous artworks originating from churches and religious institutions entered the collection and contributed to the formation of one of the most important public collections in Italy (Pinacoteca di Brera, n.d.).

A defining feature that sets Brera apart from many of Italy's other great art institutions is the political nature of its formation. Unlike galleries, which evolved from aristocratic private collections, Brera was built as the result of a deliberate state cultural policy, serving as a centralised repository for artworks seized from territories under French military control (Pinacoteca di Brera, n.d.).

The predominantly religious character of Brera's collection is a direct consequence of the wave of ecclesiastical suppressions that swept through Lombardy and the wider Kingdom of Italy in the early nineteenth century. As religious orders were dissolved, their artworks flowed into the newly established gallery, imprinting on the collection a devotional identity that subsequent acquisitions have done little to alter (Pinacoteca di Brera, n.d.).

During the eighteenth century, the institution evolved from a religious and educational site into a secular cultural center characterized by the coexistence of multiple functions. The museum went through many transformation processes over the years. The most consequential transformation of the Palazzo came in 1773 under Maria Theresa of Austria, when architect G. Piermarini completed the building and gave it its monumental main entrance. Yet as Tardito (1986) emphasises, the changes were fundamentally cultural and political in nature: with the expulsion of the Jesuits, the complex was completely secularized. This created the conditions for the development of a unique institutional model.

The Pinacoteca di Brera developed within a broader cultural complex rather than as an independent museum institution. During the eighteenth century, several scientific, educational, and cultural organizations were incorporated into the Brera complex, including the Biblioteca Nazionale Braidense, the Accademia di Belle Arti, the Astronomical Observatory, and the Botanical Garden (Lucchi, 2020). As a result, Brera evolved into an integrated environment where heritage preservation, education, research and cultural dissemination coexist.

Apart from being an art museum it is also the core component of a broader cultural ecosystem. While its primary mission remains the conservation and exhibition of artistic heritage, the institution operates within the wider framework of the Brera complex, which brings together museums, libraries, educational institutions, scientific facilities, and research centers (Bologna & Ginex, 2012). This multidimensional character has been highlighted in discussions concerning the cultural significance of Brera and its proposed recognition as a UNESCO site. Indeed, scholars describe Brera as a monumental and institutional complex that has played a central role in shaping Milan's identity as a cultural capital (Bologna & Ginex, 2012).

The collaboration of multiple cultural, educational, and research institutions within the same architectural and organizational setting has historically generated opportunities for collaboration while also creating challenges related to governance, space allocation, and the coordination of institutional objectives. As more functions were added to the building over time, it became necessary for there to be a coherent strategy that could improve relationships between the individual organizations while maintaining their distinct missions or objectives. As a result of this recognition, there have been initiatives designed to strengthen Brera's identity as an integrated system of culture rather than as independent institutions.

The *Grande Brera* project, inspired by Franco Russoli's vision and developed over several decades, wanted to strengthen the integration between the museum and the other cultural institutions located within the Brera complex (Bologna & Ginex, 2012). Consequently, the Pinacoteca di Brera can be interpreted as a complex cultural institution in which the museum represents only one component of a larger organizational structure devoted to heritage preservation, knowledge production, education and public engagement.

This institutional complexity also influenced the way in which Brera approached organizational modernization. As the museum system evolved, greater autonomy and managerial flexibility became increasingly important for coordinating the activities of such a multifaceted institution.

A significant turning point in Brera's institutional trajectory came with the ministerial reform that granted it unprecedented economic and managerial independence. For the first time in Italian museum history, the gallery acquired its own financial infrastructure, including individual annual reports and a dedicated bank account, alongside formal governance bodies such as a Board of Directors and Scientific and Audit Committees, enabling a level of institutional responsiveness previously unavailable within the Italian state museum system (Errico, 2017).

The institutional reforms were accompanied by a physical and communicative overhaul of the museum known as the “riallestimento”, involving the renovation and reorganisation of thirty-eight gallery spaces. Rather than a purely aesthetic intervention, this process reflected a strategic reorientation of the institution toward greater public accessibility and visitor engagement (Errico, 2017).

The combination of autonomy and organizational reform shows how Brera has sought to adapt its historical mission to contemporary cultural and social expectations. These transformations have become an important aspect for the museum's growing public visibility and visitor demand.

The Pinacoteca di Brera attracts substantial visitor flows, receiving more than 400,000 visitors annually. The combination of high attendance levels, educational programs, and tourism-related activities requires the institution to balance public accessibility with heritage conservation objectives, increasing its managerial complexity (Lucchi, 2020).

4.3.2 Financial and organisational analysis of Pinacoteca di Brera

Indicator	**2016**	**2019**	**2020**	**2024**
Total Renevues	**5.615.818**	**5.301.702**	**4.367.932**	**8.953.574**
Self-generated revenues	**1.981.002**	**3.255.811**	**645.668**	**6.072.677**
State funding	**433.000**	**6.421.520**	**4.972.424**	**290.841**
Current expenditures	**3.306.478**	**4.364.559**	**2.837.158**	**8.914.387**
Capital investments	**694.356**	**669.372**	**233.771**	**2.733.095**

Infrastructure and heritage investments	**694.356**	**669.372**	**233.771**	**2.733.095**
Economic surplus	**1.228.276**	**6.716.936**	**2.260.971**	**-2.403.067**

Table 4. Financial performance indicators of Pinacoteca di Brera (2016–2024).

2016

The 2016 financial statements reflect the initial phase of the Pinacoteca di Brera under the autonomous museum framework introduced by the Franceschini reform. The new governance model provided greater managerial autonomy and increased responsibility for financial management, cultural programming and strategic development. During this year, the museum recorded total revenues of approximately €5.6 million, with self-generated revenues accounting for around €2 million. Public transfers remained an important source of funding, reflecting the transitional nature of this period.

The institution closed the year with a positive economic surplus of approximately €1.2 million, indicating a stable financial position and an effective balance between revenues and expenditures. At the same time, investment levels remained relatively moderate, suggesting that Brera was still consolidating its organizational structure before entering a more expansive phase of development. Strategically, the museum was beginning to implement a vision centred on accessibility, public engagement and the long-term realization of the Grande Brera project. Consequently, 2016 can be interpreted as a year of institutional stabilization in which financial sustainability created the conditions for future growth and transformation.

2019

By 2019, the Pinacoteca di Brera had reached a phase of strong financial and organizational consolidation. Total revenues exceeded €5.3 million, while self-generated revenues increased to approximately €3.3 million, representing more than 60% of total income. This result highlights the museum's growing ability to generate resources independently from state transfers and demonstrates the effectiveness of the autonomous governance model introduced after the Franceschini reform. At the same time, state funding increased significantly, reaching approximately €6.4 million compared to only €433,000 in 2016. This substantial rise suggests that the period was characterized not only by increasing financial autonomy but also by continued public investment aimed at supporting the museum's institutional development, strategic projects and long-term transformation.

The museum recorded an exceptional economic surplus of approximately €6.7 million, the highest among the analysed years. This performance occurred within a favourable context characterized by increasing international tourism and the growing attractiveness of Milan as a cultural destination. However, the result should not be attributed only to visitor growth. During this period, Brera strengthened its educational activities, expanded public accessibility initiatives and continued pursuing a more audience-centred approach under the leadership of James Bradburne. These initiatives contributed to reinforcing the museum's role as a dynamic public institution.

The strong financial performance recorded in 2019 reflects both favourable market conditions and the successful implementation of a broader institutional strategy aimed at increasing cultural participation and organizational effectiveness. And it was the result of a hybrid model combining growing revenue-generating capacity with substantial public investment.

2020

The 2020 financial statements clearly reveal the impact of the COVID-19 pandemic on the Pinacoteca di Brera and on the museum sector more generally. Temporary closures, restrictions on mobility and the collapse of international tourism generated a significant reduction in visitor-related income. Self-generated revenues fell from approximately €3.3 million in 2019 to less than €1 million in 2020, illustrating the severity of the crisis for institutions that relied on physical attendance as a major source of income.

Despite this decline, total revenues remained relatively stable due to public funding and institutional support measures introduced during the pandemic. The museum closed the year with a positive economic surplus of approximately €2.3 million, demonstrating a level of financial resilience that contrasts with the severe difficulties experienced by many cultural organizations during the same period. The pandemic also accelerated organizational changes that were already emerging in the museum sector. Brera strengthened its digital communication activities, expanded online engagement initiatives and explored alternative ways of maintaining relationships with audiences despite physical restrictions. Consequently, 2020 was a period that reinforced the strategic importance of digitalization, accessibility and institutional adaptability within the museum's management model.

2024

The 2024 financial statements represent a pivotal moment in the evolution of the Pinacoteca di Brera. Total revenues reached approximately €9 million, representing a substantial increase compared to both the pre-pandemic and pandemic periods. Self-generated revenues exceeded €6 million and became the dominant source of funding, demonstrating the museum's strong recovery capacity and its ability to capitalize on the renewed growth of tourism and cultural consumption.

At the same time, expenditures increased significantly. Current expenditures reached almost €8.9 million, while capital investments exceeded €2.7 million, more than four times the level recorded in 2019. As a result, the institution closed the year with a deficit of approximately €2.4 million. However, this result should be interpreted within the broader context of one of the most important institutional transformations in Brera's history.

The completion of the Grande Brera project and the opening of Palazzo Citterio marked the realization of a vision originally developed decades earlier, aimed at expanding the museum beyond its traditional role as an art gallery. These investments supported the enlargement of exhibition spaces, the integration of modern and contemporary art collections and the boost of educational and cultural activities. Therefore, the deficit recorded in 2024 does not indicate financial weakness, it reflects a deliberate strategy of institutional expansion and long-term value creation. The year represents the transition from a traditional museum model toward a more complex cultural ecosystem capable of integrating heritage preservation, research, education and public engagement within a single organizational framework.

Overall Analysis

The financial evolution of the Pinacoteca di Brera between 2016 and 2024 illustrates a broader process of institutional transformation driven by autonomy, organizational innovation and strategic investment.

One of the most significant trends concerns the increasing importance of self-generated revenues. Between 2016 and 2024, self-generated revenues increased from approximately €2 million to more than €6 million, reflecting a growing capacity to attract visitors, develop cultural services and operate with greater financial independence.

The analysis also highlights the effectiveness of the autonomous governance model introduced by the Franceschini reform. Throughout the period, Brera progressively strengthened its managerial capabilities while maintaining its cultural mission. The exceptional surplus recorded in 2019 demonstrates the museum's ability to generate substantial financial resources during favourable economic conditions, whereas the positive results achieved in 2020 reveal a capacity of resilience during one of the most challenging periods in recent museum history.

At the same time, the financial data suggest that Brera's strategy cannot be understood exclusively through the lens of revenue maximization. Unlike institutions whose development was mainly driven by visitor growth, Brera consistently pursued objectives related to education, accessibility, public participation and cultural innovation. This orientation became particularly visible in 2024, when the museum accepted a temporary deficit in order to support large-scale investments connected to the completion of Grande Brera and the opening of Palazzo Citterio.

Overall, the financial trajectory of the Pinacoteca di Brera reveals the transformation of the institution from a prestigious autonomous museum into a diversified cultural ecosystem. The evolution of revenues, expenditures and investment patterns suggests a shift toward a more complex organizational model capable of combining economic sustainability with long-term cultural value creation, reinforcing Brera's position as one of the most innovative and strategically significant museums in the Italian cultural sector.

4.3.3 Pinacoteca di Brera digital strategy

The Pinacoteca di Brera had a big change in their strategy with the advent of the new director, James Bradburne. The appointment of director James Bradburne marked a turning point in Brera's communication strategy. Drawing on his background in marketing and communication, Bradburne created a dedicated communications office that managed the renewal of the museum's public image, from the redesign of promotional materials and the renewal of the website, to the expansion of social media channels and the installation of large exterior banners on the Palazzo to attract passing visitors. According to Errico (2017), these interventions contributed to a measurable increase in the institution's visibility, extending its recognition beyond the local Milanese context to national and international audiences.

A pillar of Brera's digital transformation was the promotion of accessibility and inclusion. It did not focus exclusively on technological innovation, the museum developed projects aimed at making cultural content available to audiences traditionally excluded from museum participation. Initiatives such as *Museo per Tutti* combined educational resources, accessible communication and digital support materials to facilitate the engagement of people with intellectual disabilities. These projects demonstrate that digitalization at Brera was closely linked to the institution's objective of democratizing access to cultural heritage and reducing barriers to participation (Pinacoteca di Brera, 2024).

The COVID-19 pandemic represented a critical turning point in Brera's digital transformation. During periods of closure, the museum intensified its online presence and experimented with new forms of digital captivating ways to maintain contact with audiences. According to Bradburne, the institution actively explored how museum experiences could be delivered to broader online communities while continuing to fulfil its public mission. These initiatives enabled Brera to preserve visibility during the pandemic and reinforced the role of digital communication as a permanent component of its organizational model. Therefore, the crisis accelerated processes of digital transformation that had already begun before 2020 and contributed to redefining the relationship between the museum and its users (Bocconi Art Newspaper, 2020).

The digital dimension of Brera's renovation strategy was particularly significant. The installation of large video walls at reception points served both a communicative and an informational function, keeping visitors informed about loans, restorations, and upcoming events. These physical interventions were complemented by a redesigned website and a substantially expanded social media presence, positioning digital communication as a structural component of the museum's public engagement strategy (Errico, 2017).

A key component of Pinacoteca di Brera's digital strategy has been the development of mobile applications and digital interpretation tools. Rather than limiting digitalization to the online publication of collections, the museum introduced a mobile guide aimed at facilitating autonomous exploration of its artworks. According to the developers of the original Brera application, the primary objective was to guide visitors through more than 600 artworks by providing institutionally curated content directly on personal devices. The application incorporated visual recognition technology, allowing users to obtain information about artworks simply by pointing their smartphones at a painting. This feature was intended to encourage autonomous navigation while reducing barriers to information access and improving the overall visitor experience (Inera S.r.l, n.d.).

Part of Brera's renewed audience strategy involved a fundamental rethinking of how the collection communicates with its visitors. Artwork labels were made bilingual in Italian and English, and for major works, multiple interpretive texts were produced simultaneously: one aimed at families and children, and another contributed by literary and philosophical figures. This layered approach to communication reflects a deliberate effort to make the permanent collection accessible to diverse audience segments without sacrificing intellectual depth (Errico, 2017).

The implementation of digital technologies at Brera was closely linked to accessibility objectives. The museum's mobile application was designed to support different categories of users through simplified interfaces and compatibility with accessibility functions. This approach is consistent with the institution's broader commitment to inclusion, which also includes projects such as *Museo per Tutti* and other initiatives aimed at facilitating access for visitors with disabilities. Digitalization in this case, is seen as a mechanism for reducing barriers to participation and extending access to cultural heritage to a wider range of audiences (Pinacoteca di Brera, n.d.).

Also, with the inauguration of Palazzo Citterio and the realization of the Grande Brera project the role of digital technologies expanded within the institution. The new official Grande Brera application integrates audio guides, thematic itineraries, interactive maps, multilingual content and visual artwork recognition into a single platform. Through these functions, the application supports visitors before, during and after their visit, facilitating navigation across the different spaces of the Brera complex and providing personalized access to information. Rather than functioning solely as a digital guide, the application contributes to connecting the various components of the Grande Brera ecosystem and supports the museum's extensive goal of creating a more integrated cultural experience (Pinacoteca di Brera, n.d.).

The expansion of Brera's digital strategy is also reflected in the partnerships established with external institutions operating in the field of digital culture. A notable example is the collaboration agreement signed between the Pinacoteca di Brera and MEET Digital Culture Center in 2024, aimed at promoting digital art, cultural innovation and new forms of audience engagement through joint exhibitions and communication initiatives. The agreement accompanied the opening of Palazzo Citterio and included the presentation of a section of Refik Anadol's digital artwork *Renaissance Dreams*, together with coordinated communication campaigns, digital content, newsletters and QR-code based resources that connected visitors to additional online materials. This initiative illustrates how Brera's digital transformation extends beyond internal technological development and contributes to the creation of a broader cultural ecosystem in which museums, digital culture centres and contemporary artistic practices interact to expand public participation and cultural accessibility (Pinacoteca di Brera & MEET Digital Culture Center, 2024).

In addition, the evolution of Brera's mobile applications illustrates how digital technologies were integrated into a broader strategy centred on accessibility, visitor autonomy and audience engagement. Rather than adopting technology as an end in itself, the museum used mobile tools to facilitate interaction with artworks, improve orientation within the museum and provide personalized access to cultural content. This approach is consistent with the institution's broader transformation into the Grande Brera ecosystem, where digital platforms support the integration of collections, educational resources and visitor services. Consequently, the strategic value of these technologies lies not only in their technical functionality but also in their contribution to creating a more inclusive, accessible and user-oriented museum experience.

Another example of Brera's user-centred digital strategy can be observed in the development of *Breraviglie*, a free digital audioguide designed by the museum's educational services. Unlike traditional audio guides focused primarily on the transmission of factual information, *Breraviglie* encourages visitors to engage in what the institution describes as a "slow observation" of selected artworks. Through illustrated rhymes and accessible narratives, the audioguide introduces visitors to less visible aspects of the collection, including artistic techniques, conservation histories and contextual details that may otherwise remain unnoticed during a conventional visit. By combining digital accessibility with educational storytelling, the initiative demonstrates how Brera employs digital technologies to promote deeper and more meaningful forms of engagement with cultural heritage. (Pinacoteca di Brera, n.d.).

The case of the Pinacoteca di Brera suggests that the success of digital transformation in museums depends on the ability to integrate digital tools within a coherent institutional strategy. Brera appears to have used digital innovation as a means to support objectives related to accessibility and audience development. This approach may explain why the museum was able to strengthen its relationship with visitors while simultaneously pursuing its educational and social mission.

The Brera experience shows an organizational and cultural transformation of the museum, in which technology serves strategic goals rather than driving them. Consequently, the institution's achievements seem to derive less from the implementation of specific digital solutions and more from the existence of a clear vision regarding the role that digitalization should play.

4.4 Museums comparative analysis

To facilitate comparison between the three case studies, *Table 2* summarizes the main characteristics that distinguish the Gallerie degli Uffizi, Palazzo Barberini and the Pinacoteca di Brera across a number of organizational, strategic and digital dimensions.

Dimension	Pinacoteca di Brera	Palazzo Barberini	Gallerie degli Uffizi
City	Milano	Roma	Firenze
Museum typology	Public art museum integrated within a broader cultural ecosystem	National art museum specialised in Renaissance and Baroque heritage	Large-scale autonomous museum and international cultural landmark
Historical origin	Educational institution linked to the Academy of Fine Arts	Aristocratic residence transformed into a public museum	Medici dynastic collection gradually transformed into a public museum
Original mission	Education and artistic training	Representation of papal and aristocratic power	Dynastic representation and political legitimacy
Current institutional identity	Cultural ecosystem combining museum, library, academy and research institutions	Heritage conservation, research and dissemination centre	Global museum institution focused on preservation, dissemination and tourism management
Governance after Franceschini Reform	Strong managerial autonomy and institutional transformation	Progressive modernization with continued public support	Highly autonomous museum with international managerial profile
Scale of operations	Medium-large	Medium	Very large
Dependence on tourism	Moderate	Relatively low	Very high
Main source of revenue growth	Growing self-generated revenues and audience development	Public investment and institutional funding	Ticket sales and international tourism
Digital maturity	Advanced	Intermediate-advanced	Advanced
Primary objective of	Accessibility and	Heritage management	Visitor management

digitalization	inclusion	and knowledge production	and global engagement
Digitalization approach	User-centred	Heritage-centred	Audience-centred
Digital tools for visitors	Mobile apps, visual recognition systems, interactive itineraries	Digital guides and interpretation tools	Mobile app, audio guides, digital ticketing and QR services
Collection digitalization	Digital access and interpretation of artworks	Digital Twin-oriented documentation and integrated information systems	Online collections, Uffizi Touch and digital dissemination
Use of advanced technologies	Mobile technologies and accessibility solutions	Digital Twin concepts, diagnostic imaging	Visitor analytics, digital communication platforms and integrated digital services
Communication strategy	Rebranding and communication reform under Bradburne	Limited external communication emphasis	Highly developed international communication strategy
Social media role	Audience engagement and educational communication	Complementary role	Strategic pillar of institutional visibility
Main value created through digitalization	Social and educational value	Knowledge and conservation value	Economic, communicative and managerial value

Table 5. Comparative overview of the three case study museums.

The comparative analysis demonstrates that even though all three institutions have invested in digital technologies, the objectives pursued through these investments differ substantially according to their historical development, organisational identity and priorities.

The Gallerie degli Uffizi have mostly employed digitalization as a mechanism for managing scale, expanding international visibility and interacting with a global audience. Digital communication, visitor management systems, online engagement strategies and initiatives such as Uffizi Diffusi illustrate an approach oriented toward audience expansion, tourism management plus institutional visibility. In this case, digitalization contributes together with the economic performance, operational efficiency and international reputation.

Palazzo Barberini presents a different model. Its digital transformation has been strongly associated with heritage management, conservation, documentation and knowledge production. Projects such as MUSE and the implementation of Digital Twin methodologies evidence a strategy centred on the creation of digital infrastructures capable of supporting research and preservation. Here, digitalization functions as a tool for heritage enhancement and cultural knowledge generation.

The Pinacoteca di Brera has followed a third path, where digital technologies are closely connected to accessibility, inclusion and audience development. Mobile applications, accessibility projects and communication initiatives introduced under James Bradburne reflect a user-centred approach in which digital innovation serves educational and social objectives. Digitalization is therefore integrated into a vision focused on participation and public engagement.

For this reason, it would be difficult to identify a single museum as the most successful or highest-performing case. Each institution operates under different conditions and pursues different strategic objectives. The Uffizi manage millions of visitors and face challenges associated with overtourism and global visibility. Palazzo Barberini prioritizes conservation, cultural heritage preservation and research. And Brera seeks to position itself as an integrated cultural ecosystem where education, access to cultural content and participation play a central role.

Nevertheless, if the analysis focuses specifically on the strategic integration of digitalization within the broader institutional mission, the Pinacoteca di Brera appears to demonstrate the strongest alignment between digitalization and institutional strategy. Unlike approaches centred mainly on visitor management or technological infrastructure, Brera has consistently integrated digital tools into an extensive vision of accessibility, audience development and institutional transformation. Digitalization is not treated as a singular technological objective but as a vehicle to achieve the educational, cultural and social mission of the museum. The clear alignment between technological innovation and the strategic focus of the institution indicates a high level of maturity in their approaches to digital transformation and therefore will provide valuable insight to other museums looking to integrate digital innovations with the creation of long-term value.

Throughout the period analysed, Brera consistently approached digital transformation as part of a wider process of organizational and cultural change. Digital technologies were not introduced as isolated tools aimed exclusively at increasing visibility or modernizing specific activities. Instead, they were integrated into a wide strategy centred on accessibility, audience engagement, education and institutional development. As a result, digitalization appears as a recurring element across different dimensions of the museum's activities rather than as a collection of independent technological projects.

This approach is particularly visible in the management philosophy that characterized the institution during the years under examination. The emphasis placed on audience-centred experiences, public accessibility and the democratization of cultural heritage created an environment in which digital technologies could support wider institutional objectives. Concretely, Brera invested in the development of its website as a central access point for information and cultural content, strengthened its presence on social media platforms to foster dialogue with audiences, expanded the availability of online educational resources, and promoted digital storytelling initiatives aimed at contextualizing artworks and collections. During and after the COVID-19 pandemic, the museum also increased the use of virtual content, online exhibitions, video-based programming and digital communication channels that allowed audiences to engage with the institution beyond the physical visit. These tools were developed to strengthen the relationship between the museum and its audiences. In this sense, digitalization became part of the museum experience itself rather than merely a supporting function.

Furthermore, the integration between digital initiatives and the broader Grande Brera project suggests a long-term strategic perspective. The objective was not simply to introduce new technologies but to rethink the role of the museum within a wider cultural ecosystem composed of educational, research and cultural institutions. Digital tools supported this vision by facilitating access to collections, disseminating knowledge through online platforms, and connecting different audiences with the museum's educational and cultural activities. In this way, digitalization reinforced Brera's role as an active cultural platform rather than solely a repository of artworks.

Another relevant aspect concerns the relationship between organizational transformation and technological innovation. In many institutions, digitalization remains concentrated within communication activities or specific technological projects. In the case of Brera, however, digital initiatives appear closely connected to wider managerial and institutional changes. The museum's efforts to expand cultural engagement were accompanied by investments in digital communication, online learning resources, virtual programming and audience-oriented digital services capable of supporting these objectives.

For these reasons, Brera does not necessarily emerge as the museum with the greatest digital visibility, the largest digital audience, or the strongest economic performance. Rather, it represents the case in which digitalization appears most fully embedded within the institution's mission, governance approach and long-term development strategy. The coherence of its digital transformation lies precisely in its capacity to connect specific digital initiatives, such as online educational content, virtual exhibitions, social media engagement, digital storytelling and web-based access to collections; with cultural, educational and social objectives. Digitalization therefore functions as an integral component of value creation.

In conclusion, the comparison between the three institutions also reflects that digitalization serves different strategic purposes across them. At the Uffizi Galleries, digital technologies are closely linked to the challenges associated with managing one of the most visited museums in Italy. Consequently, many initiatives focus on visitor experience, audience expansion, communication and the dissemination of collections to global audiences. At Palazzo Barberini, digital innovation appears more strongly connected to the preservation and documentation of cultural heritage, reflecting the institution's emphasis on research and conservation activities. In the case of the Pinacoteca di Brera, digitalization is more frequently employed as a mechanism for improving accessibility, participation, education and audience engagement. These differences do not indicate varying levels of success, but rather illustrate how digital technologies can support distinct institutional priorities and create value in different ways according to the mission and strategic objectives of each museum.

5. Digitalization and Museum Value Creation: Economic, Organizational, Cultural and Social Dimensions

This chapter examines how digitalization contributes to museum value creation through four interconnected dimensions: economic, social, cultural, and organizational. The economic dimension explores how digital technologies support sustainability, tourism development, and new revenue opportunities. The social dimension focuses on participation, inclusion and accessibility. The cultural dimension analyses how digitalization preserves and disseminates the heritage, while the organizational dimension investigates the internal transformations required to support digital initiatives. Together, these perspectives provide a comprehensive framework for understanding the strategic role of digitalization in contemporary museums and the different ways through which it contributes to value creation within cultural institutions.

Economic

Economic value represents one of the most visible and measurable dimensions through which museums contribute to society. Although museums are recognised firstly for their cultural, educational, and preservation functions, their activities also generate significant economic benefits that extend beyond the institutions themselves. In recent decades, governments, policymakers, and researchers have acknowledged that museums should not be considered just as custodians of cultural patrimony, but also as strategic assets capable of supporting tourism development, stimulating local economies, generating employment, fostering innovation, and raising the competitiveness of territories. As a result, the economic impact of museums has become an important area of research, particularly in countries such as Italy, where national heritage represents a central component of their identity and of economic activity.

One of the principal ways in which museums contribute to economic development is through their relationship with tourism. Cultural tourism is one of the fastest-growing segments of the industry, and museums frequently constitute a key motivation for travel. Visitors are often attracted not only by the collections themselves but also by the opportunity to absorb the history, identity, and traditions of a destination. Consequently, museums play an important role in the attractiveness of cities and regions.

Museums constitute an important component of cultural tourism and contribute directly to tourism expenditure through admissions, souvenir sales, food services, and other visitor-related activities. As museums integrate digital technologies to improve visitor experiences and maintain their relevance, digitalisation makes the economic contribution of museums (Yap et al., 2024).

The economic effects generated by museums extend beyond the revenues collected by the institutions themselves, visitors attracted by museums consume a wide range of complementary goods and services during their stay, generating expenditure throughout the local economy. Accommodation providers, restaurants, transportation companies, retail businesses and leisure services, all benefit from the presence of cultural attractions capable of drawing tourists to a destination. Because of this, museums create multiplier effects that spread economic benefits across multiple sectors and stakeholders. Their impact therefore cannot be measured exclusively through admission revenues or museum budgets, but must also consider the economic activity stimulated by cultural visitation.

Museums can generate economic value that extends beyond their own organisational boundaries. As cultural institutions embedded within local economies, they contribute to regional development by attracting visitors, generating revenue, supporting business activity, and strengthening the overall attractiveness of destinations (OECD, 2019).

Through these mechanisms, museums contribute to the economic vitality of territories and support the development of tourism ecosystems that benefit local communities. In destinations where cultural heritage represents a major attraction, museums can become really important drivers of economic growth and place competitiveness.

Another significant aspect of the economic contribution of museums is the employment generation. Museum operations need a diverse workforce including curators, conservators, educators, administrators, security personnel, communication specialists, and technical staff. Moreover, the economic activity generated by museum visitors creates indirect employment opportunities across numerous sectors associated with tourism and cultural consumption.

Museums support local economic development through employment generation and visitor-related expenditure. By attracting tourists and encouraging cultural consumption, museums stimulate economic activity across multiple sectors, including hospitality, retail, transportation, and leisure services. Their contribution therefore extends beyond the cultural sector and influences the wider visitor economy (OECD, 2019).

The growing recognition of museums as economic actors has encouraged researchers to examine their contribution from a different perspective, focusing on more than direct financial returns. Recent studies highlight the capacity of museums to contribute to destination branding, urban regeneration, social attractiveness, and the creation of favourable environments for investment and entrepreneurship. Museums often serve as symbolic landmarks that reinforce the identity of places and expand their visibility in increasingly competitive tourism and cultural markets. In this way, cultural institutions become part of wider strategies aimed at attracting visitors, talent, businesses, and economic opportunities.

The relationship between museums and economic development has become even more significant in the context of digital transformation. Advances in digital technologies have created new possibilities for museums to diversify their sources of income and fortify their sustainability. The importance of these capabilities became particularly evident during the COVID-19 pandemic, which severely disrupted museum operations worldwide and exposed the vulnerability of traditional business models heavily dependent on physical attendance.

The pandemic highlighted the vulnerability of museum business models that rely predominantly on physical visitation and ticket sales. In response, many Italian museums experimented with digitally enabled services that introduced alternative sources of revenue. These experiences demonstrated that digital technologies can contribute to economic sustainability by supporting the diversification of revenue streams beyond traditional onsite activities, reducing dependence on a single source of income and increasing organizational resilience (Agostino, 2024). This shift marked an important evolution in the economic logic of museums, encouraging institutions to explore new forms of value creation capable of complementing traditional revenue models.

Digital transformation facilitated the development of new revenue mechanisms associated with online cultural experiences. Italian museums experimented with business models that included freemium services, memberships, donations, sponsorships, and the sale of individual or bundled digital experiences. These initiatives illustrate how digital technologies can create economic value by generating additional monetization opportunities linked to cultural content delivered online (Agostino, 2024).

Apart from generating income and developing tourism, museums are also becoming important actors in innovation ecosystems. In contemporary knowledge-based economies, cultural institutions are more involved in activities that support technological experimentation, entrepreneurial initiatives, and the dissemination of digital skills.

The economic role of museums increasingly includes supporting entrepreneurial initiatives and technological development. Through innovation-oriented infrastructures such as fabrication laboratories, museums can encourage experimentation, facilitate access to digital technologies, and contribute to the creation of innovative enterprises. These activities reinforce the museum's role as an active participant in local economic development rather than a passive cultural institution (OECD, 2019).

Taken together, these dimensions prove that the economic contribution of museums extends far beyond their traditional functions. Museums generate value through tourism attraction, employment creation, visitor expenditure, destination competitiveness, entrepreneurial development, and innovation activities. Digital technologies further strengthen these contributions by enabling new revenue models, expanding audience reach and developing new ways for museums to be economically viable. Consequently, museums should be understood not only as cultural institutions but also as strategic economic actors capable of contributing to local, regional, and national development.

Social

Social value has become a significant dimension of museum activity in contemporary societies. Nowadays, museums are expected to contribute to societal objectives, including participation, inclusion and community development. This evolution reflects a growing recognition that museums are not only repositories of cultural assets but also public institutions capable of influencing the quality of social life and creating relationships between individuals, communities, and cultural resources.

Museums create social value by encouraging participation and engagement among diverse groups of visitors. Beyond their role as exhibition spaces, they function as public environments where individuals, families, school groups, and communities interact with cultural resources and with one another. Through these shared experiences, museums facilitate social participation and contribute to strengthening connections between citizens and public cultural institutions (Lagendijk, 2011).

They also contribute to social inclusion by engaging audiences that have traditionally been underrepresented in cultural participation. European cultural policies have highlighted the importance of widening access and increasing participation among disadvantaged groups, recognising museums as institutions capable of reducing barriers to cultural engagement and promoting more inclusive forms of participation (Šucha, 2011).

Taken together, these developments reflect a growing shift in the understanding of museums from institutions focused on collections towards organisations that actively seek to engage different segments of society. Participation and inclusion are crucial for the museum mission, reinforcing the idea that cultural institutions should serve diverse audiences and provide opportunities for meaningful connections regardless of social, economic, or cultural background.

Museums can create social value by facilitating dialogue between individuals from different cultural and social backgrounds. Through exhibitions, educational programmes, and public activities, museums provide spaces where diverse perspectives can meet, fostering mutual understanding and encouraging exchanges between communities. This role has become increasingly relevant in multicultural societies seeking to strengthen social cohesion and intercultural understanding (Šucha, 2011).

The social contribution of museums extends to their capacity to act as community anchors. By serving as accessible public spaces and creating opportunities for collective experiences, museums help strengthen social cohesion and reinforce relationships among different groups within society. Their role within communities is therefore not limited to cultural provision but also includes fostering social interaction and a sense of belonging (Lagendijk, 2011).

Through these mechanisms, museums contribute to the development of social capital within communities. By bringing together individuals with different experiences, perspectives, and identities, they create opportunities for interaction that may not occur in other contexts. These interactions can reinforce social networks, foster trust among community members and promote a greater sense of belonging.

Digital technologies have further expanded the social potential of museums. Traditionally, geographical distance, mobility constraints, economic limitations, or other barriers could restrict engagement with cultural resources. Digitalization has challenged many of these limitations by creating new ways of participation and interaction.

Thanks to digital technologies, the potential of museums to reach wider and more diverse audiences has escalated. Online access to collections and cultural resources allows museums to involve individuals who may face geographical, economic, or physical barriers to participation. Digital access therefore represents an important mechanism for expanding the social reach of museums and strengthening their inclusiveness (Šucha, 2011).

Thanks to them, the capacity of museums to address the needs of visitors with different abilities and support requirements have expanded. Tools such as virtual reality, augmented reality, and artificial intelligence can facilitate access to information, improve engagement, and reduce barriers that traditionally limited participation in museum experiences. As a result, digitalization can contribute to widening access to cultural heritage and fostering more inclusive forms of visitor engagement (Del Bianco et al., 2026).

Providing information in accessible formats is an important factor in promoting social participation within museums. Accessible communication facilitates knowledge exchange, supports the acquisition of new skills, and enables visitors to engage more actively with cultural content. These practices can strengthen visitors’ autonomy and encourage a more active role in cultural experiences (Del Bianco et al., 2026).

Overall, the social value created by museums emerges through a combination of participation, inclusion, dialogue, community engagement, and availability of cultural legacy. Digital technologies reinforce these contributions by reducing barriers and enabling wider involvement in cultural experiences. In doing so, museums contribute to the development of more connected, inclusive, and participatory societies, demonstrating that their role extends well beyond the preservation of heritage and into the broader sphere of social development.

Cultural

Cultural value represents one of the fundamental dimensions through which museums contribute to society. Contemporary perspectives consider culture as a strategic resource capable of supporting sustainable development, social progress, and innovation. Within this framework, museums play a key role in protecting, interpreting, and spreading cultural resources while ensuring that they remain relevant and accessible to present and future generations.

Culture is now recognized as the fourth pillar of sustainable development, alongside the economic, environmental, and social dimensions. This positioning implies that a community's cultural heritage, creative industries, and living cultural practices are not merely current assets but strategic resources that must be preserved for future generations. Taking part in creative and cultural activities carries measurable benefits for individuals: it improves quality of life, personal well-being, and fosters a meaningful sense of belonging within one's community (Pioli, 2023).

It can be understood as a form of capital encompassing both tangible assets, such as monuments, artworks and heritage sites; and intangible ones, such as traditions, languages, and collective memory. Just as economic or natural capital requires responsible administration, cultural capital demands management guided by a sustainability-oriented perspective (Pioli, 2023).

Considering culture as a form of capital implies that cultural resources must be actively preserved and transmitted across generations. Museums occupy a particularly important position in this process because they are responsible for ensuring that citizens can access, understand, and be actively involved with them. Consequently, the cultural value generated by museums depends on their ability to facilitate meaningful interactions between people and heritage.

Museums today face a dual challenge. On one hand, they must broaden and diversify their reach to reflect the demographic complexity of contemporary society by attracting audiences that go beyond their traditional visitor base. On the other hand, they bear the responsibility of ensuring that all citizens can genuinely access the cultural capital that belongs to them collectively, as a matter of civic right, including the right to culture and to a meaningful understanding of their own heritage (Izzo et al., 2023).

Through digitized collections, cultural institutions can protect legacy assets while simultaneously expanding opportunities for access, participation, and interpretation (Palandri, 2023). Digitized collections create cultural value by enabling multiple forms of use and reuse, allowing heritage resources to generate new meanings and support ongoing cultural production and knowledge creation (Palandri, 2023).

The strategic importance of digitalization for cultural institutions has also been recognized at the policy level. Across Europe, digital technologies have increasingly been viewed as essential tools for preserving cultural heritage, expanding public access, and strengthening the contribution of culture to innovation and sustainable development. These initiatives reflect a broader understanding of digital transformation not simply as a technological process, but as a mechanism for enhancing the cultural mission of museums and ensuring the long-term relevance of heritage in contemporary society.

Digitalization has been recognised strategically by cultural institutions and at the level of policy makers. Throughout Europe is being rapidly accepted as a major means to further develop the role of culture in contributing to innovation and sustainable development. This includes an evolving view of what digital transformation means in society, as being more than just technology based, but also as an approach to carry out the cultural mission of museums and ensuring their relevance in the future.

Positioning culture as an engine of innovation and social progress has become a strategic priority at the European level. Since 2007, the European Commission has backed this vision through a series of policy frameworks and funding programmes designed to support the preservation and promotion of historical patrimony across member states. Within this landscape, ICT (Information and Communication Technologies) occupies a particularly significant role. The capacity to reshape virtually every sector of modern life has led scholars to treat it as a measure of a society's cultural capital. For museums and cultural institutions specifically, digital technologies open the door to a fundamental repositioning: rather than functioning as closed, access-restricted environments, they can become open, communicative spaces where collections are more easily understood, exhibitions reach wider places and more people, and the relationship between institution and visitor grows substantially more interactive and meaningful (Izzo et al., 2023).

Taken together, these developments confirm that museums generate cultural value through the preservation, dissemination, interpretation, and continuous renewal of cultural heritage. Digitalization strengthens these processes by expanding access, supporting reuse, enabling new forms of interaction, and facilitating the circulation of cultural knowledge.

Organizational

Digital transformation has introduced major organizational changes for museums, extending its impact far beyond the implementation of technological tools. Cultural institutions must adapt their structures, processes, competencies, and managerial practices to operate effectively in a rapidly evolving environment where technology is continuously spreading. It represents an organizational capability that requires dedicated investments, specialized competencies, and sustained managerial commitment (Galgano, 2022).

The development of these capabilities often requires museums to reconsider the way activities are organized and coordinated. Digital initiatives frequently involve multiple departments and functions, creating a need for greater collaboration across areas and encouraging new forms of coordination and decision-making.

Digital transformation expands the responsibilities of museum managers beyond operational administration. Managers are required to design strategies that facilitate knowledge dissemination across multiple channels and support meaningful interactions between museums and their audiences (Galgano, 2022). And often redesign existing organizational processes and working practices. The adoption of digital technologies therefore involves adjustments to the ways activities are planned, coordinated, and carried out in these institutions (Lupo et al., 2023).

These changes are also reflected in the skills and expertise required in museums. While traditional institutions have historically relied on curatorial, conservation, and management competencies, digital transformation has expanded the range of knowledge necessary to support museum operations and strategic development. Museums need to combine both traditional curatorial and heritage management expertise with digital competencies. The development of multidisciplinary professional profiles has become a key organizational requirement for supporting digital transformation initiatives (Lupo et al., 2023).

As digital technologies have expanded the number of channels through which museums communicate with audiences, institutions have to develop more sophisticated approaches for content diffusion. The adoption of digital technologies has encouraged museums to redesign their communication strategies. Social media, digital platforms, and online content have become important tools for attracting visitors, promoting collections and maintaining continuous engagement (Galgano, 2022).

The growing importance of digital communication has contributed to the emergence of organizational models that integrate traditional museum functions with new forms of digital engagement. Museums must manage a vast range of activities while maintaining consistency with their cultural mission and institutional objectives.

Digitalization encourages museums to develop hybrid organizational models that combine traditional cultural functions with new digital activities. This transformation requires institutions to balance commercial opportunities, public engagement objectives, and their broader social mission (Lupo et al., 2023).

However, sometimes the pace of organizational adaptation often differs from the speed of technological innovation. While digital tools evolve rapidly, institutional structures and managerial practices tend to change more gradually, creating challenges for the effective implementation of digital strategies (Lupo et al., 2023).

Overall, digitalization creates organizational value by encouraging museums to develop new capabilities, redesign internal processes, strengthen managerial competencies, and adopt more flexible organizational models. These transformations enable cultural institutions to operate more effectively while supporting their objectives of preservation, education, and public engagement.

The four dimensions examined in this chapter (economic, social, cultural, and organizational) shows that digitalization does not operate as an isolated technological process, but as a transformative force that reshapes the very foundations of museum value creation. Economically, digital technologies have enabled museums to diversify revenue streams, strengthen their role within tourism ecosystems, and position themselves as active contributors to regional development. Socially, digitalization has expanded participation and inclusion, allowing museums to reach audiences who would otherwise face geographical, economic, or physical barriers to cultural engagement. Culturally, digital tools have opened collections to new forms of interpretation and meaning-making. Organizationally, these transformations have required museums to rethink their internal structures, competencies, and managerial approaches, often revealing a gap between the rapid technological change and the slower rhythm of institutional adaptation.

Taken together, these dimensions are not separate trajectories but deeply interconnected processes. Economic sustainability depends on the ability to engage diverse audiences; cultural dissemination relies on organizational capacity; and social inclusion is, in turn, shaped by the digital infrastructures that institutions are able to develop and maintain. This interdependence suggests that digitalization should be seen as a strategic dimension that cuts across every aspect of museum activity.

6. Conclusion

Throughout the thesis, it was investigated how digitalization has contributed to the evolution of Italian museums and how it influences their processes of value creation. The findings demonstrate that digitalization has driven this evolution by reshaping museums' business models, organizational processes and relationships with visitors. Drawing on the literature on digital transformation and digital platforms, and combining it with an analysis of the Italian museum context and three case studies, the research has shown that digitalization is not simply a technological phenomenon. Rather, it represents a broader organizational transformation that affects how museums preserve heritage, interact with audiences, manage resources, and fulfil their cultural missions.

One of the most interesting insights emerging from this research concerns the relationship between technology and cultural heritage. At first glance, digitalization and museum preservation may appear to be contradictory concepts. Museums have traditionally been associated with conservation, authenticity and the protection of the past, whereas digital technologies are often linked to innovation, disruption and continuous change. For many years, there was also an implicit concern that the increasing availability of digital collections, virtual exhibitions and online cultural content could reduce the attractiveness of physical museum visits. If artworks could be explored remotely and collections accessed from anywhere in the world, it seemed reasonable to assume that digital experiences might gradually replace physical ones.

The evidence analysed throughout this thesis suggests a different outcome. Rather than diminishing the relevance of museums, digitalization has expanded their possibilities. Digital technologies have not replaced the physical experience; instead, they have complemented and enriched it. Online collections, virtual exhibitions, educational resources and social media platforms have enabled museums to reach audiences that would otherwise remain inaccessible, while simultaneously increasing institutional visibility and stimulating curiosity among potential visitors. In many cases, digital engagement acts as the beginning of a relationship that may culminate in a physical visit. Consequently, digitalization should not be understood as a substitute for the museum experience but as an extension of it.

The research also demonstrates that the value generated by digitalization extends beyond communication and audience development. Throughout the analysis, digital transformation emerged as a process of organizational change that influences how museums manage information, coordinate resources and adapt to evolving environmental conditions. By enabling more efficient processes and supporting decision making, digital technologies strengthen institutional capabilities and improve the effectiveness of organizational activities. These improvements contribute to the operational performance of museums and to their economic sustainability.

At the same time, some of the most significant impacts of digitalization occur within areas that remain largely invisible to visitors. Museums increasingly rely on digital databases, cataloguing systems, collection management platforms and analytical tools that support internal processes and guide organizational strategies. Technologies such as artificial intelligence, environmental monitoring systems, 3D modelling and Digital Twins have introduced new possibilities for conservation, restoration planning and heritage preservation. From this perspective, digital transformation affects how museums communicate culture and how they protect and manage it. The creation of digital replicas and digital archives ensures that cultural assets can be documented, studied and maintained even when physical access is limited by conservation requirements.

Another important finding concerns the transformation of the visitor journey. The relationship between museums and visitors no longer begins at the entrance of a gallery and ends when visitors leave the building. Digitalization has extended the museum experience across multiple stages. Potential visitors discover institutions through websites, social media platforms or online reviews. During the visit, digital tools enrich interpretation and facilitate access to information. After the visit, museums continue to engage audiences through online content, educational resources and digital communities. As a result, value creation increasingly occurs throughout an integrated physical and digital journey.

The comparative analysis of the three case studies further demonstrates that there is no single model of digital transformation within the museum sector. The Uffizi Galleries, Palazzo Barberini and the Pinacoteca di Brera have all adopted digital technologies, yet they have done so in ways that reflect their distinct institutional characteristics and strategic priorities. The Uffizi Galleries have leveraged digitalization to support one of the world's most visited cultural institutions, combining technological innovation with audience management and global outreach. Palazzo Barberini has used digital technologies extensively to support conservation activities, heritage enhancement and the dissemination of knowledge surrounding its collections. The Pinacoteca di Brera, meanwhile, stands out for the extent to which digitalization has been integrated into broader objectives related to education and audience engagement.

Importantly, these differences should not be interpreted as indicators of greater or lesser success. The analysis suggests that digitalization creates value in different ways depending on the mission and objectives of each institution. What emerges most clearly is that the effectiveness of digital transformation depends not on the quantity of technologies adopted but on their alignment with particular institutional goals. Digital tools create the greatest value when they support and reinforce the strategic vision of the organization implementing them. At the same time, despite the differences observed across the institutions, digitalization contributed in all cases to strengthening economic performance by supporting revenue generation, improving financial sustainability, and reducing the relative dependence on government funding.

Beyond the individual museums, the findings also highlight the strategic relevance of digital transformation for Italy as a whole. Cultural heritage represents one of the country's most distinctive resources and museums are an important part of it. The modernization of museums contributes to tourism competitiveness, territorial attractiveness, educational development and international visibility. Because of this, digitalization should not be seen solely as a matter of cultural policy and national development.

The Italian experience further demonstrates that public policy can play a significant role in enabling digital transformation. The Franceschini Reform created conditions that encouraged museums to adopt more strategic and autonomous approaches to management and a more flexible business model, while the COVID-19 pandemic accelerated the recognition of digital infrastructures as essential components of cultural accessibility and institutional resilience. Together, these developments contributed to reshaping the role of museums within contemporary society and highlighted the importance of innovation for ensuring their long-term sustainability.

Lastly, this thesis suggests that the future of museums does not lie in choosing between preservation and innovation. On the contrary, the evolution of Italian museums shows that these objectives can reinforce one another. Institutions whose mission is fundamentally rooted in the protection of the past are relying more and more on some of the most advanced technologies available to fulfil that mission more effectively. Digitalization has enabled museums to conserve patrimony more accurately, manage collections more efficiently, engage audiences more deeply and extend cultural access more broadly than ever before.

For this reason, digital transformation should not be understood as a departure from the traditional role of museums, but as an evolution of it. The museums examined throughout this research show that technological innovation can strengthen rather than weaken cultural institutions when it is aligned with their fundamental mission. In this respect, perhaps the most significant lesson emerging from the Italian case is that the preservation of cultural heritage and the adoption of digital innovation are not opposing forces. Rather, they represent complementary elements of a broader process through which museums continue to adapt, remain relevant and create value for visitors, communities and society in an increasingly digital world.

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