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Co-production in Digital Cultural Heritage: Bridging Communication, Community, and Sustainability

Beatrice Meo[1](b.meo@lumsa.it), Camilla Falivena[1], Alessandro Giosi[1], Virginia Mondello[1]
[1]Department of Human Science, LUMSA University of Rome

Abstract

*Co-production has become crucial for Digital Cultural Heritage [WSB21], based on stakeholder participation and redesign of traditional approaches [CHE*21]. The study aims to understand the use of digital strategies to foster co-production in the management of cultural heritage. Furthermore, it explores the consistency of such a management of cultural heritage with sustainability standards and the associated impact from the citizens' and public decision-makers' perspectives. To that end, a multiple case study analysis on three Italian case studies was conducted: Via Francigena, Via degli Dei, and I Borghi più Belli d'Italia. Findings highlight a strong alignment between co-production and public value theories. The cases show how collaboration is not incidental but rather the foundation of these projects 'success: citizens and local stakeholders perceive themselves as partners in the heritage initiatives. All cases also developed governance arrangements that facilitate collaboration across organizational and jurisdictional boundaries, enabling the co-production.*

CCS Concepts
· Network → Data Communication; · Information System → World Wide Web

1.Introduction

In accordance with recommendations from European Commission, local and heritage communities are required to foster community ownership and local participation [Ec19].

In such a scenario, co-production in Digital Cultural Heritage has emerged as an essential paradigm for transforming traditional heritage management [CHE*21; LBT19]. Scholars have defined digital co-production as a collaborative process whereby service providers and users engage through digital tools to create enriched, user-centric heritage experiences [BA25; MBE16].

This approach essentially changes the relationship between heritage institutions, tourists, and local communities by incorporating user-generated content, interactive digital platforms, and tools that promote participatory heritage preservation and promotion [Gia21]. By leveraging digital tools, heritage communities can boost inclusivity, allowing diverse community stakeholders to actively build and describe their heritage narratives, to support a deeper connection to heritage sites [PT24].

However, effective digital co-production requires respect for clear ethical guidelines and well-defined standards to mitigate challenges such as digital divides and superficial engagement risks [MWS22]. The ultimate aftermaths of digital, such as accessibility, usability, and sustainability, are also aligned with those proposed by the Global Sustainable Tourism Council, promoting genuine participation and sustained engagement [MC24].

Moreover, in heritage contexts, successful digital co-production initiatives often use intuitive interfaces, visual storytelling, and gamification elements to develop user experience and engagement [Web24]. Such initiatives not only improve the tourist experience but also strengthen community connections, driving local economic benefits and social cohesion.

As a result, the value produced by digital co-production in heritage management extends beyond just economic metrics to cover experiential, cultural, and community-driven values, encouraging more dynamic heritage sites [Pio24].

From a digital perspective, co-production facilitates learning and knowledge exchange, empowering citizens, policymakers, and administrators with deeper insights into heritage values and sustainability practices.

Despite growing interest in digital co-production for cultural heritage [BH09], there remains a notable research gap at the intersection of co-production, sustainable tourism, and public value outcomes [XSC25; PG15]. Prior studies have largely examined co-production in public services or focused on digital innovation in tourism separately, with fewer works addressing how digital co-production initiatives in heritage tourism align with sustainability standards and deliver broad public value [YWC*22; PG15].

This paper addresses that gap by examining three Italian cultural tourism initiatives that explicitly incorporate co-production and digital strategies.

Therefore, our research questions are:

RQ1: How are digital strategies used to facilitate co-production in cultural heritage management?

RQ2: How do these co-produced initiatives align with sustainable tourism standards and create value for stakeholders?

In pursuit of these questions, we investigate how digital platforms and community engagement practices are employed in each case, and we evaluate their consistency with recognized sustainability criteria and public value outcomes.

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2. Background

Co-production in public management refers to individuals from different organizations jointly designing or producing services, representing a driver for innovation that can amplify public value [EM21]. It aims to create public value by integrating the knowledge, skills, and energy of citizens and administrators [JS20]. Engaging users and communities can boost outcomes such as service quality and social outcomes [BL12]. This linkage of co-production with public value theory implies that when stakeholders participate in service design or delivery, the outcomes are more likely to reflect collective values and generate broader benefits for society. In the context of cultural digital heritage co-production often takes the form of co-creation of content, knowledge, or decision-making. Here, citizens, experts, and administrators collaboratively design digital archives, virtual exhibits, or plans [CHE*21; LBT19], conceived as a sustainable and significant bottom-up methodology well-suited to heritage governance [GO21].

Co-production in digital cultural heritage thus serves as a mechanism to create public value: it not only yields better heritage experiences for users but also builds social capital and shared responsibility for preserving cultural assets [EM21].

In Italy, many cultural sites are embracing these principles with volunteer associations, local governments, and users, co-producing route maintenance, and visitor services [FPS23].

Likewise, the network of I Borghi più belli d'Italia involves local communities in curating and promoting their heritage towns. Therefore, the expansion of digital technologies in the cultural sector has fundamentally increased active stakeholder participation. In the heritage domain, this translates into practices like crowdsourcing of cultural data, participatory mapping of heritage sites, virtual museum curation by the public, and interactive storytelling leading to a greater sense of ownership and relevance [CWA*22]. Modern e-government and digital heritage strategies increasingly adopt user-centric and co-creation principles, recognizing that technology can facilitate citizen involvement in service design and delivery [EM21].

As underlined by European Commission (2019), this sense of community ownership is critical in cultural heritage, as it can deepen stakeholders' emotional connection to the site or traditional practices. The Global Sustainable Tourism Council (GSTC), also emphasizes these dimensions in the guidelines and support the possibility of engaging local communities in planning decision-making and safeguarding cultural heritage as key pillars of sustainability [GO21]. Engaging stakeholders is not only a social goal, but a means to ensure that economic benefits and community well-being, preservation of cultural and environmental resources are balanced [FPS23].

From the perspective of public value theory, these digitally mediated interactions contribute to outcomes like greater cultural awareness, learning opportunities, and inclusive governance. Surveys of digital public service projects in Europe find that the main outcomes sought are better quality services and insight into user needs, with co-production providing citizens the opportunity to be active and involved in governance [EM21]. A more inclusive, technology-supported approach to heritage management can yield tangible public value, improving transparency, responsiveness, and the cultural relevance of heritage initiatives, resulting into empowered communities [EM21].

In essence, the knowledge and values of the local community become built into sustainability practice, yielding outcomes like preserved historic buildings, maintained local customs, and higher resident satisfaction. International charters reinforce this approach.

Italian cultural sites that embrace these principles, by working closely with residents to co-manage tourism, are better positioned to achieve sustainable outcomes consistent with global criteria, ensuring that tourism not only generates economic returns but also enriches local heritage and social fabric [BM21].

Following these recommendations, this study aims to investigate the use of digital strategies to engage communities and stakeholders. It also addresses alignment of the implemented policies with the sustainability standards recommended by the Global Sustainable Tourism Council, particularly regarding community engagement and the preservation of cultural landscapes.

The research objective is to understand the mechanisms through which digital co-production improve collaborative governance in cultural heritage and to assess the outcomes against sustainability benchmarks.

By conducting a qualitative multiple-case study of the Via Francigena, Appennino Slow, and "I Borghi più Belli d'Italia," the study can compare different models of co-production in the cultural heritage domain.

By conducting interviews with key stakeholders, it also aims to understand how citizens, public decision-makers, and government administrators perceive the values they obtain from participating in co-production programs (Mu et al., 2022).

3 Method and Case Study

The case study method is commonly adopted as a means to better understand complex phenomena in real-life contexts, providing rich and comprehensive insight into the underlying dynamics.

This is especially useful when identifying organizational case studies, where the goal is academic rigor in analysis within specific areas of organizations, generally focusing on managerial problems and practical solutions backed by empirical evidence. A case study involves the collection of data from multiple sources (interviews, documents, direct observations) and intends to triangulate information and improve the completeness and reliability of findings [CCR*11]. This approach is especially useful for helping researchers answer "how" and "why" questions [Yin09] in a way that leads to a richer understanding of more abstract theories or generalizations based on statistics. The flexibility of case study design allows researchers to adjust data collection and analytical techniques as the study progresses.

The use of case studies allows for an in-depth investigation of collaborative governance initiatives in the context of the digital tourism heritage sector [BL19; XSC25]. The present study

explores three specific case studies: (1) the association "I Borghi più belli d'Italia," founded in 2002 to promote the historical and cultural features of small Italian towns based on a public-private partnership; (2) the tour operator "Appennino Slow" which promotes responsible tourism and authentic local experiences (in this specific case the "Via degli Dei"); and (3) the "Via Francigena del Sud" which is embedded in the cultural route of the Council d'Europe, representing an effective model of cultural and natural heritage tourism which engages with different communities. Cases purposively selected as representative of different arrangements: 1) I Borghi più belli d'Italia has been selected because of its promotional support to smaller heritage communities; 2) Appennino Slow because of its support to the smaller and more local "Via degli Dei"; 3) "Via Francigena del Sud" is an example of heavily institutionalized heritage, whose promotional strategy relies on its supranational network. A comparison between these cases will therefore uncover
lessons learnt and key success factors of digital co-production from different institutional and influential arrangements, offering practical insights for innovative and sustainable digital tourism strategies. Four interviews have been conducted involving: the social media manager of "I Borghi più Belli d'Italia"; a manager of SL&A, Communication agency of the Via Francigena; and two managers of Appenino Slow, an experiential tour operator for the Via degli Dei.

3.1 Interview Procedure

The interviews were conducted between January and March 2025, via the Google Meet online platform. The duration of the interviews were approximately one hour and 30 minutes each, and the structure was studied on the basis of the literature studied. Since they were semi-structured interviews, the macro areas and questions were mostly the same for all interviewees, beyond specifics for each case, highlighted during the interviews and explored by the researchers.

3.2 Data Collection and Analysis

Data were mainly collected through qualitative, semi-structured interviews, a method that fits well with the exploratory focus on actors' perceptions and experiences in public governance [Bel23; Ahl19]. This technique fuses the freedom of unstructured conversations with a guiding thematic structure while maintaining enough elasticity to pursue unanticipated threads that emerge during interviews [DW21; Min25].

Semi-structured interviews allow for exploring how decisions were made and the dynamic of implementing policy and support [Ale01]. To investigate the main themes of the study, we performed a scientific coding process for the identification and categorization. Then, we used N-VIVO software [RK20] to conduct a content analysis to establish key findings. This method helps a deeper information about the content material, reflecting the realities pertinent to the investigation. The origins of content material evaluation may be traced returned to the 20th century, gaining prominence with the seminal work of Bernard Berelson in 1952, which established it as a rigorous research method [Ber52]. Moreover, we carried out the Gioia Methodology to broaden the facts shape. These facts encompass three essential processes: first-order, second-order, and aggregate dimensions [GCH12]. During the preliminary phase, the researchers adhered to the terminology used by the interview participants, seeking to minimize the number of categories by systematically assigning labels or descriptive phrases to the emergent categories. To do so, preliminary concepts were identified and organized into groupings utilizing the participants' terminology (first-order concepts).

Afterwards, it is time for the second-order analysis: the focus is directed towards the theoretical elaboration of the identified concepts; this entails progressing the categories from the preliminary stage to a more thematic development. In this phase, the researchers embraced the role of informed interpreters, contemplating the findings through the lens of the language and categories articulated by the participants, as well as considering overarching themes and dimensions [GCH12]. The second-order part tried to determine if the emerging themes provided coherent explanations for the concepts employed in discussions regarding the topic under investigation. Additionally, the observed patterns were consolidated into detailed dimensions. [GC91; GCH12; GSC00]. The Gioia Methodology provides a strong framework that allows researchers to effectively document participants' experiences while following a rigorous data analysis protocol. During the second-order analysis phase, the study shifted from a focus on individual participants to a "theory-centric" approach. In this stage, the initial first-order codes were systematically arranged into second-order themes that reflect the researchers' interpretations. This phase is marked by the creation of a theoretical domain wherein themes that clarify the phenomenon of interest are developed, ultimately leading to actionable conceptual frameworks. The second-order themes that were developed were then further refined into aggregate dimensions, representing a greater level of theoretical abstraction. The aggregate dimension, as the third step of the study, functions to synthesize the data, which is essential for achieving the study's objectives. Table 1 offers a detailed summary of the synthesized dimensions, including concepts from the researchers and terminology from the interview participants [SO21].

1st order concepts	2nd order concept	Aggregate dimensions
Governance Model	G1 – Multi-level Governance G2 – Consortium or polycentric model G3 – Coordination and flexibility	Governance and Management
People involvement	C1 – Citizens as stakeholders C2 – Territorial associations C3 – Identity and belonging	Community Co-production
Marketing	N2 – Digital storytelling N2 – Promotional Strategies N3 – Resident vs Traveler Narration	Communication and Storytelling
Sustainability	S1 – Certifications	SDGs and GSTC

	S2 – Environmental S3 – Social and Economic	
Monitoring	M1 – Business model M2 – Stakeholder as asset holder M3 – Monitoring & KPI	KPI and Evaluation
Walker's Experience/People experiences	E1 – Personal Motivations E2 – Relationships Along the Way E3 – Personal Growth	Value-in-use

Table 1: *Summary of the synthesized dimensions*

4 Findings

The analysis reveals that across all cases, citizens, local authorities, and other actors actively collaborated in heritage initiatives, shaping the process and outcomes to reflect shared goals and collective values.

4.1 Governance and Management

All three cases developed governance arrangements that facilitate collaboration across organizational and jurisdictional boundaries, enabling the co-production described above. Rather than traditional top-down management by a single authority, these initiatives operate via networked, multi-actor governance.

A prime example is the Appennino Slow within the promotion and management of Via degli Dei. This route was managed through an inter-municipal partnership with a strong coordinating entity. In 2014, the mayors of the towns along the path signed a formal protocol, "a pact to work together in a structured way", and identified Appennino Slow (a specialized slow-tourism enterprise) as the trail's managing organization. "There is a clarity of structure," explained the manager, noting that a "council of mayors" meets annually to set policy guidelines, which Appennino Slow translates into an operational plan file. She believes that "the governance system is the reason why the Via degli Dei is as famous as it is today". A decade of consistent, unified management has built a strong brand and effective operations. Dozens of small businesses joined the network with a membership fee, contributing to and benefiting from the trail's development.

The interviews suggest that local administrators value this framework because it provides access to resources and expertise beyond their tiny bureaucracies. For instance, the trail association's centralized marketing and social media campaigns amplify each village's visibility far beyond what any small town could achieve alone. "It's important to be part of a network and communicate as a network. That added value can pull a more forgotten village out of oblivion […] simply by being in the circuit, its ranking increases by default.". This governance model delineates roles while keeping all parties connected: local elected officials provide political direction and legitimacy, but day-to-day decision-making and coordination are entrusted to a dedicated organization with technical expertise. The benefits of such an arrangement were evident when Appenino Slow's Manager A reflected on implementation, noting that responsibilities were so well-defined and accepted that "it's hard to find any major issues, because the organization was so linear, so clear in terms of responsibilities." This suggests that a polycentric governance model, where authority is distributed among interconnected actors, can be highly effective for managing cultural routes.

The Via Francigena del Sud case similarly involves multiple layers of governance, though in a low formalized network. As part of a European Cultural Route, the Via Francigena benefits from a broader framework of cooperation, but on the ground in Southern Italy, it depends on regional and local bodies working together.

A clear theme across the cases is the active participation of a broad spectrum in co-producing cultural heritage services

Interviewees described the Via Francigena's management as needing a "network active on the territory" that brings together diverse stakeholders: "the tour operator, the accommodation provider, the public administrator, the volunteer association that takes care of trail maintenance – which is fundamental, without which the trail does not exist" (from SL&A's Manager interview). Here, we see a combination of public, private, and third-sector co-production: public agencies handle infrastructure and recognition, private tour operators and hospitality businesses cater to pilgrims, and volunteer groups maintain the path. Notably, some regions along the Francigena have established coordinating committees or working groups to periodically align efforts among municipalities, church authorities, and civil society. The key governance challenge, as identified by participants, is ensuring continuity and communication across such a large geography. However, the Francigena's governance is somewhat looser, relying on the relationship with an European network and periodic coordination. Nevertheless, the stakeholders' shared recognition that the route's success hinges on cooperation has spurred greater integration over time.

In the Borghi più Belli d'Italia association, the governance model is yet another variant: a public–private partnership network spanning the national to local level. The association itself acts as an umbrella organization, while each member village's local government commits to the network's standards and actively manages local initiatives. The Social Media Manager explained that the national association provides guidance, branding, and promotional platforms, but "each village is the protagonist for saving their own heritage." There is a membership process through which villages apply and are evaluated based on their heritage value and, importantly, their commitment to preservation and promotion. Acceptance into the network creates a multilevel governance dynamic: the national body coordinates on broad marketing campaigns and partnerships, whereas local municipalities and community groups carry out the projects on the ground. In essence, the Borghi network operates on consensus and collective interest. Governance here is less formal in terms of hierarchy; it's more about agreements, shared branding rules, and collaborative projects. Yet it still requires significant coordination to maintain quality across more than 300 villages and to ensure that the association's sustainability and cultural goals are upheld.

4.2 Community Co-production

A clear theme across the cases is the active participation of a broad spectrum in co-producing cultural heritage services.

For instance, the Association's centralized communication and social media campaigns amplify each village's visibility far beyond what any one town could achieve alone. As the Social Media Manager of Borghi's stated, "It's important to be part of a network and do communication as a network, that added value can pull a more forgotten village out of oblivion […] simply by being in the circuit, its ranking increases by default". Importantly, this governance model delineates roles while keeping all parties connected. The benefits of such an arrangement were evident: responsibilities were well-defined and widely accepted, and community participation is pivotal. Each village mobilizes residents in promoting their town's heritage, from volunteering at events to sharing local stories online. The communications lead of the Borghi association told how he formed a volunteer social media team of photography enthusiasts from across Italy to collectively showcase the beauty of "I Borghi più belli d'Italia" on Instagram. He also highlighted living cultural traditions that rely on community involvement, providing the example of a newly affiliated village, Bagolino in Brescia province, has a centuries-old carnival where "all the inhabitants of the town, 5,000 people, with groups of youths in traditional dress, dance for two days straight" (extract from the interview with the Social Media Manager of Borghi più Belli d'Italia). Such examples illustrate citizens not as passive consumers of heritage, but as active co-creators, whether by physically upkeeping a pilgrimage route, contributing creative ideas, or animating local festivals that enrich the visitor experience (this also reveals the "Value-in-use" aggregate dimension).

Interviewees consistently conveyed that this broad-based participation is not incidental but rather the foundation of these projects' success.

"The inclusion is a theme we strongly emphasise", noted Appennino Slow agency, explaining how the Via degli Dei organizers held numerous meetings to involve everyone, from one-on-one conversations to group forums on the trail, as part of a recent sustainability certification process. These meetings were open to residents, and Appenino Slow's Manager A observed that especially young citizens were eager to contribute: "In the meetings we held where citizens participated, perhaps younger people, who are more sensitive to certain issues, a lot of interesting observations and contributions emerged". This suggests that when involved, local people (particularly youth) are keen to offer input on heritage and tourism initiatives, bringing fresh ideas and energy.

For the Via Francigena, interviewees described how an EU cultural route project needs a network active on the territory by involving diverse stakeholders: "The tour operator, the accommodation provider […] the public administrator [..] the volunteer association that takes care of trail maintenance, which is a fundamental aspect without which the trail does not exist" (extract from the interview with SL&A's Manager). In other words, maintaining the Francigena depends on the contributions of local people: without volunteer trail custodians, the trail would not exist.

Similarly, Appennino Slow relies on a cooperation of local actors along Via degli Dei. After a formal governance structure was established through a protocol, Appennino Slow proactively involved hiking clubs and private operators in the project: "The next step […] was the involvement of other members […] Italian Alpine Club is responsible for trail maintenance, and then all the private stakeholders, the service providers along the trail, who adhere to the Via degli Dei project" (extract from the interview with Appenino Slow's Manager A). This quote indicates how broad the co-production web is. Thus, what started as a grassroots initiative among hikers and communities was scaled up into a structured co-production model involving public, private, and civic partners. At the same time, the interviews revealed nuances in who engages. SL&A's Manager noted that long-time locals sometimes showed less interest in participatory workshops than newcomers who had adopted the community as their own: "Often those who take part in the working tables are operators who were not born and raised in the area but arrived later […] perhaps it's easier for these 'adopted citizens' to participate". Nevertheless, overall enthusiasm for involvement was high in all cases. Appenino Slow's Manager A described the Via degli Dei community as "a happy island, because there is always such great enthusiasm […] Everyone wants the good of the trail because it's a trail that was born from the bottom up". Local citizens also directly shape the Via degli Dei's identity; for instance, the official logo was chosen through an open contest, selecting the design of a 19-year-old resident (this also reveals the "Value-in-use" and "Communication and Storytelling" aggregate dimensions).

In the "I Borghi più belli d'Italia" network, only towns with a proactive civic spirit tend to join in the first place, those that "want to save themselves" and actively promote their heritage, following the association's Social Media Manager. Once involved, they leverage the collective platform to engage even more people. The network's structure encourages each village to put its "best foot forward," but also to share what works with peers. Thus, communities learn from each other's co-production efforts, whether it's how to mobilize volunteers for a festival or how to run a social media page for heritage promotion. This participatory ethos reflects exactly what co-production theory predicts, and the result is a deep sense of local ownership in each initiative, which feeds directly into effective governance and valued outcomes.

4.3 Communication and Storytelling

This dimension focuses on how digital narratives and media are co-created by various actors. In this dynamic, two key elements emerge: (a) user-generated storytelling as a form of promotion, and (b) collaborative management of digital marketing platforms.

Together, they show how residents, organizations, and, also, tourists, jointly shape the digital representation of cultural routes and places through storytelling, social media, and other online tools. The strategic use of user-generated stories and feedback to promote and enrich the cultural heritage experience, rather than relying solely on top-down messaging, trail managers leverage the voices of walkers and visitors as authentic narrators of place.

The SL&A's Manager observed that long-distance cultural routes often inherently encourage travelers to document and share their journeys. These individual narratives then feed into the collective story of the heritage site. As she explained, "often many trails, the Via Francigena is one example, utilize the walkers themselves to tell the trail's story. This remains one of the most important vehicles for increasing the notoriety of that trail and territory, and for conveying its most identity-rich aspects". This quote exemplifies the first-order concept of Communication and Storytelling: pilgrims and hikers on the Via Francigena and Via degli Dei' blog post photos and write reviews, thereby co-producing a rich digital tapestry of experiences. Such content not only markets the route to potential visitors but also adds layers to the heritage narrative, highlighting facets of local culture and landscape that official descriptions might miss. The SL&A's Manager noted that some trail organizations now actively develop strategies to stimulate walkers to share their stories, for instance by running campaigns or providing platforms for reflections. By encouraging reflective narratives rather than just ratings or factual reviews, these initiatives co-create a deeper, more personal cultural narrative online.

In addition to written or spoken stories, stakeholders recognize the value of visual storytelling via social media. The Appennino Slow case demonstrates how digital photographs and posts by visitors serve as both promotion and documentation of the route's heritage. Appenino Slow's Manager A mentioned that since the trail's resurgence around 2011, a significant effort was put into building a digital presence: "A site was created […] social pages were created, first Facebook, then Instagram". Now they are starting to work on TikTok, thereby offering channels where hikers' experiences can be shared widely. The co-production of content happens when these individual experiences are aggregated: each Instagram post or blog entry from a walker becomes part of the public narrative of the Via degli Dei through Appennino Slow, complementing official content.

The SL&A's Manager pointed out, storytelling tends to highlight the "identity aspects" of the territory, since visitors often focus on local culture, nature, and personal growth during the journey. In essence, the digital sphere around these heritage routes is populated by the voices of users, a form of crowdsourced storytelling that serves both as marketing, raising awareness, and as interpretive content providing diverse perspectives on heritage [Gia21].

The second theme highlights how organizations and stakeholders jointly manage digital platforms and campaigns to market heritage destinations, often blurring the line between content producer and consumer.

Particularly in the "Borghi più belli d'Italia" case, the role of community members as digital content co-creators is highly developed. A cornerstone of their approach is the Brand Ambassador Program, which mobilizes passionate individuals to create and share content about the villages. "We started working with some brand ambassadors who were happy to share content with us, and up until three years ago, they would send the content and we would publish it. So, there was a certain interplay and we established the Ambassador Program to valorize content creators" (extract from the interview with the Social Media Manager). By formalizing a program and giving recognition to these content creators, the "I Borghi più Belli di Italia" initiative effectively co-produces its marketing output.

Over time, the collaboration has evolved to further empower the community contributors. Initially, the Association maintained more editorial control, but it gradually shifted to a more participatory model where creators have greater agency. The assosiation's Social Media Manager noted that now they "do the opposite of the initial approach, ensuring that control is in the hands of the content creator who has the intellectual property of the product they generated. We come in as a partner". This reflects a deliberate transfer of ownership and initiative to the community; ambassadors and independent content creators drive the storytelling, and the Association supports and disseminates.

The result is a vibrant, decentralized content ecosystem: local photographers and storytellers produce high-quality photos, videos, and narratives of their heritage towns, which are then shared through official platforms to a broad audience.

Such co-marketing arrangements also appear in the Via Francigena context, where the route managers partner with travel bloggers and leverage pilgrim testimonials in promotional campaigns.

In all cases, digital platforms (social media, websites, apps) act as meeting grounds for co-production. It demonstrates that digital heritage promotion is most effective when it becomes a participatory, community-driven endeavor rather than a one-way broadcast.

4.4 Public value (SDGs and GSTC/ KPI and Evaluation)

Finally, the outcomes of these co-production efforts can be read in terms of sustainability and public value. Stakeholders across the board reported positive impacts, ranging from economic gains and improved services to strengthened social fabric and cultural vitality. These results indicate that co-production, when guided by sustainability principles, can deliver tangible public value outcomes aligned with broader policy goals (like the UN Sustainable Development Goals and the criteria of the GSTC). Co-production has improved the quality and effectiveness of services related to these heritage sites. Because stakeholders are involved, the resulting tourism products are better tailored to user needs and local context.

In the case of Appennino Slow along Via degli Dei, participants co-created practical tools like a comprehensive hiking map and a pilgrim "credential" system, which not only guides visitors but also collects feedback and data for continuous improvement. Appenino Slow's team actively monitors metrics such as app downloads, social media engagement, and survey responses from walkers to identify issues on the trail and adapt management strategies. This data-driven, inclusive approach has led to quick fixes of problems and innovations in visitor experience.

Similarly, the "I Borghi più belli d'Italia" association's collaborative marketing means even small villages now have a professional online presence and promotional strategy that they

could never have developed alone. As the Social Media Manager explained, the association strategically mixes content about famous “flagship” towns with lesser-known ones, so that the latter are “perceived as a quality product” by association. The outcome is a rising tide that lifts all boats. Indeed, cases show that by harnessing local knowledge and effort, heritage initiatives have delivered more relevant and authentic experiences, which are valued by residents, who see their culture respected in the way it’s presented.

Another significant outcome of these co-production projects is the building of social capital and trust between citizens and institutions. Working side by side appears to have improved relationships and understanding.

For example, through the Via Francigena’s participatory meetings, private operators came to realize the importance of government support for infrastructure, and public administrators grew more appreciative of citizens’ and entrepreneurs’ initiatives.

Appenino Slow’s Manager A similarly mentioned that Appennino Slow on the Via degli Dei has made the community “collaborative” and minimized conflicts: “I struggle to find major issues […] there were operational difficulties, but that’s different, there were no big conflicts”. Even when challenges arose, the network dealt with them cohesively.

About the aspects of evaluation and KPIs, but also sustainability evaluation (GSTC and SDGs), organizations are increasingly moving in a formal direction to become certified sustainable entities: "[..] wanting to start this GSTC certification process is coming to meet us because it involves the involvement of stakeholders, production activities, administrations, but also citizens […]" (extract from the interview with Appenino Slow’s Manager B); "[…] Our idea is that the Via degli Dei becomes the first sustainable path in the world. We are waiting for the answer, we don't know it yet" (extract from the interview with Appenino Slow’s Manager A).

For the Via Francigena "[…] the model that is proposed is the model of sustainable tourism for which we always start from three assumptions of social, environmental and economic sustainability, and by dealing with these three themes in depth individually one and the other it is probably easier to understand the dynamics by the operators in the tourism sector so let's say this model also finds satisfaction on our part and certainly also in the territories [...]" (extract from the interview with Dr. Sbaraglia).

The association "I Borghi Più Belli d'Italia" instead has included in its statute the purpose of the association "To increase, in society, the awareness that the protection, recovery and enhancement of cultural, historical, artistic, environmental and landscape heritage are essential factors for the harmonious, sustainable and lasting development of communities and supporters of economic and social growth and promoters of good employment, especially for young people, and improvement of the quality of life of communities.". The municipalities that respect this requirement are rewarded by the association itself. There is, therefore, an innate concept of sustainability in the association itself.

4.5 Value-in-use

As already mentioned, in these cases, the individual narratives become a collective story of the heritage site. Walkers tell the trail’s story, and this is one of the most useful and impactful vehicles for increasing the notoriety of the territory. Organizations built a digital community to promote cultural heritage at 360°. Interviews also emphasized outcomes like community empowerment, cultural preservation, and improved well-being.

One common thread is the strengthening of community pride and cohesion that comes from working together on heritage projects.

Appenino Slow’s Manager A observed that the Via degli Dei’s development has instilled pride in the participating communities, uniting them around the trail as a shared asset. She remarked that despite the occasional disagreements or difficult characters, all stakeholders “want the best for the trail”, and the project’s bottom-up origin is evident in the high level of local buy-in. The fact that the trail’s success was driven by the local populace gives people a sense of collective achievement. In Appenino Slow’s Manager A’s words, the trail brought about a “phenomenon of restanza” (literally, “remaining”): “Many young people have stayed in the area instead of leaving for the cities”. Such an outcome is particularly significant in Italy’s Apennine regions, which have long struggled with depopulation.

The Social Media Manager of “I Borghi più Belli d’Italia” expressed a similar sentiment for the association’s program, framing it as a lifeline for towns at risk of decline. By “committing to exposing their peculiarities and beauties”, communities add “value to save the village”. This can boost morale and local identity. Intangible heritage events, sustained by citizen participation, become a source of pride when recognized as unique cultural assets. One of the interviewees noted that even if a territory “is not the most beautiful in the world,” it can offer “an extremely meaningful experience” to visitors, showing “facets of history, culture, folklore, gastronomy” that none could have known without going there. This captures how locals sharing their heritage with outsiders can generate mutual value: visitors gain authentic cultural insight, and locals see their culture validated and valued.

5 Discussion & Conclusion

The study explains how digital cultural heritage can improve co-production, fulfilling theoretical expectations of improving public value and sustainability [EM21]. In all three Italian contexts, the Via Francigena, Appennino Slow, and the “I Borghi più belli d’Italia” network, stakeholders’ active participation has translated into widely perceived positive outcomes. Communities report greater empowerment and pride, local administrators observe revitalized towns, and policymakers see goals like sustainable tourism and rural development being met [FPS23]. Such outcomes echo co-production theory, which posits that when citizens, experts, and institutions co-create services, the results better reflect collective values and generate broader benefits. Indeed, these initiatives have democratized heritage management and generated public value in practice [EM21].

Notably, the benefits observed extend beyond improved tourist services to intangible gains like shared ownership and trust. Such

trust and social capital are critical components of public value, reinforcing the legitimacy of heritage governance and the sustainability of outcomes over time [EM21].

Co-production theory, hence, finds strong validation in these cases. Citizen involvement can improve service quality and social outcomes: here evidenced by safer, well-maintained trails and vibrant community events co-produced by local volunteers [BL12]. The inclusive governance model built a strong shared vision and brand over a decade, confirming that co-production can institutionalize a democratic, multi-actor form of management in line with theory [EM21]. In turn, public value theory is exemplified by the broad benefits that emerged.

Economic gains are tangible, for instance, the Via degli Dei now attracts 22.000 trekkers yearly, fueling local businesses, yet the public value created goes further. Residents along the routes feel a renewed sense of place and inclusion, and previously fragmented stakeholders now work in trust-based partnerships. This mirrors the notion that co-production generates value not just as financial returns, but as cultural continuity, community development, and visitor fulfillment.

However, our findings also extend theory by illustrating how digital strategies amplify the impact. Technology lowered participation barriers and connected stakeholders across distances, embodying the idea that digital co-production turns passive audiences into active co-producers [GGC*23]. For example, the Via Francigena's adoption of a gamified digital pilgrim passport, improving the perceived value of the journey [Web24]. Likewise, the "I Borghi più Belli di Italia" network's online platforms and social media promotions have broadened community reach, enabling even small villages to share their heritage stories globally and involve diaspora members in heritage projects.

These cases confirm recent research asserting that technology-enabled co-creation develops a greater sense of ownership and relevance among participants, thereby scaling up participation and reinforcing public value through transparency and inclusivity [Gia21; PT24]. Finally, the outcomes strongly align with sustainability frameworks such as the GSTC criteria: long-term heritage sustainability requires community engagement and shared stewardship of cultural resources [Dha24].

The Via Francigena's multi-level governance model linked EU-level initiatives with local action, facilitating knowledge exchange while adapting broad quality charters to fit local realities.

This flexible approach exemplifies how engaging diverse stakeholders yields more robust and legitimate decisions in heritage management. It also demonstrates that meeting global standards is not just a box-ticking exercise but a public value outcome in itself.

In the case of Appennino Slow, Via degli Dei pursuing GSTC certification exemplifies how engaging residents and businesses in sustainability evaluation leads to concrete improvements and commitments that meet global standards.

Meanwhile, the Borghi network, by embedding sustainable development into its membership criteria, shows an internalization of sustainability values without needing external enforcement.

Achieving certification or adhering to EU guidelines became part of the narrative of success for these communities, symbolizing that their destination is managed responsibly with respect for heritage and community well-being. This alignment with high-level frameworks lends additional legitimacy to the projects and can help in securing support or funding. It also provides a common language to communicate their achievements to outsiders who increasingly seek assurance of sustainability and community engagement when valuing destinations.

Based on these insights, several policy recommendations emerge. First, governments should formalize channels for community and stakeholder involvement in heritage management [Meg22].

Crucially, policies must allow flexibility to adapt external guidelines to local context, so that global sustainability charters or quality standards are tailored to community capacity instead of overwhelming local actors [AST22].

Moreover, Public agencies should invest in user-friendly digital tools to facilitate wider participation in heritage projects [EM21].

Also, heritage policies should explicitly link co-production efforts to sustainability objectives and public value outcomes.

For heritage managers and digital cultural tourism providers, the study highlights actionable strategies to improve participation and value creation. Managers should involve local stakeholders in designing both physical and digital experiences. Early co-creation of digital content with residents, local historians, and frequent visitors ensures the end products reflect authentic local narratives [CWA*22]). The development of the Via Francigena's digital pilgrim app, for example, could incorporate suggestions from actual walkers and input from communities along the trail to include their stories. Such co-designed experiences resonate more with users and promote community pride [CWA*22].

Heritage operators should actively solicit and showcase contributions from the public. This can range from organizing digital storytelling campaigns to implementing features in apps or exhibitions that let people add comments or creative content.

Such storytelling not only enriches the visitor experience but also heightens locals' perceived value of their heritage, as their identities and memories become integral to the official narrative [Web24].

However, these innovations must complement, not replace, traditional engagement: hybrid approaches ensure that those less expert or without devices can still participate fully.

While the advantages of co-production and digital strategies are clear, it is equally important to acknowledge ongoing challenges and chart future directions for research and practice. One key challenge is the digital divide and participation gap [EM21]. Not all community members have equal access to technology or the skills and time to contribute. Our cases benefited from highly motivated stakeholders, yet even within them, some voices remained quieter. Older residents in rural towns, for instance, might not engage with a mobile app, or smaller businesses may lack the digital literacy to fully capitalize on online platforms. This raises the risk of increasing disparities in participation, where the most active or tech-expert citizens disproportionately shape the heritage narrative while others are left behind. Overcoming this requires targeted inclusion and designing

multiple avenues for input so a broader demographic can participate.

Future research could investigate deeper into methods of bridging these divides, perhaps by evaluating community training interventions or exploring the use of intermediaries [MWS22; EM21].

Another challenge lies in the complexity of governance when many actors are involved. Collaborative models are, by nature, complex to manage; they demand constant communication, conflict resolution, and consensus-building. Research could provide insight into institutional designs or incentive structures that best sustain co-production over time.

There is also the challenge of measuring and communicating the value of co-produced heritage initiatives by adopting more structured approaches. Traditional metrics do not capture community pride, cultural transmission, or resilience. Developing evaluation frameworks that include social and cultural indicators would help validate the approach to funders and policymakers. Scholars and practitioners should collaborate to quantify how co-production contributes to outcomes like social cohesion or environmental stewardship, perhaps through longitudinal studies or public value assessment tools. This evidence base can make the case for broader adoption of co-production in heritage policy.

Several future directions emerge. The first is using emerging technologies in co-production, such as Artificial Intelligence. As digital tools evolve, research should assess how these can be applied to involve stakeholders in content creation and decision-making. Also, future work should continue to refine the understanding of how co-production contributes to long-term sustainability, adopting reliable metrics. Indeed, as our findings reveal, local community engagement is crucial for facing the most critical challenges in cultural heritage, balancing tourism growth with heritage conservation at the same. Once those valuable metrics are identified, longitudinal studies should be conducted to assess the durability of public value co-created through these partnerships and their adaptation ability to evolving socio-economic conditions.

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