Configuring Immersive Storytelling for Cultural Heritage Valorization: Insights from an Interpretive Socio-Technical Case Study

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Abstract

This study investigates how innovative firms operating at the intersection of technology and heritage combine immersive tools with narrative design to support heritage valorization while addressing interdisciplinary and institutional challenges. Moving beyond technology-centric approaches, the paper adopts a socio-technical lens to examine the interplay between digital infrastructures, storytelling, and organizational practices in developing immersive experiences.

Drawing on an in-depth qualitative single-case study, the research focuses on Cultura Immersiva, an Italian innovative start-up developing virtual reality solutions to enhance the accessibility and engagement of cultural and tourism heritage. The empirical analysis draws on in-depth interviews with the two founders, whose different but complementary profiles combine technical and artistic expertise, supported by extensive archival and media materials. Through an abductive and multilevel analytical approach, the study uses the case to unpack micro-processes, relational dynamics, and institutional negotiations that are often overlooked by dominant quantitative approaches.

The findings reveal that the effectiveness of virtual environments depends on a strategic logic that subordinates technological sophistication to narrative structuring and emotional pacing. Immersive storytelling acts as a key cognitive mediator, reducing symbolic distance for less engaged audiences and transforming the visitor

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experience into a more active and participatory process. The study also highlights the organizational complexity underlying these initiatives, showing how the interplay between engineering, artistic creation, storytelling, and historical expertise is continuously negotiated in practice. Finally, tensions related to authenticity and the "edutainment" paradox are addressed through relational and design choices that use emotional engagement as an attentional anchor, supporting institutional legitimacy and long-term viability.

Keywords: Immersive Technologies; Virtual Reality (VR); Experience Design; Institutional Logics; Cultural Entrepreneurship; Qualitative Case Study

Configurare lo storytelling immersivo per la valorizzazione del patrimonio culturale: uno studio di caso interpretativo in una prospettiva sociotecnica

Sommario

Questo studio esamina come le imprese innovative che operano all'intersezione tra tecnologia e patrimonio culturale combinino strumenti immersivi e *narrative design* per supportare la valorizzazione dei beni culturali, affrontando al contempo sfide interdisciplinari e istituzionali. Superando gli approcci tecnocentrici, l'articolo adotta una prospettiva socio-tecnica per esaminare l'interazione tra infrastrutture digitali, narrazione e pratiche organizzative nello sviluppo di esperienze immersive.

Basandosi su uno studio di caso singolo qualitativo e approfondito, la ricerca si concentra su Cultura Immersiva, una start-up innovativa italiana che sviluppa soluzioni di realtà virtuale per migliorare l'accessibilità e il coinvolgimento del patrimonio culturale e turistico. L'analisi empirica si avvale di interviste approfondite ai due fondatori, i cui profili differenti ma complementari uniscono competenze tecniche e artistiche, supportate da un ricco materiale d'archivio e mediatico. Attraverso un approccio analitico abduttivo e multilivello, lo studio utilizza il caso per sviscerare i micro-processi, le dinamiche relazionali e i negoziati istituzionali che vengono spesso trascurati dagli approcci quantitativi dominanti.

I risultati rivelano che l'efficacia degli ambienti virtuali dipende da una logica strategica che subordina la sofisticazione tecnologica alla strutturazione narrativa e al ritmo emotivo. Lo *storytelling* immersivo agisce come un mediatore cognitivo chiave, riducendo la distanza simbolica per i pubblici meno coinvolti e trasformando l'esperienza del visitatore in un processo più attivo e partecipativo. Lo studio evidenzia inoltre la complessità organizzativa alla base di queste iniziative, mostrando come l'interazione tra ingegneria, creazione artistica, comunicazione e competenze storiche venga continuamente negoziata nella pratica. Infine, le tensioni relative all'autenticità e al paradosso dell'*edutainment* vengono affrontate attraverso scelte relazionali e di *design* che utilizzano il coinvolgimento emotivo come àncora attenzionale, sostenendo la legittimità istituzionale e la redditività a lungo termine.

Parole chiave: Tecnologie Immersive; Realtà Virtuale (VR); Experience Design; Logiche Istituzionali; Imprenditorialità Culturale; Studio di Caso Qualitativo

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1. Introduction

Immersive technologies – including Virtual Reality (VR), Augmented Reality (AR), and Extended Reality (XR) – are increasingly recognized as influential drivers within the cultural and creative industries (CCIs). Their capacity to simulate environments, engage multiple sensory channels, and generate a sense of presence has attracted sustained scholarly attention across disciplines such as information systems, management, and heritage studies (Slater and Sanchez-Vives, 2016; Riva *et al*., 2019; Radianti *et al*., 2020). Early research in museum and heritage contexts largely emphasized their potential to enhance learning outcomes, increase visitor engagement, and introduce interactive modes of content delivery (Bekele *et al*., 2018; Trunfio *et al*., 2021).

More recent contributions, however, have problematized technology-centric perspectives, warning against forms of technological determinism that overlook the contextual and organizational conditions shaping digital innovation (Flavián *et al*., 2019; Dwivedi *et al*., 2022). Within this evolving debate, immersive technologies are increasingly conceptualized as socio-technical configurations embedded in broader cultural, institutional, and experiential systems (Wickert *et al*., 2021). From this standpoint, the effectiveness of immersive experiences cannot be reduced to their technical features; rather, it depends on how they are designed, interpreted, and integrated into specific cultural settings, often characterized by strong traditions and normative constraints.

Despite these advances, the management literature still provides limited insight into the concrete development and management of immersive projects within organizations. Existing studies offer robust conceptualizations of immersion as a multidimensional phenomenon – encompassing sensory, emotional, and cognitive engagement (Flavián *et al*., 2019; Buhalis *et al*., 2023) – yet they rarely address the practical integration of these dimensions. In particular, we still know relatively little about the coordination between technological development and narrative-experiential design, the management of diverse professional logics, and organizational responses to institutional pressures related to legitimacy and authenticity.

These gaps are particularly relevant in cultural heritage contexts, where the introduction of immersive technologies may generate tensions between innovation and conservation. Prior research has highlighted issues such as the risk of over-entertainment, the challenge of maintaining historical accuracy, and the ambivalent reception of digital tools by traditional stakeholders (Champion, 2021; Rickly-Boyd, 2013). At the same time, the growing emphasis on audience engagement and accessibility places additional demands

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on organizations to develop experiences that are both meaningful and inclusive. This creates a complex balancing act that remains underexplored from a processual and organizational perspective.

To address this gap, this study investigates how immersive technologies are operationally orchestrated within an innovative cultural venture, focusing on the interplay between design practices, interdisciplinary collaboration, and institutional dynamics. Rather than assessing outcomes in terms of user satisfaction or technological performance, the paper aims to unpack the underlying mechanisms through which immersive experiences are conceived, negotiated, and refined over time.

The study is guided by the following research question: How do innovative cultural firms organize and manage immersive technologies in ways that enable cultural valorization while addressing interdisciplinary and institutional challenges?

To answer this question, the research adopts an interpretive qualitative approach based on a single-case study of Cultura Immersiva. Founded in Italy in 2021 through the collaboration between CEO Stefano Rainone, a computer engineer, and Creative Director Andrea Carraro, with over 50 years of experience in theatre, the company provides a particularly suitable empirical setting to explore the integration of heterogeneous competencies from its very inception. Since its foundation, the organization has progressively expanded its activities throughout Italy, developing immersive experiences that combine cultural storytelling, technological infrastructures, and educational objectives.

The empirical analysis draws on primary data from in-depth, semi-structured interviews with both founders, complemented by a rich set of secondary materials, including project documentation, institutional communications, and publicly available sources. This triangulation enables a comprehensive understanding of how immersive experiences are planned and implemented within a real-world organizational context (Yin, 2014; Eisenhardt and Graebner, 2007).

The remainder of the paper is structured as follows. Section 2 develops the conceptual background, focusing on immersive experience design, narrative mediation, and institutional dynamics in cultural heritage. Section 3 outlines the methodological approach and Section 4 presents the empirical findings. Section 5 discusses the results in relation to existing literature. Section 6 elaborates theoretical, managerial, and methodological implications. Section 7 concludes and outlines directions for future research.

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2. Conceptual Background

2.1 Immersive Technologies as Socio-Technical and Experiential Configurations

Immersive technologies- including Virtual Reality (VR), Augmented Reality (AR), and Extended Reality (XR) – have become increasingly relevant within the cultural and creative industries due to their ability to reshape how cultural content is experienced and communicated. Early studies primarily emphasized their capacity to enhance engagement, interactivity, and learning outcomes (Bekele *et al*., 2018; Trunfio *et al*., 2021). More recent contributions, however, have progressively moved beyond technology-centric interpretations, highlighting the limitations of deterministic approaches that reduce immersive experiences to technical performance alone (Flavián *et al*., 2019; Dwivedi *et al*., 2022; Buhalis *et al*., 2023; Xi and Hamari, 2019).

Within this evolving perspective, immersive technologies are more appropriately understood as socio-technical and experiential configurations, whose effects depend on how they are embedded within broader organizational, cultural, and interpretive contexts (Wickert *et al*., 2021). Rather than generating value autonomously, these technologies require deliberate alignment with narrative structures, user expectations, and institutional settings. Consequently, immersion emerges not as an intrinsic property of the technology, but as a situated outcome shaped by design choices, contextual integration, and patterns of use.

This shift has progressively redirected attention from technological capabilities to the conditions under which immersive experiences become meaningful, highlighting the importance of examining how such configurations are concretely developed and enacted within cultural organizations.

2.2 Designing Immersion: Narrative Mediation, Experience Structuring, and Meaning-Making

A growing body of research conceptualizes immersion as a multidimensional and subjective phenomenon, encompassing sensory stimulation, cognitive processing, emotional engagement, and behavioral involvement (Flavián *et al*., 2019; Buhalis *et al*., 2023; Loureiro *et al*., 2020). This has led to increasing scholarly attention on the configuration of immersive experiences, focusing on how elements such as spatial environments, interactivity,

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temporal pacing, and multisensory cues contribute to shaping the user journey (Riva *et al*., 2019; Champion, 2021; Tussyadiah *et al*., 2018).

Within this perspective, narrative plays a central role. Immersive environments do not merely present information; they actively structure how that information is interpreted and experienced. Drawing on constructivist approaches, cultural consumption is increasingly understood as a process of meaning-making in which users engage with and reinterpret content through situated interaction (Falk and Dierking, 2016; Maitlis and Christianson, 2014). Narrative frameworks therefore function as cognitive and interpretive scaffolds, enabling users to transform fragmented sensory inputs into coherent cultural understanding (Green, 2021).

At the same time, immersive experiences require the careful alignment of multiple experiential dimension. Emotional engagement, accessibility, and interpretive depth must be combined in ways that sustain attention without compromising complexity. This is particularly relevant in cultural heritage contexts, where immersive experiences are expected not only to captivate audiences, but also to support knowledge transmission and cultural interpretation. Recent discussions increasingly point to the need for integrated approaches that connect storytelling, interaction, and technological implementation within unified experiential logics (tom Dieck and Jung, 2017; Neuhofer and Buhalis, 2014).

2.3 Institutional Logics and Organizational Challenges in Digital Heritage

The integration of immersive technologies into cultural heritage contexts introduces a range of structural tensions that extend beyond design considerations. One of the most prominent concerns relates to authenticity. Traditional heritage paradigms associate authenticity with materiality and direct encounters with artifacts, whereas immersive experiences rely on simulation, reconstruction, and interpretation, thereby challenging established curatorial assumptions (Guttentag, 2010; Rickly-Boyd, 2013; Shim *et al*., 2024).

At the same time, immersive technologies are widely regarded as tools for expanding cultural access and participation, enabling organizations to reach broader and more diverse audiences by reducing physical, cognitive, and social barriers (Styliani *et al*., 2009; Bonacini *et al*., 2022; Trunfio *et al*., 2021). This dual role generates an inherent tension between accessibility and rigor, as efforts to simplify and engage may risk flattening the complexity of cultural narratives.

These dynamics unfold within a context characterized by multiple, and

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sometimes competing, institutional logics. Cultural organizations are required to simultaneously preserve heritage, educate audiences, and remain attractive within increasingly competitive and experience-driven markets. This convergence gives rise to well-documented tensions, including the balance between educational depth and entertainment value (Zollo *et al*., 2023; Trunfio *et al*., 2021), as well as the broader challenge of reconciling innovation with established institutional norms and expectations (Lucchi, 2025; Wang and Ametefe, 2025).

In this context, immersive cultural initiatives are increasingly shaped also by the need to combine heterogeneous competencies – ranging from technological development and historical expertise to storytelling and communication – while navigating evolving expectations from both institutional and public stakeholders (Battilana and Lee, 2014; Khaire, 2017). Understanding how these elements are brought together in practice is therefore central to advancing knowledge on digital cultural innovation.

3. Methodology

This study adopts a qualitative single-case study design to explore how an innovative cultural venture organizes and manages immersive technologies within a complex interplay of design practices, interdisciplinary collaboration, and institutional constraints. This methodological approach is particularly suitable for investigating contemporary, context-dependent phenomena characterized by multiple interacting dimensions and evolving organizational processes (Yin, 2014; Eisenhardt and Graebner, 2007). In line with recent calls for more context-sensitive and process-oriented research in digital innovation (Reinecke *et al*., 2016; Gummesson, 2017), the study aims to generate in-depth insights into how immersive cultural experiences are concretely developed and sustained in practice.

The empirical setting is represented by Cultura Immersiva, an Italian innovative start-up operating at the intersection of virtual reality, cultural heritage, and experiential design. The empirical setting is represented by Cultura Immersiva, an Italian innovative start-up that develops virtual reality solutions for cultural and tourism valorization. Founded in 2021 in Palma Campania through the collaboration between Stefano Rainone, CEO and computer engineer, and Andrea Carraro, Creative Director and playwright with over 50 years of theatrical experience, the company represents a particularly relevant case for exploring the organizational and interpretive processes through which immersive experiences are developed and implemented.

The study follows an interpretive qualitative approach aimed at

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understanding how different knowledge domains – technological, narrative-experiential, and cultural – are combined within organizational practices. Consistent with interpretive research traditions, the objective is not statistical generalization but the development of theoretically meaningful insights grounded in a rich empirical context (Cornelissen, 2017; Alvesson and Sandberg, 2013).

Data collection relies on a multi-source qualitative strategy. Primary data consist of two in-depth, semi-structured narrative interviews conducted with the two founders. The interviews were designed to explore key dimensions such as the origins and vision of the company, the role of immersive technologies in cultural experiences, audience engagement and accessibility, organizational challenges, and future developments.

These primary data were complemented by an extensive set of secondary materials, including company documents, project descriptions, institutional communications, media articles, and publicly available content related to the startup's activities. Rather than being treated as mere background information, these sources were used to contextualize and enrich the empirical understanding of the case, supporting a more nuanced interpretation of organizational practices over time.

The analytical process followed an abductive logic, characterized by an iterative movement between empirical material and theoretical concepts (Dubois and Gadde, 2002). This approach enabled the progressive refinement of interpretive categories, without relying on predefined hypotheses. The analysis focused on identifying recurring patterns and underlying mechanisms related to the integration of technological development, narrative-experiential design, and organizational coordination within immersive cultural projects.

The single-case study allows for an in-depth and holistic examination of a complex and still-evolving phenomenon, where technological innovation, cultural production, and institutional dynamics intersect. Such an approach is particularly appropriate in contexts where standardized models and consolidated managerial practices have not yet fully emerged, making exploratory and theory-building research especially valuable.

4. Findings

Cultura Immersiva is an Italian innovative technological start-up established with the aim of enhancing the country's cultural and tourist heritage through new technologies, with a specific focus on virtual reality. The initiative was supported in its early stages by regional public funding (Campania

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Startup 2020), which enabled the development of initial experiential prototypes, and was later recognized at the European level among the top 5 innovative projects in the field of cultural fruition.

From its early stages, the company positioned itself not simply as a technology provider, but as a partner for cultural communication, developing VR solutions such as interactive 3D reconstructions, immersive docu-films, virtual tours, and site-specific installations. These experiences are conceived to translate historical, artistic, and territorial content into accessible and engaging formats, often targeting audiences that are traditionally less involved in cultural consumption.

The operational model combines content production, technological implementation, and on-site event organization, allowing the company to directly manage the full experience cycle – from concept development to public delivery. This approach has enabled the diffusion of immersive initiatives across a wide range of contexts, including museums, schools, local events, and temporary installations, reaching audiences throughout the Italian territory. Public engagement is structured through modular sessions that ensure a continuous flow of visitors, often attracting family-based audiences and generating high levels of participation during weekend events.

Over time, the company has developed a portfolio of experiences spanning cultural heritage, art, and educational content. Notable examples include virtual reconstructions of archaeological sites such as ancient Pompeii, immersive reinterpretations of iconic artworks, and exploratory environments that combine scientific and narrative elements.

The cross-sector scalability of this operational model is validated by its expansion into commercial, performative, and socio-therapeutic settings documented across prominent regional and national media outlets. At its core, the venture is driven by a clear mission articulated by the CEO:

> "Cultura Immersiva was born from the idea of making cultural heritage more accessible, engaging, and emotionally memorable through immersive technologies. We identified a limitation in traditional forms of cultural consumption: content often appears static, distant from younger generations, and not very interactive. Our goal was to transform the visitor from a simple observer into an active participant".

This foundational orientation toward accessibility and experiential transformation underpins all subsequent strategic and design choices.

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4.1 Designing Immersion: Invisible Technology and Experiential Accessibility

A first key finding concerns the way Cultura Immersiva conceptualizes and operationalizes immersive design. The empirical evidence shows that VR is not treated as a technological endpoint, but as a mediating infrastructure that must remain perceptually "invisible" while enabling deeper forms of cultural access.

Rainone explicitly emphasizes this principle: "The technology must remain invisible; it must serve the content, not become the focus of attention".

This design philosophy translates into a content-first development process in which storytelling, historical reconstruction, spatial sound, and narrative rhythm precede technical implementation. The immersive environment is therefore constructed as a coherent experiential system in which multiple sensory layers converge to produce emotional and cognitive engagement.

From Carraro's perspective, this process is even more deeply rooted in artistic and theatrical logics: "I always start from color, then I move to the word, and from the word to space".

This sequence reflects a dramaturgical approach to immersion, where meaning emerges progressively through aesthetic composition and spatialization. The immersive environment becomes analogous to a stage, where the user is not merely positioned in front of the artwork but is enveloped within a dynamically constructed sensory field. This explicit theatrical framing translates directly into practice through structural collaborations in staging contemporary performative arts, as evidenced by the firm's projects at the Teatro Ghirelli, where the traditional boundaries between acting, physical scenic spaces, and digital innovation are dissolved to turn artistic visions into lived user experiences (*la Repubblica*, 2023).

Importantly, this approach also enhances accessibility. By translating complex historical and cultural content into intuitive, sensorially rich experiences, immersive design reduces the cognitive and symbolic barriers traditionally associated with cultural institutions. As the engineer notes:

> "VR reduces the psychological distance between the individual and the cultural content. It is exceptionally effective at reaching younger demographics and students who typically avoid traditional museums. When they put on the headset, we see instant reactions of wonder and surprise, which immediately translates into prolonged attention spans and genuine curiosity".

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Accessibility here is not limited to physical reach (e.g., remote access or mobility constraints), but extends to interpretive accessibility-making culture understandable, emotionally resonant, and meaningful for diverse audiences, including those with limited prior cultural capital. Crucially, evidence from secondary sources integrated with the interview data shows that this inclusive mandate extends beyond standard educational activities into more advanced socio-therapeutic and digital health applications. In this context, the company has deployed immersive environments to enable heavily hospitalized pediatric patients, isolated by severe medical conditions, to temporarily overcome physical constraints and collectively experience high-profile real-time events (Medolla, 2022).

4.2 From Spectatorship to Co-Creation: User Interpretation, "Proposals" and Experiential Agency

Building on this design logic, the findings reveal a transformation in the role of the user, who increasingly shifts from passive recipient to active interpreter and, in some cases, co-creator of the experience.

Rainone describes this transition clearly: "We wanted to allow people to 'enter' history… transforming them from simple observers into active participants".

This transformation is not only behavioral but also epistemological: users do not simply consume content, but actively construct meaning through interaction, exploration, and emotional engagement. The immersive environment fosters what can be interpreted as a situated and embodied form of cultural understanding.

Carraro's reflections add a crucial nuance to this process, highlighting both its potential and its limits. He notes that user reactions are often dominated by immediate emotional responses: "I would say that the main reaction is wonder, amazement. But if you ask whether this is followed by a deeper reasoning process leading to conclusions, not really-people tend to stop at that sense of wonder. Beyond that, however, in some cases a second phase emerges, where people start making proposals".

This observation highlights a key tension between immediate emotional engagement and deeper cognitive processing. While immersive experiences effectively capture attention through wonder, they do not automatically translate into reflective understanding; at the same time, they can, under certain conditions, trigger a more active and generative form of engagement, where users move beyond passive reception and begin to articulate ideas about the experience. These "proposals" represent an advanced stage of

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engagement, where users attempt to extend, reinterpret, or even reshape the experience itself. While many of these suggestions are technically unfeasible, their very emergence signals a shift toward participatory cultural consumption.

This dynamic introduces a productive tension. On the one hand, immersive experiences stimulate imagination and user agency; on the other, they generate expectations that cannot always be operationalized. Rather than being interpreted as a limitation, this gap can be understood as an indicator of deep engagement and cognitive activation.

At the same time, both founders acknowledge persistent challenges in interpretability. Carraro points out that immersive culture is often difficult to grasp in advance, while once users experience it, they tend to reinterpret and explain it in their own terms. This highlights a paradox: immersive experiences are intuitively powerful but conceptually difficult to communicate ex ante. The user journey therefore involves not only participation but also a process of sensemaking that unfolds during and after the experience.

4.3 Interdisciplinarity as a Generative Tension: Creativity, Technology, and Organizational Practice

A third major finding concerns the deeply interdisciplinary nature of the venture and the organizational tensions it generates. Cultura Immersiva operates at the intersection of technological development, artistic creation, historical research, and experiential design, requiring the integration of heterogeneous competences.

This hybridity is embodied in the relationship between the two founders. Carraro reflects on this complementarity: “I am more ‘analogical’, Stefano is more ‘digital’. We respect each other’s worlds”.

He further emphasizes the generative nature of this difference, noting that ideas initially perceived as unrealistic from a creative standpoint are often translated into feasible solutions through technical expertise. This interplay between creative exploration and technical feasibility constitutes a core organizational mechanism. Innovation emerges not from linear processes, but from iterative negotiation between imagination and constraint.

Rainone, in turn, highlights the managerial complexity of orchestrating these diverse domains: “One of our greatest managerial challenges is navigating pure interdisciplinarity. Forcing technological innovation, absolute historical rigor, user-experience design, and financial sustainability to live under the same roof requires constant organizational adaptation. It is a continuous balancing act”.

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The findings suggest that interdisciplinarity is not simply a resource but a continuous source of friction that requires active management. Yet, it is precisely this friction that enables the development of novel experiential formats.

Carraro extends this argument to an intergenerational dimension: “From the combination of consolidated knowledge of older generations and the faster, more immediate knowledge of younger ones, only positive effects can emerge”.

This insight reframes interdisciplinarity as both cognitive and temporal, linking different epistemologies, professional cultures, and generational perspectives.

4.4 Authenticity, Institutional Frictions, and the Boundaries of Creative Freedom

Another central theme concerns the tension between creative exploration and historical authenticity, particularly in relation to institutional expectations.

While immersive technologies allow for high degrees of imaginative reconstruction, both founders stress the importance of maintaining fidelity to historical sources. Rainone underlines the need to: “simplify highly complex, layered cultural narratives without diluting their historical rigor or academic validity”.

In this framework, immersive storytelling operates as a crucial cognitive mediator. By translating complex, abstract cultural knowledge into an intuitive, emotionally resonant sensory journey, the firm lowers the cognitive barriers to entry without falling into the trap of over-simplification.

This principle reflects an effort to balance accessibility with epistemic rigor.

The empirical material also points to concrete situations where this balance imposes constraints on creative freedom. As reported in the fieldwork, the team chose to abandon a 3D reconstruction project because certain visual elements, while narratively effective, could not be supported by historical evidence. This decision illustrates how authenticity operates as a boundary condition for immersive design.

Institutional relationships further complicate this balance. Early interactions with cultural stakeholders were characterized by skepticism, as VR was often perceived as overly playful or lacking seriousness. Over time, however, growing evidence of audience engagement has contributed to greater openness.

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Carraro captures the ambivalence of these dynamics: “Either people reject it completely, or, if they accept it, they become very open”.

This polarization suggests that immersive technologies do not simply integrate into existing cultural frameworks but actively challenge them, forcing institutions to renegotiate their assumptions about knowledge transmission and audience engagement. To overcome this structural friction and establish external institutional legitimacy, the firm relies heavily on building a collaborative ecosystem. Partnerships with schools, universities, municipal administrations, and traditional museum curators are utilized not just as distribution channels, but as vital mechanisms to co-develop content and secure cross-sector institutional backing. The definitive consolidation of this external institutional legitimacy is signaled by the start-up inclusion in highly conservative and authoritative spaces; its innovative projects have been prominently featured and endorsed within the official press organs of the Vatican at Piazza San Pietro, where the firm's immersive formats were legitimized as profound vehicles for universal humanistic and ethical messaging (*Piazza San Pietro Magazine*, 2026).

4.5 Between Predictive Adaptation and Human Unpredictability: The Ambivalent Role of AI and Speed

The final set of findings concerns the future trajectory of immersive cultural experiences, particularly in relation to artificial intelligence and the broader acceleration of cultural consumption.

Rainone envisions a shift toward adaptive and personalized experiences:

> “We are witnessing a transition toward an entirely participatory, personalized, and adaptive model of cultural consumption. Integrated with VR and AR, Artificial Intelligence will radically transform how we learn and live cultural heritage, allowing us to create dynamic, responsive content in real time according to the user's feedback”.

According to the CEO, the convergence of AI and VR will fundamentally reconfigure heritage communication by shifting the paradigm from standardized group experiences to hyper-personalized, real-time cultural journeys. Rather than interacting with fixed narrative scripts, future immersive applications will dynamically adjust their educational depth, language, and sensory stimuli based on real-time user behavior.

Furthermore, the data indicates that this predictive shift is essential for overcoming contemporary market barriers, such as high initial setup costs

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and institutional resistance. By demonstrating that AI-driven immersive ecosystems can offer scalable, long-term educational impact rather than short-lived entertainment, the startup aims to redefine the financial and strategic viability of digital innovation for public administrations and private cultural entities alike. This strategic search for systemic scalability and financial viability is reflected in the venture's ability to mobilize large-scale institutional funding, such as the European Regional Development Fund (FESR), to deploy temporary digital heritage ecosystems directly inside unconventional, high-traffic mass commercial environments like the Renzo Piano-designed Vulcano Buono complex (*Il Meridiano*, 2022).

Carraro, however, introduces a more critical and reflective stance, expressing skepticism about the capacity of AI to capture the nuances of artistic experience. As he notes,

"AI is an algorithm… I struggle to believe it can deal with intuition, irony, or subtle variations".

ultimately positioning it as almost antithetical to the sense of wonder that characterizes cultural experience.

This contrast reveals a fundamental tension between predictability and unpredictability. While AI enables efficiency and adaptation, it risks reducing the open-ended, surprising, and interpretive nature of cultural engagement.

A similar ambivalence emerges around the role of speed. Carraro observes that contemporary cultural models are increasingly shaped by acceleration and time optimization, yet he simultaneously questions this trajectory, suggesting that technological advancement should also create space for slower, more reflective forms of engagement.

This reflection introduces an important counterpoint to dominant narratives of digital acceleration. Immersive technologies, while often associated with speed and innovation, may also enable moments of deeper engagement, contemplation, and "productive slowness".

Finally, Carraro highlights the fundamental unpredictability of human experience: "At the end of the day, everything is based on the human being, and the human being is not predictable".

This insight ultimately reframes the entire discussion: immersive cultural innovation cannot be fully engineered or anticipated, as it remains deeply entangled with human interpretation, emotion, and variability.

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5. Discussion

The empirical evidence analyzed in this study provides a process-oriented, socio-technical framework that shifts the analytical lens from what immersive technology is to how its underlying, multi-vocal organizational routines are balanced and institutionally legitimized (Reinecke *et al*., 2016; Wickert *et al*., 2021). While traditional quantitative and experimental research has heavily evaluated extended reality in heritage settings through isolated, hardware-centric user-testing metrics – such as tracking accuracy, interface usability, or immediate retention scores (Bekele *et al*., 2018; Radianti *et al*., 2020) – this qualitative inquiry unpacks the hidden socio-technical dynamics, intergenerational negotiations, and systemic paradoxes that characterize the long-term implementation of immersive creative media.

A first interpretive contribution concerns the reconceptualization of digital immersion as a situated process of experiential orchestration. Current management literature frequently frames immersion as an automatic byproduct of high hardware affordances, assuming that sensory vividness, field of view, or spatial interactivity mechanically trigger psychological presence (Slater and Sanchez-Vives, 2016; Riva *et al*., 2019). Our findings challenge this technological determinism, showing that within creative ecosystems, digital infrastructure must remain deliberately "invisible," serving as a transparent scaffold for narrative pacing. By integrating a dramaturgical sequence – where visual composition, text, and spatialization precede technical implementation – the case demonstrates that immersion is fundamentally an aesthetic and interpretive practice. This directly extends contemporary multidimensional models of experience design (Flavián *et al*., 2019; Buhalis *et al*., 2023), proving that digital value emerges when technology is subordinated to a content-first strategic logic, transforming virtual space into a dynamic interpretive arena. This dramaturgical realignment is empirically manifested in the integration of XR with analog performing arts (*la Repubblica*, 2023), proving that the design rules of successful virtual experiences borrow heavily from historical theatrical structures rather than pure software programming logics.

This content-driven architecture updates constructivist heritage communication and audience development theories (Styliani *et al*., 2009; Falk and Dierking, 2016; Bonacini *et al*., 2022). While previous studies primarily define VR accessibility in terms of overcoming physical, geographical, or mobility barriers (Bekele *et al*., 2018), this study suggests that its most significant organizational impact lies in dismantling cognitive and symbolic distance. By translating complex historical knowledge into intuitive and sensorially rich environments, immersive experiences make cultural content more

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approachable without requiring extensive prior knowledge. Meaning-making is therefore not delivered top-down by the institution; rather, it is co-created through the visitor's situated interaction within the virtual narrative. This reconfigures traditional, passive consumption models (Pine and Gilmore, 1999; Carù and Cova, 2007), transforming historical observation into agentic participation. At the same time, evidence from complementary secondary sources suggests that these experiences may extend beyond conventional cultural settings, for instance in initiatives involving vulnerable audiences, where immersive environments can temporarily alleviate physical and contextual constraints (Medolla, 2022).

However, our findings add a crucial nuance to experience economy frameworks by revealing that participation is not a fully controllable managerial process, but a generative dynamic that produces an "interpretive surplus". When users shift from spectators to active interpreters, their engagement often culminates in spontaneous, unsolicited "proposals" that exceed the technical and operational boundaries of the designed simulation. This indicates that digital co-creation inherently triggers an imaginative overflow. Rather than viewing this gap between user expectation and technical feasibility as an operational failure, it must be theorized as a clear indicator of deep cognitive activation, requiring organizations to develop selective filtering mechanisms to manage participatory boundaries.

Furthermore, this study contributes to the literature on hybrid organizational forms and cultural entrepreneurship (Battilana and Lee, 2014; Khaire, 2017) by mapping how digital ventures navigate the competing institutional logics of preservation, rigor, and commercial entertainment (Guttentag, 2010; Rickly-Boyd, 2013). Prior research often conceptualizes the introduction of digital simulation as an unresolvable paradox where innovation inherently dilutes historical authenticity (Champion, 2021; Trunfio *et al*., 2021). Our qualitative inquiry reframes this tension, demonstrating that authenticity is a situated organizational practice constructed through iterative ethical boundaries. The decision to abandon digital reconstructions when visual components lack empirical backing proves that authenticity operates as a strict boundary condition. The apparent friction between education and entertainment is bridged by deploying emotional engagement instrumentally as an attentional anchor to capture diverse demographics, securing external institutional legitimacy through a collaborative ecosystem of universities, schools, and traditional curators. Evidence from secondary sources further shows how these immersive formats are implemented not only within museums and heritage sites, but also in more accessible public and commercial environments, broadening audience reach, while simultaneously gaining recognition within traditionally conservative institutional settings (*Il*

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Meridiano, 2022; *Piazza San Pietro Magazine*, 2026). This suggests that legitimacy is strengthened when technology is aligned with cultural values rather than treated as a mere novelty. This hybridity is internally sustained by an ongoing, generative friction between divergent professional epistemologies. The continuous negotiation between "analog" artistic direction and "digital" software engineering represents an essential creative mechanism where innovation emerges from the productive clash between imagination and technical constraint. By incorporating an intergenerational dimension - linking consolidated traditional expertise with rapid, digital-native cognitive models – the study reframes organizational interdisciplinarity as a temporal and cognitive resource that prevents both academic insularity and shallow technological consumerism.

Finally, the findings challenge linear assumptions regarding digital acceleration and environmental volatility within smart tourism and metaverse domains (Flavián *et al*., 2019; Dwivedi *et al*., 2022). While digital transformations are commonly associated with velocity, immediacy, and automated personalization, the case uncovers a deeply ambivalent socio-technical future. The strategic push toward algorithmic, AI-driven real-time adaptation stands in direct tension with the core human properties of the cultural experience, such as intuition, irony, and wonder. While predictive algorithms aim to standardize or certify the user journey, true cultural immersion relies on open-ended surprise and unpredictable human interpretation. This duality foregrounds the epistemic limits of algorithmic mediation in creative contexts. Immersive environments thus emerge as relational spaces where technological acceleration must coexist with moments of deliberate slowing down, allowing users time for reflection, interpretation, and emotional processing. In this sense, long-term strategic viability depends on the organization's ability to preserve these spaces for open-ended, non-linear engagement alongside rapid technological development.

6. Theoretical, managerial, and methodological implications

6.1 Theoretical Implications

This study contributes to ongoing debates on immersive technologies by shifting the analytical focus from technological affordances to the organizational and interpretive processes through which immersive cultural experiences are developed and sustained. While recent literature on XR, metaverse environments, and digital experiences conceptualizes immersion as a multidimensional construct encompassing sensory, cognitive, emotional, and

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social dimensions (Flavián *et al*., 2019; Dwivedi *et al*., 2022; Buhalis *et al*., 2023), the findings show that these dimensions do not emerge automatically from technological infrastructures. Rather, they are actively produced through situated design practices, narrative configurations, and organizational coordination.

A first contribution lies in advancing the understanding of immersion as a structurally constructed experiential process. Prior studies have largely emphasized presence, interactivity, and technological intensity as key drivers of immersive engagement (Slater and Sanchez-Vives, 2016; Riva *et al*., 2019). This study instead highlights how immersive value depends on the alignment between narrative development, spatial composition, emotional pacing, and user involvement. In this sense, technology operates less as a driver of experience and more as an enabling layer whose effectiveness depends on its integration within a broader experiential architecture. This perspective enriches research on experience design and digital experience ecosystems (Lemon and Verhoef, 2016; Flavián *et al*., 2019) by emphasizing the organizational work required to produce coherence across heterogeneous experiential elements.

Second, the study contributes to the literature on meaning-making in immersive environments by clarifying the role of narrative mediation. While previous research has questioned whether immersion necessarily leads to deeper understanding (Bekele *et al*., 2018; Champion, 2021), the findings indicate that comprehension emerges through interpretive structures that guide user attention and frame the experience. Immersive storytelling thus functions as a translation mechanism between expert knowledge and user experience, extending constructivist perspectives on sensemaking and cultural interpretation (Falk and Dierking, 2016; Maitlis and Christianson, 2014).

Third, the findings refine existing debates on authenticity in digital heritage contexts. Rather than treating authenticity as a fixed attribute anchored in materiality, the study conceptualizes it as a negotiated and practice-based outcome shaped through ongoing design decisions and institutional interactions. This aligns with relational and constructivist interpretations of authenticity (Rickly-Boyd, 2013), while showing how organizations establish boundaries to preserve historical credibility without renouncing experiential engagement.

Fourth, the study contributes to research on cultural consumption and audience participation by highlighting the generative nature of user involvement in immersive environments. Participation is not limited to predefined interaction patterns but often produces emergent interpretations and expectations that extend beyond the designed experience. This suggests that

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immersive environments activate forms of engagement that are only partially controllable, calling for a reconceptualization of co-creation as an open-ended and bounded process.

Finally, the study extends the literature on digital innovation and socio-technical change by addressing the evolving role of Artificial Intelligence in immersive environments. While existing research emphasizes personalization and real-time adaptation (Dwivedi *et al*., 2022), the findings reveal a tension between algorithmic predictability and the inherently open-ended nature of cultural experience. This highlights the need to conceptualize immersive systems as dynamic configurations in which technological advancement must be continuously balanced with the preservation of interpretive openness and human agency.

6.2 Managerial Implications

The findings of this study offer several practical insights for practitioners operating in cultural institutions, creative industries, and digital innovation contexts, highlighting first and foremost that immersive technologies should be approached as strategic tools for cultural communication rather than as standalone technological solutions. Because the ultimate effectiveness of virtual reality experiences depends heavily on their deep integration with storytelling, emotional design, and user-centered interaction, organizations investing in these digital environments must prioritize narrative coherence and experiential quality over technological sophistication alone. To achieve this, it is critical that the underlying hardware remains strategically secondary to the cultural content, serving as an invisible vehicle for meaning-making rather than a short-lived attraction.

In operational terms, the results emphasize the absolute importance of developing robust interdisciplinary capabilities. Constructing immersive cultural experiences requires the continuous coordination of deeply diverse and often conflicting competencies, including technological expertise, cultural knowledge, storytelling, and experience design. This operational complexity suggests that organizations should move past traditional functional silos and adopt collaborative, cross-functional approaches, while actively investing in systematic skill development and cross-sector partnerships to manage the internal frictions typical of hybrid socio-technical ventures.

This interdisciplinary integration becomes particularly powerful when addressing accessibility and audience development strategies. Immersive technologies can support the concrete engagement of new and previously underrepresented audiences, reducing both the cognitive and symbolic

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distance that often alienates younger generations and less frequent visitors from traditional spaces. By leveraging immersive experiences, cultural organizations can effectively broaden participation, enhance social inclusivity, and foster prolonged, post-experience engagement and curious learning long after the digital simulation has concluded.

At the same time, the findings underline the crucial managerial requirement of actively balancing the persistent tensions between authenticity, innovation, and entertainment. Cultural organizations adopting immersive applications need to maintain a careful and constant equilibrium between preserving absolute academic or historical rigor and enhancing emotional engagement. Navigating this "edutainment" paradox successfully requires not only sophisticated design capabilities but also effective communication and relational strategies to legitimize immersive approaches among conservative institutional stakeholders, positioning emotional entertainment instrumentally as an attentional anchor rather than a commercial end.

Finally, managing these strategic dimensions demands that practitioners address environmental volatility by designing digital portfolios with long-term adaptability and scalability in mind. To counter high initial adoption costs and rapid technological obsolescence, managers must prepare their organizational frameworks for the upcoming integration of Artificial Intelligence. Transitioning from static, pre-programmed virtual assets toward hyper-personalized, adaptive environments that respond to user behavior in real time allows ventures to realign creative practices with shifting technological frontiers. By focusing on dynamic, AI-driven socio-technical systems, managers can secure long-term cross-sector backing and deliver a sustainable educational impact that justifies the initial capital investment for both public and private stakeholders.

6.3 Methodological Implications

Our study offers critical contributions directly relevant to the debate on the exploratory power of qualitative inquiry in management research. First, it demonstrates how a single-case design functions as an epistemological probe capable of unpacking non-linear, multi-level processes that quantitative metrics systematically flattens (Yin, 2014; Eisenhardt and Graebner, 2007). While quantitative surveys can effectively measure the outcomes of digital immersion (e.g., user satisfaction or perceived usefulness), they remain blind to the micro-foundations of experience orchestration – such as the relational tensions between technical engineers and artistic directors during the design phase.

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Second, by adopting an abductive iterative logic, this research challenges the rigid boundaries of deductive theory-testing. The single-case design allowed us to confront empirical surprises – such as initial institutional resistance from heritage curators – and use them to refine institutional logic theories in real-time. This confirms that the case method is not merely a descriptive tool, but a highly generative approach for context-sensitive theory building in fast-paced, high-density innovative ecosystems (Dubois and Gadde, 2002; Cornelissen, 2017).

Third, the study demonstrates the importance of designing interviews that are not merely descriptive but explicitly oriented toward uncovering mechanisms, processes, and managerial logics. The semi-structured interview used in this research enabled the reconstruction of strategic decisions, experiential design practices, and organizational challenges, thereby generating rich and analytically relevant data. This approach aligns with calls for greater rigor and reflexivity in qualitative research design (Alvesson and Sandberg, 2013).

Fourth, the case highlights the importance of integrating multiple levels of analysis within qualitative research. The findings simultaneously address micro-level experiential dynamics (user engagement), meso-level organizational processes (capabilities and design practices), and macro-level institutional dynamics (legitimacy and adoption of immersive technologies). This multi-level perspective strengthens the explanatory power of case study research and enhances its contribution to theory building.

Finally, the study provides an example of how single-case research can contribute to broader theoretical debates when the case is selected for its revelatory and exploratory potential. Rather than aiming for statistical generalization, the research demonstrates analytical generalization by identifying mechanisms and conceptual patterns that may be transferable to similar contexts (Yin, 2014). This reinforces the legitimacy of case study methodology as a rigorous and valuable approach for advancing management research, particularly in contexts characterized by innovation, complexity, and rapid change.

7. Conclusions, Limitations, and Future Research

This study has investigated how innovative cultural ventures operationally orchestrate immersive technologies to drive cultural heritage valorization while navigating interdisciplinary frictions and institutional legitimacy demands. By unpacking the single case of Cultura Immersiva, this paper moves past hardware-centric views of digital simulation. Instead, the empirical evidence frames these digital interventions as complex socio-technical

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phenomena where technological features must remain secondary and hidden behind a rigorous narrative infrastructure. Immersive storytelling serves as a vital cognitive scaffold that translates abstract historical knowledge into highly intuitive, emotionally resonant user experiences. This operational alignment successfully lowers both cognitive and symbolic barriers to entry for younger generations and historically alienated visitors, shifting the paradigm of cultural consumption from static observation toward agentic, participatory co-creation.

Furthermore, this qualitative inquiry reveals that digital cultural entrepreneurship requires managing deep internal and external systemic tensions. Forcing tech engineers, historical experts, and artistic directors to collaborate introduces permanent organizational frictions that demand continuous relational coordination and cross-functional hybridity. Externally, the persistent friction between preservation, material authenticity, and entertainment is mitigated by utilizing emotional engagement strictly as an attentional anchor rather than a commercial end, securing cross-sector institutional backing through collaborative multi-actor ecosystems. Finally, the empirical data highlights an evolutionary transition where the convergence of Artificial Intelligence and extended reality redefines the viability of these projects. By moving from static, pre-programmed installations toward adaptive systems capable of personalization based on real-time feedback, digital ventures develop the dynamic capabilities needed to withstand rapid technological obsolescence and high initial market barriers.

Despite these insights, several boundaries condition the empirical scope of this investigation. Because the qualitative framework relies on a single-case design within the Italian creative industry, the analytical generalization of the findings to different geographical or regulatory settings remains constrained. The specific reliance on public-private partnerships and local municipal support observed in this context might reflect regional institutional architectures that do not directly translate to different national cultural regimes. Additionally, while the primary narrative interview with the co-founders was systematically triangulated with an extensive corpus of archival data, the findings inevitably prioritize a strategic, founder-centric perspective. This perspective limits the direct inclusion of employee-level dynamics or real-time visitor behaviors. Lastly, since the startup's operational shift toward adaptive, AI-driven media models represents a recent and still unfolding phenomenon, tracking the long-term economic performance and institutional stabilization of this technological convergence was beyond the temporal reach of this inquiry.

These boundaries offer fruitful pathways for expanding the conversation within future creative industries and management research. Scholars are

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encouraged to implement comparative multiple-case designs across contrasting national settings to examine how divergent public funding mechanisms and curatorial traditions shape the negotiation of institutional logics. There is also an urgent need to empirically explore the workflow reconfigurations triggered by the integration of Artificial Intelligence in digital curation. Investigating how multidisciplinary teams preserve historical accuracy and curatorial authority when automated algorithms dynamically alter sensory stimuli based on visitor tracking will significantly advance experience ecosystem theories. Finally, future qualitative designs should explicitly incorporate a multi-stakeholder lens by gathering primary data from traditional museum curators, public administrators, and final users simultaneously. Such multi-level field studies will provide a balanced understanding of how value, credibility, and socio-cultural accessibility are continuously co-created and legitimized within evolving socio-technical assemblages.

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