Case Study

Leveraging social capital for destination promotion in the metaverse: The Enoverse case

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A B S T R A C T

This study examines the challenges of metaverse-driven community innovation in the context of rural tourism. Through an in-depth case study, we analyse the social capital dynamics within an Italian winery consortium that ventured into the metaverse through a project called Enoverse to promote local wine and rural territory. The results show that the complexity and novelty inherent in the implementation of a presence in the metaverse to provide a consistent and authentic territorial and product experience requires and fosters stakeholder cohesion and participation. This promotes tourism by enhancing stakeholder engagement, inclusion, and satisfaction. Drawing on social capital theory, the establishment of network mechanisms and actor connectivity facilitates innovative promotion of rural destinations. This study contributes to the growing body of literature on the role of virtual environments in promoting tourism, specifically in the wine industry.

1. Introduction

Tourism and hospitality industries are among the early adopters of the so-called metaverse, a technology-mediated immersive environment that enables users to seamlessly connect the physical and digital realms (Buhalis et al., 2023). Immersive technologies (i.e. Augmented Reality and Virtual Reality) significantly disrupt the travel planning phase, as they provide new tools to foster travel inspiration and facilitate decision-making processes before the visit (Buhalis et al., 2023; Dai et al., 2022). This is the case with Qatar Airway's 'QVerse', an immersive environment designed to allow travellers to preview the key features of the company's offerings, including aircraft comforts and onboard services. The metaverse allows tourists to familiarise themselves with new destinations, explore cities, and look at hotel rooms and facilities. This enriched information creates familiarity with the destination or offering, reduces perceived risk, and improves customer decision making (Fan et al., 2022).

The growing attention to the metaverse has further encouraged debate on its impact on the tourism and hospitality industry (Dwivedi et al., 2022), as it can change how people work, learn, travel, socialise, purchase, and entertain, and how companies and organisations create and capture value from a multidimensional and omni-channel perspective. Among the range of touchpoints that consumers encounter while living a tourism experience, immersive technologies are remarkably effective in the inspirational stage, when tourists dream about a destination (Gretzel, 2021; Simoni et al., 2022). Therefore, within the 13 billion USD travel inspiration business (Constantin et al., 2023), the

metaverse has the potential to generate new leads and pipelines for physical destinations by providing opportunities to fully design virtual tourism experiences and create hybrid offerings by merging virtual and physical interactions. The ability to 'feel' the intangible experience is critical in tourism offerings, where most traditional promotional materials cannot convey the affective value of an offering, concentrating on more descriptive features (e.g. length of the experience, type of activities). Immersive technologies are distinguished by their ability to elicit enhanced emotional reactions and psychological and behavioural engagement (Flavián et al., 2021a), ultimately nurturing experiential consumption. When leveraging immersive technologies to authentically portray the heritage of a region in the metaverse and engage visitors, it is crucial to involve stakeholders who embody the culture and traditions of the territory. The metaverse has the capacity to reflect the complexity of reality; therefore, engaging all stakeholders is essential for capturing the territory's diverse values and traditions.

Providing a self-representation of territory in the metaverse means recreating the complex system of connections, social capital, experiences, and diversity that characterises the destination (Allam et al., 2022). This requires replicating reality and enrichment based on a consistent 'stream of engagement' (Gursoy et al., 2022). Therefore, if promoting a destination is in itself a multi-stakeholder venture (d'Angella & Go, 2009), presenting a destination on the metaverse appears as a twofold challenge: on the one hand, interconnecting the stakeholders looking for new narratives, and on the other hand, overcoming the natural reluctance to technological innovations that characterise smaller and rural areas (Esparcia, 2014). A cohesive local

community must enhance and promote its territory in new forms. Building relationships within a local community is vital to the economic success of a territory and its tourism initiatives (McGehee et al., 2010). Moving toward the metaverse represents a significant challenge for a territory and its stakeholders, especially in rural areas, and calls for collective endeavours.

Literature has broadly shown how community involvement and collaboration help build social capital and promote the success of territorial initiatives (Pelissero, 2003, pp. 275–277). However, there is limited understanding of whether this principle is applicable and to what extent promotion occurs in the metaverse. Exploring these mechanisms in the rural context poses an even greater challenge. Indeed, among tourism destinations, rural areas are more oriented toward tradition, thus representing a challenging case for tourism innovation. A key element of rural tourism destinations is their ability to leverage tradition and authenticity for innovation, which has a positive impact on their territory (Palmi & Lezzi, 2020). This study explores how venturing into the metaverse for destination promotion facilitates community social involvement and collaboration in a rural context.

By conducting an in-depth case study, this study demonstrates the pivotal role of the social capital theory in the context of rural tourism in endorsing the adoption of the metaverse. This study uses social capital as a theoretical lens to investigate the social dynamics among different actors and network mechanisms that may facilitate or hinder tourism organisations' presence into the metaverse. Given that the metaverse is a new phenomenon, the prior literature lacks conceptual guidance on approaching it from organisational and strategic perspectives.

We focused on Enoverse, a metaverse project embraced by the Club del Buttafuoco Storico, a consortium operating in the Oltrepò Pavese area in Lombardy region in Italy. Investigating this case study is a suitable approach for capturing the phenomena under investigation in the context of rural tourism related to wineries in Italy. Thus, we analysed building social capital inside a community of winemakers in Italy who are part of a consortium that aims to promote the region by inspiring prospective visitors and inviting them to visit the territory and enjoy locally produced wine. The territory has recently entered the metaverse to promote wine-related activities, such as vineyard visits and wine tasting. Through in-depth interviews with winemakers, key figures managing the consortium, and company representatives who supported the territory in entering the metaverse, we explore how network mechanisms and actor connectivity uphold the dimensions of trust, reciprocity, and cooperation in bonding and bridging social capital.

This study contributes to tourism literature by demonstrating how venturing into the metaverse for destination promotion can facilitate bridging and bonding social capital, promote active stakeholder engagement, and ignite network reinforcement in a rural context. It provides directions on how to leverage social networks and actor connectivity to enhance social capital bonding and bridge through trust, reciprocity, and collaboration to foster the adoption of the metaverse for rural destination promotion. This case study shows that creating a presence in the metaverse to provide a unified and genuine territorial and product experience requires and encourages stakeholder cohesion and participation. In turn, this promotes tourism by improving stakeholder engagement, inclusion, and satisfaction. Additionally, it provides a strategic perspective on the tourist experience in the inspirational phase of the customer journey, answering a recent call for research (Dai et al., 2022). Thus, on one hand, this work provides organisational levers for developing social relationships within a community for tourism promotion, and on the other hand, it provides planning levers on how to inspire consumers to visit a territory with the support of new technological opportunities. Consequently, this study represents a noteworthy advancement in the promotion of rural tourism and provides novel value streams for practitioners.

2. Literature review

2.1. The role of the metaverse in the promotion of tourism destinations

The tourism field has evolved over time from the mere adoption of specific technologies to more networked ICT solutions and eTourism, which promote the co-creation of value among all stakeholders (Dwivedi et al., 2022). As envisioned by Buhalis (2020), smart tourism takes advantage of technology-based business networks to sustain conjoint value creation by the different stakeholders populating the field, such as hospitality industry operators, transportation companies, and the same consumers.

Technologies foster interactions and collaboration with tourists through physical, virtual, and hybrid spaces, thereby enabling technology-mediated experiences. Thus, they can be envisioned as key operand resources in the tourism environment that enable the co-creation of value with tourists (Liu et al., 2023). In this context, the metaverse can be defined as a technology-mediated network of scalable and potentially interoperable extended reality environments that merge physical and virtual realities to deliver experiences that are distinguished by immersiveness, environmental fidelity, and sociability (Giang Barrera & Shah, 2023, p. 6). Buhalis et al., 2023, p. 2) define the metaverse as 'the convergence of physical and digital universes, where users can seamlessly traverse between them for working, education and training, health, exploring interests and socialising with others'. Indeed, the metaverse proves impactful in several fields, from manufacturing to retailing, and from human resource management to operations, including the tourism industry (Koohang et al., 2023). Drawing on Giang Barrera and Shah (2023) and Buhalis et al., 2023, the metaverse is conceived as a technology-mediated virtual environment characterised by varying degrees of environmental fidelity and sociability in which the access device provides the user experience with different levels of immersion. Many opportunities are offered to the tourism industry. It allows for immersive experiences in both virtual and physical environments by providing tourists with virtual exploration during the travel planning phase and augmented content when they are physically at their destination (Yovcheva et al., 2014). Potential buyers can access virtual spaces and discover tourist products and destinations without having to physically touch them. This is possible via a virtual product showcase, virtual performance, event (e.g. festival, concert, exhibition), or even a virtual minigame.

Using technologies which enable psychological and physiological immersion (Chen & Yao, 2022), the metaverse provides users with immersion in the virtual world through multisensory reference points, thereby allowing them to experience a strong sense of presence and embodiment(Buhalis et al., 2023). Immersive technologies allow users to perceive, feel, and interact in a virtual environment that is similar to a physical place, creating engaging and inspiring scenarios. This is achieved by combining stimulation over multiple sensory channels, such as sight, hearing, and touch, through input, output, and input/output interfaces. According to the Uses and Gratification Theory (UCG, Katz & Foulkes, 1962), individuals may interact in such encounters to satisfy their personal needs for interaction and engagement (Dolan et al., 2016), which displays cognitive, affective, and behavioural components (Brodie et al., 2013). Following the theory of planned behaviours, Sparks (2007)depicts how consumers' engagement in winery tourism depends on their favourable attitude, subjective norms, and perceived behavioural control. In further studies, the winery's surrounding environment has been validated as a critical factor shaping positive attitudes toward the winery and influencing decision-making within the wine tourism context (Quintal e t al., 2015). Haller et al. (2021) confirmed the relevance of the aesthetic dimension in enhancing the wine experience, facilitated by an appealing visiting environment. The key feature of immersive technologies is their ability to convey a sense of 'presence', defined as 'the perceptual illusion of non-mediation'(Lombard & Ditton, 1997). Such immersive experiences can elicit complex emotional

experiences such as aesthetic emotions (Chirico et al., 2021). When individuals feel highly 'present', they are expected to react emotionally as if the virtual world exists physically. These affective states originate from the evaluation of the aesthetic value of a stimulus (Schindler et al., 2017) and are experienced across a broad range of experiential domains. Given the aesthetic and emotional nature of travel experiences, tourism can benefit from immersive technologies. Tourism products and experiences are indeed characterised by an intangible (Buhalis et al., 2023), with a strong overarching experiential component. The value of a tourism offer is not merely functional; it is also subjective as consumers evaluate experiential elements during the purchasing process (Holbrook & Hirschman, 1982). As Gursoy et al. (2022) argue, marketing and operations strategies for hospitality and tourism industry players may be reshaped in the metaverse, for instance, by envisioning new approaches to marketing promotions.

In this context, the metaverse supports the inspiratory phase of travel. Inspiration is the first step in a tourist journey and can directly influence consumer desire and subsequent purchases. Dai et al. (2022) defined the travel inspiration phase as a motivational state that drives a prospective tourist to bring new travel ideas into realisation. Inspiration can be evoked by external stimuli such as social media, billboards, or radio advertising (Thrash & Elliot, 2004). Such external stimuli can be created by companies, such as destination advertising and promotional activities, or by users, as occurs on social media platforms, for instance, when travellers share videos of their last trip (Ji et al., 2023). After attention is elicited, consumers are motivated to explore further and engage in destination exploration, such as searching for information about the destination, sharing comments or likes, and actualising travel ideas (Dai et al., 2022). Research has shown that travel inspiration can directly elicit consumer intentions to travel, thus enabling a faster decision-making process depending on the intensity of inspiration. The consumer enters the information search phase and elaborates on personal preferences and evaluations (Dai et al., 2022).

The metaverse is expected to be particularly effective in eliciting fantasy and imagination owing to its ability to enhance the vividness of imagination (Buhalis et al., 2023). When planning travel, the first stages of a tourist journey are touchpoints at which the metaverse can stimulate inspiration. Individuals can use immersive technologies to pre-experience locations, hotels, and entertainment venues, and acquire lifelike visiting experiences during the planning phase (Flavián et al., 2021b). Consumers may receive marketing content from tourist destinations and organisations (Dwivedi et al., 2023). Consumer decision-making may also be supported through digital twins (Buhalis et al., 2023), which can replicate a destination, cultural heritage facility, or cruise by allowing consumers to experience and choose the travel most in line with their needs. At the same time, cryptocurrencies and NFTs present opportunities and challenges for all parties involved in the tourism industry as well. Clearly, these technologies facilitate the development of a novel and immersive customer experience within the tourism sector (Jung et al., 2023).

In addition, considering the intangible nature of tourism products and the intrinsic complexity of choice, tourists often obtain information from different sources while choosing a destination and compare possible options to prevent incorrect choices (Buhalis et al., 2023). The metaverse can extend the social connections and interactions among tourists from the travel and post-travel phases to the planning phase. Individuals can vividly participate in past travellers' virtual experiences and immerse themselves in the journey (Fan et al., 2022). By enabling tourists to pre-experience different alternatives, the metaverse can help reduce the risk in their travel choices and support media-induced travel inspiration (Buhalis et al., 2023). However, accessing the metaverse to promote tourist destinations remains challenging, especially for stakeholders in rural areas. A joint effort among tourism operators, local governments, and companies is required to create a foundation for developing tourism initiatives in the virtual world. This collective endeavour is driven by the shared goal of conveying the territorial

excellence and peculiarity of a rural area to prospective visitors. Therefore, it is crucial to engage stakeholders who epitomise the culture and traditions of a region to enhance the fidelity of the experience in the metaverse (Chen et al., 2023; Fazio et al., 2023).

2.2. The social capital theory for tourism development and destination promotion in the metaverse

This study builds on social capital theory to illuminate how venturing into the metaverse for destination promotion enables the growth of bridging and bonding mechanisms, encourages active stakeholder engagement, and reinforces networks in a rural context. Riva et al. (2024) underscore that the existing literature has demonstrated the potential for the metaverse to engage in the same neurobiological and cognitive processes as in real-world environments. This contrasts with digital platforms, which impede social bonding and bridging. Therefore, it is of great interest to investigate stakeholder engagement through the lens of social capital in the metaverse context.

We Flor's framework (2004) investigated community development in rural areas by focusing on social capital theory. Social capital is the ability of actors to secure benefits through membership of social networks or other social structures (Portes, 1998). Social capital is a pillar of the diverse forms of capital that characterise a community: physical, financial, human, natural, and social (Dasgupta & Serageldin, 2001). The metaverse offers a radical opportunity for innovation driven by the complex and rapidly evolving integration of a range of technological resources across extensive ecosystems (Dwivedi et al., 2022). The metaverse is expected to be one of the most influential technological trends over the next decade (Kraus et al., 2022), significantly affecting the mobilisation of financial and social capital. To stimulate investment in the metaverse, we believe that social capital is of paramount importance. Venturing into the metaverse involves a high level of complexity and a wide range of competencies. Therefore, it is essential that all stakeholders involved in the real-world setting, which must be created in a virtual environment, are actively engaged. Accordingly, in the context of the metaverse, we believe that social capital is preserved and expanded.

Virtual environments offer opportunities for host-community gatherings and events that emulate traditional interactions, encourage active involvement, and foster a sense of belonging. A sense of belonging plays a key role in influencing intentions to share and gain knowledge as well as in shaping the relationship between social capital factors and a virtual community member's intention to participate (Zhao et al., 2012). Given its potential to transcend geographical boundaries, the metaverse favours the development of the existing community of stakeholders and attracts visitors more effectively than digital platforms. As stakeholders engage with each other in these virtual environments, they contribute to the development of a robust and international network characterised by trust and cooperation (Davis & Moscato, 2018). In the case of destination promotion, this approach has the additional benefit of strengthening social capital and enhancing the visibility and appeal of destinations. Stakeholders are empowered to share their narratives and cultural identities within the metaverse, thereby fostering a more inclusive community. This representation contributes to a more equitable distribution of social capital, ensuring that diverse voices are recognised and valued.

Social capital holds promise given the significance of stakeholder engagement in attracting funding and political and social support for tourism development in rural areas. A participative environment is fundamental to the sustainable development of rural areas, planning effective tourism strategies, and avoiding conflicts that arise during their implementation (Wanner & Pröbstl-Haider, 2019). This is necessary to inform and prepare tourism stakeholders for potential conflicts and manage them effectively (Upadhyay et al., 2023). Social capital is significant, as trust and reciprocity lubricate cooperation by reducing transaction costs. People no longer must invest in monitoring the

behaviour of others, thus building confidence to invest in collective or group activities (Jones, 2005). This view is supported by research in the tourism field, indicating that social capital represents the core of development and influences other forms of capital (Barbieri et al., 2002; Malecki, 2012). To ensure tourism development within a specific area, local stakeholders must feel included in the plans relevant to the territory (Soulard et al., 2018). The strength of a locally bound community and entrepreneurial values, networks, social capital, and trust are drivers of the economic success of winemaking settlements (Tomay & Tuboly, 2023). This is particularly relevant in emerging wine regions, where wineries are typically more fragile than those operating in well-established regions, and where network ties can significantly improve performance (Franken et al., 2018). Rural enterprises are typically located in specific regions and are strictly tied to the local community and social networks (Akgün et al., 2011). Strong social networks within a community, information exchange, activity coordination, group decision-making, reciprocity, and trust are all components that support and define social capital (McGehee et al., 2010). Research confirms that social capital is essential for the success of tourism activities in wineries, suggesting that local wineries should connect with local businesses and push toward the reinforcement of community relationships (Xu et al., 2020).

Previous studies have adopted multiple conceptualisations of social capital to investigate community development. This study embraces the network view proposed in Woolcock (2000), which differentiates between bonding and bridging social capital (Putnam, 1993). Relationships within a community are defined as bonding social capital, where trust, social networks, and bonds among participants work as the social glue. This may be the case in a local community which regularly meets to share issues and seek solutions within its territory (McGehee et al., 2010). When a community connects with external stakeholders and organisations, it bridges social capital. This is typically achieved by seeking external support and resources. For instance, a local community that interacts with a community in a neighbouring area seeks opportunities to jointly promote territories. Bonding social capital is usually a necessary preliminary step toward bridging social capital (Warren & Thompson, 2001). This is necessary for a community to sustain itself (de Souza Briggs, 1998), but becomes dangerous if the community becomes stationary and resistant to change (Coffé & Geys, 2007), especially when bridging social capital is low (Flora, 2004; Zahra & McGehee, 2013). In contrast, bridging social capital is necessary for community development. However, communities may engage in clientelism when bridging social capital is high and bonding social capital is low. High bridging and bonding social capital is optimal for successful community growth (Flora, 2004; Soulard et al., 2018; Zahra & McGehee, 2013).

Bridging and bonding social capital result from three factors (Flora, 2004): trust, reciprocity, and cooperation. Trust is grounded in the perception of the integrity of other people and organisations. Reciprocity relies on fair and mutual exchange, whereas cooperation is based on the common objective of achieving collaboration. Communities with high trust, reciprocity, and cooperation are likely to take advantage of new opportunities and enhance and develop business options. Social capital can boost economic success through information sharing, coordination, collaboration, and collective decision-making (Harriss & De Renzio, 1997), which depend heavily on trust, reciprocity, and cooperation toward developing a cohesive tourism product (Granville et al., 2016).

From the perspective of actor connectivity, bonding social capital has been linked to strong-tie relationships that are crucial for fostering tight-knit communities. By contrast, bridging social capital has been associated with weak-tie relationships, which are relevant for expanding beyond a tight-knit group to engage with others who possess diverse resources and have access to new information (Dickinson et al., 2017). The control of knowledge, influence, and power by individuals and organisations depends on the number of connections in a social network (Viren et al., 2015). Social capital networks facilitate information

exchange, enabling the pursuit of common goals (Viren et al., 2015). Adopting such a relational perspective is key in the tourism industry because organisations tend to form alliances and clusters within a destination context (Pavlovich,2003). Social capital has been confirmed as a source of knowledge sharing and innovation in the tourism industry, enhancing organisations' business performance (Kim & Shim,2018).

Social ties are particularly important for entrepreneurial success because they provide access to marketing, innovation, and human resources, especially for winemakers (Lee & Hallak, 2020). When social capital is low, entrepreneurs display a reduced growth potential (Lee& Hallak, 2020). Technologies may help support the development of social capital, enabling faster communication, and increasing accessibility to information and wider resources (Baym, 2010). Although this may result in more scattered social networks, online interaction can foster broader local connections (Urry, 2007). These connections facilitate the formation of weak ties, thereby enabling a remarkably large network of contacts (Lee & Hallak, 2020). In addition, digital technologies play a crucial role in sustaining dispersed strong-tie connections, and forming and maintaining weak-tie relationships (Dickinson et al., 2017). Current research on social capital in the tourism industry is mainly theoretical and does not explicitly focus on mechanisms for building social cohesion (McGehee et al., 2010). Assessing a community's readiness for tourism development requires understanding its social capital (Macbeth et al., 2004).

This study seeks to elucidate the role of social capital in promoting rural areas as tourist destinations, within the empirical context of the metaverse. This study employs a single case study to elucidate how venturing in the metaverse for the development of rural tourism enables the formation of higher bonding and bridging social capital, stronger social networks, and actor connectivity.

3. Methods

This study is based on a single-case study approach. As advocated by Yin (2009), single-case studies prove valuable in examining critical cases to test theories, analyse social mechanisms, and analyse unique scenarios characterised by core distinctiveness. Our focus is the exploration of social dynamics within an Italian consortium of wine companies that venture into the realm of virtual wine-tasting experiences through a virtual desktop environment. To the best of our knowledge, this is the first case report of this condition to date.

Our primary data comprised 16 semi-structured interviews with key stakeholders supporting the design and implementation of the virtual environment, including the provider's team, wine experts, the Director of the Consortium, and members. Each member of the Consortium is a wine producer operating within the Oltrepò Pavese region. Appendix 1 provides a full list of interviewees. The interviewees were selected to comprehensively represent all the key parties actively engaged in the case. The semi-structured approach ensures that interviews can detect the different dimensions of social capital, while leaving respondents free to add information that could be useful for case analysis. Starting from the social capital theory proposed by McGehee et al. (2010) and Soulard et al. (2018), bridging and bonding social capital dimensions were measured by combining three and six open-ended questions. The questions are listed in Table 2. Data trustworthiness was prioritised throughout the data collection process. Each interview lasted for approximately 1 h. To enhance dependability, multiple investigators were involved in data collection and analysis. Each interview participant received a transcript for review, to ensure accuracy. We used informant triangulation to confirm the findings and ensure confirmability.

Following data collection, we employed a deductive approach in the data analysis process utilising predefined theoretical coding. This systematic method allows for a structured analysis of the data guided by the established theoretical framework (Bradley et al., 2007; Braun & Clarke, 2006). Interviews were drawn from McGehee (2010) and Soulard (2018) to explore the social capital mechanisms underlying the

initiative. Furthermore, to gain a deeper insight into the fundamental aspects of virtual environments and marketing factors that led the consortium to adopt this solution, we adopted the travel inspiration framework proposed by Dai et al. (2022). These were translated into a framework aimed at codifying the core concepts that emerged from the interviews (Bradley et al., 2007; Thomas, 2006).

This approach facilitated a focused examination of the relevant themes and ensured alignment with the anticipated theoretical constructs. Replicating the approach of Soulard et al. (2018), the coders were provided with the following definitions for each subcategory of social capital: *Trust* is defined as the reliance on the integrity of another individual or organisation and the level of comfort in placing confidence in them. *Reciprocity* is a mutual and fair exchange in which parties reciprocate actions or favours. *Cooperation* is the act of working together toward a common goal.

Two authors independently analysed the data to identify themes within a shared category grid. Subsequently, the coders convened to discuss the findings and identify similarities and differences. The coding framework was refined through iterative discussions until consensus was reached. This process ensured the validity and reliability of data analysis. Considering the theoretical relationship between social capital theory, actor connectivity, and network mechanisms, the findings were interpreted by examining how each stakeholder contributed to enhancing participation and the frequency of interaction.

3.1. Case description

Club del Buttafuoco Storico, established in 1996 within the Oltrepò Pavese area of Lombardy (Italy), includes 18 wine companies united with the shared objective of reviving the heritage of the region where Buttafuoco vineyards are located. In 2010, they endeavoured to explore historical characteristics, carefully select vineyards, regulate production, and promote the territory by restoring the quality of Buttafuoco wine, which was officially recognised as an independent Protected Designation of Origin product (the Italian acronym for protected designations of origin is DOC). Subsequently, efforts have been directed toward adding value to the product and its region of origin. Over the last 13 years, a series of initiatives has been undertaken to enhance the standing of this territory. All producers collectively promote Buttafuoco's identity and heritage by engaging in marketing activities, including events, commercials, exhibitions, and tourism plans. Notably, with the growing significance of the Internet in recent years, the need to reach individuals who are distant from the region and even overseas has become relevant. Consequently, the consortium recognised that the traditional approach alone was no longer sufficient and prompted its member companies to venture into the realm of the metaverse.

Enoverse is a platform developed by a US-based metaverse developer. This is a desktop-based virtual environment designed for wine and food companies. Enoverse aims to enhance visibility and accessibility for companies to reach new audiences, and caters to both Business-to-Consumer and Business-to-Business markets. Built on the Unity3D platform, Enoverse presents a skybox that offers visitors a panoramic view of the surrounding vineyards and hills, replicating the Oltrepò Pavese rural environment (Fig. 1). Enoverse also includes a lounge room where visitors can delve into the territory and the consortium's features, and a wine cellar provides a space for obtaining comprehensive information about the winery's products. This information was obtained by integrating AI-based non-player characters. Users can participate in live virtual events in which avatars promote territories and local products to leverage sociability and create a stronger community. The integration of a CRM system enables the direct publication of products and services in the metaverse, allowing users to purchase products and book services after live events or during free browsing. The data flow from the metaverse to the CMR Suite provides Key Performance Indicators (KPIs) to evaluate a company's effectiveness and automate post-visit communications.

Enoverse provides visitors with the opportunity to purchase wine testers and bottles directly while navigating a virtual environment (i.e. virtual commerce). During the purchase process, information pertaining to each wine was presented in the form of extendable labels on the digital twins of the bottles. Once visitors purchase and receive a wine tester at home, they can reserve a spot for an online tasting event. The main objective of these events is to introduce visitors to the full range of Buttafuoco Storico's wine offerings and the cultural heritage of Oltrepò Pavese. Visitors are welcomed within the Buttafuoco winery by a Non-Player character (NPC) powered by generative artificial intelligence. The NPC answers generic questions about the different wines produced by the consortium, in addition to introducing visitors to the virtual environment. Enoverse's online tasting events feature participation by experts and sommeliers, represented by their avatars, to provide an enriched experience for remote participants while tasting their wine glasses. Sommeliers play a crucial role in providing uniqueness to online tasting events. They offer authentic narratives that illustrate the profound influence of a region's heritage on winemaking traditions. These activities are conducted within a virtual environment that faithfully replicates the rural ambiance of Oltrepò Pavese (Fig. 2), making these online tasting events a crucial value-adding element for Enoverse.

From September 2023 to June 2024, 19 events were organised with the aim of promoting wineries. A total of 399 individuals participated in the online tasting event, 62% of whom subsequently purchased additional bottles. This resulted in nearly 4000€ worth of sales through Enoverse's virtual commerce. Furthermore, Enoverse facilitates public
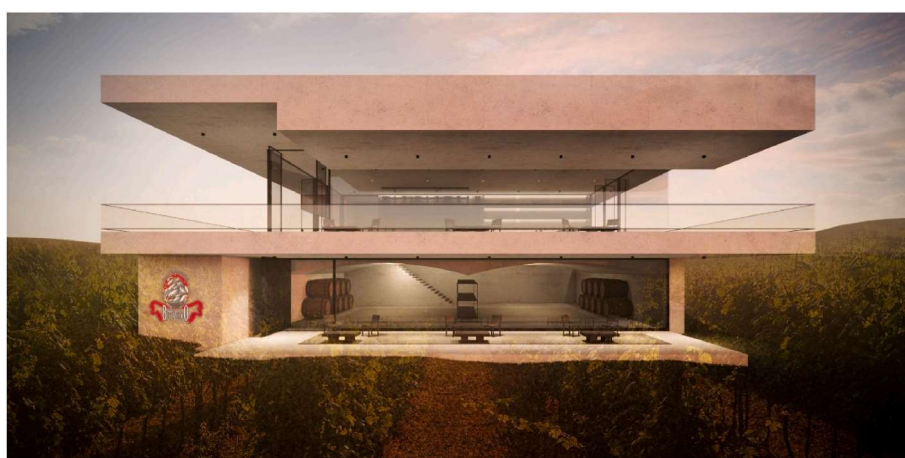

Fig. 1. The Buttafuoco Storico's building in the Enoverse.

Fig. 2. Oltrepò Pavese vineyards in Enoverse.

workshops aimed at promoting Buttafuoco Storico's winemaking traditions to a wider audience. The number of participants in these workshops reached over 3000, which demonstrated the efficacy of the model and growing public interest in such experiences.

This case was selected for its inherent originality and richness, which enabled the research team to investigate the management of social capital in a rural context, and how this led to innovation. Enoverse strategically prioritises inspiring users to explore showcased territories in real life, acquainting them with the region's wine excellence and distinct characteristics. Accordingly, this case study offers insights into the role of the metaverse in the inspirational stage of the tourism journey at the beginning of the travel process.

4. Results

4.1. Bonding social capital

4.1.1. Trust

Rural environments often lean toward traditional practices and parochial misconceptions, making it challenging to establish strong connections among local producers. Cultural barriers inhibit progress when innovative approaches are introduced. Building trust has emerged as the primary foundational factor in fostering social capital within conservative organisations. The case of the Buttafuoco Storico consortium is an example of this, as it stands out as an outlier within the Oltrepò Pavese territory for its success in cultivating internal relationships based on trust and respect for traditional wine production methods. A profound sense of belonging to a long-standing winemaking tradition is crucial for promoting an environment in which producers can share challenges openly and collectively seek solutions. This sense of rooted practice fosters a unique case in a rural setting where the consortium serves as a platform for assessing and discussing various alternatives involving the active participation of all wine producers.

As the technology provider CEO explained, when common challenges arise, specific meetings are convened to address them. The key role of the Consortium Director in driving the initiative was also evident. He is the central figure with whom to interact as a reference point for the consortium. Collective problem-solving engagement strengthens social cohesion and solidarity among members, contributing to the consortium's exceptional openness toward technological innovation in rural

contexts. Furthermore, it is noteworthy that the metaverse shift was so strong that the community allowed consortium members to entrust their decision-making authority to the directors. Approaching the metaverse requires a profound act of trust within the community, as it involves relinquishing the degree of individual decision-making power in favour of a collective vision. This transformative step demonstrates the consortium's commitment to successfully leverage trust to navigate this new frontier.

4.1.2. Reciprocity

As the Director of the Club del Buttafuoco Storico elucidated, the agricultural sector is characteristically averse to innovation. Therefore, a mutual and fair exchange of ideas within a consortium is an essential factor that bonds social capital and supports innovation. The Director's pivotal role becomes particularly apparent in this regard, as he provides support to members in bridging the organisational gaps that naturally arise when embracing technological shifts. Because the club has focused heavily on destination promotion in recent years, it has not been difficult to bring the producers of the consortium together for discussions. The objective of these gatherings is to provide support at the stages of the innovation process where difficulties may arise, particularly for small producers who may encounter heightened organisational and cultural challenges. By encouraging collaborative problem-solving and knowledge sharing, the club empowers its members to navigate technological discontinuities more effectively. This consortium has fostered a dynamic and adaptive rural ecosystem. This inclusive and reciprocal approach exploits thriving innovation to address shared goals, which is a counterintuitive practice within rural organisations. The implementation of Enoverse serves as a platform through which all consortium members exchange ideas, opinions, and core values while sitting around the same table. Despite differences in weight, size, and production capacity among the companies in the consortium, the principle of sharing ideas and values levelled the playing field and flattened the dimensions of each company involved in achieving a common goal.

> *'Each company is characterized by its own business reality, its own life and history. There's the youngest one, but also the older one with more stories, more things to tell, more wines, and so forth. Every partner was available to tell his story and to make it as real as possible in Enoverse. So, the metaverse played a relevant role in aligning the diverse corporate realities.'* - Consortium member C

4.1.3. Cooperation

Cooperation plays a significant role in bonding social capital as it establishes shared goals and the necessary steps to achieve them. Along with the high sense of trust and reciprocity that emerged from the interviews, the consortium shared a common vision of its territory and local wine production. The consortium has devoted recent years to regenerating the wine-growing process; however, entering the metaverse requires the implementation of a branding strategy that all consortium members are willing to pursue. As highlighted by the Director of the Club, the founders set clear guidelines for restoring wine production in accordance with traditional methods to provide distinctiveness and recognition of Buttafuoco Storico's brand. Accordingly, a product and territory enhancement process was initiated, which is currently employed and shared among all wine producers affiliated with the club. This is exemplified by the Club's venture into the metaverse, in which the promotion of Buttafuoco Storico's brand can only be effective if cooperation arises. Promoting a collective brand and engaging in cooperative efforts are uncommon in rural settings. However, interviews highlight that in recent years, the consortium has adopted a shared strategy to promote the Oltrepò Pavese territory. This concerted approach underscores the Consortium's commitment to unite its members under a common vision, thereby enhancing its overall appeal and recognition of the region and wine. By prioritising collaborative efforts to elevate the territory, the consortium stands out for leveraging social

capital to drive positive outcomes for the members and the entire Oltrepò Pavese area.

4.2. Bridging social capital

4.2.1. Trust

The case of Enoverse exemplifies the significant and transformative shift occurring in the food and wine landscape of the Oltrepò Pavese region. Given its novelty, Buttafuoco Storico garnered significant interest from the region's tourism industry. The consortium established robust partnerships with agricultural institutions and volunteer organisations to strengthen their communication plans. As a constituent of the food and wine tourism industry, clubs have consistently received support from several agricultural institutions. This includes collaboration in communication strategies, which fosters mutual confidence. This strategic collaboration has effectively extended the reach and impact of Enoverse, fostering a cohesive approach that unites various stakeholders. Club del Buttafuoco Storico aims to build trust by bridging social capital through collaboration with agricultural institutions. In addition, the back-office Manager of the Provider observed that the development of Enoverse reinforced the existing bond between the provider and the consortium. The Provider's team was given a set of guidelines for the creation of the virtual environment, while also providing considerable trust in their replication of the club's heritage. Specifically, the consortium placed considerable trust in them to identify the most effective methods of promoting their products and territory.

4.2.2. Reciprocity

Bridging social capital is driven mainly by reciprocity between the consortium and technology providers. The rising realism of the metaverse has spurred a widespread desire for participation, as individuals and entities strive to remain at the forefront of advancement and pay attention not to lag. The shared motivation to excel in this immersive space compels stakeholders to invest in creating richer, more engaging, and seamless user experiences. In the case of Enoverse, the initiative's design revolves around fostering a continuous exchange of ideas, thus enabling a dynamic and iterative improvement approach over time.

> '*In recent years, Internet has become increasingly important, but there is also the need to promote a territory to those who are far away and want to see it. The traditional website is not enough anymore. Therefore, we discussed for several months with our Provider to open a new channel in the metaverse*'. Club del Buttafuoco Storico, Director.

Through this continuous improvement process, the consortium consistently enhances its innovative offerings, positioning it as a cutting-edge solution that continues to evolve and adapt to the changing needs of the wine industry and the broader tourism landscape. This process led to the creation of new forms of aggregation. The interviews underscored that all interest groups perceived the necessity of uniting to gain access to financial resources that would otherwise be unavailable. Therefore, innovations, such as venturing in the metaverse, function as catalysts for aggregation, facilitating the reduction of existing divisions within the wine industry. The results of the interviews also highlighted the need to bridge social capital by promoting Enoverse without damaging other local wine producers or members of the consortium. The Club is characterised as an exceptional case within the cultural landscape of Oltrepò Pavese, where winemakers tend to exhibit a competitive spirit. The consortium devised a communication strategy that eschews competition and cultivates mutual respect among its members. Thus, venturing in the metaverse inspired a sense of belonging among local producers, driven by the belief that investing in technological innovation can serve as a stepping stone for collective benefits. Indeed, producers involved in the Enoverse demonstrated a commitment to innovation without seeking to overshadow other Oltrepò Pavese wine producers. Instead, they demonstrated openness, while respecting producers who chose not to join the Enoverse Initiative. As the enologist who collaborated with the

design of online tasting events elucidated in the interview, the metaverse serves as a conduit for outwards communication, and also as a platform for reciprocal engagement. This approach has prompted a paradigm shift in the cognitive framework of winemakers. To achieve this, producers engage in dialogue within a context inspired by principles of excellence. These principles must be represented with precision and accuracy in the metaverse; therefore, reciprocity and knowledge-sharing are of paramount importance.

4.2.3. Cooperation

Strategic planning plays a decisive role in fostering cooperation among the stakeholders. Strategic planning creates a common framework that encourages stakeholders to effectively collaborate by aligning goals, defining clear objectives, and outlining a shared vision. Interviews underscored the relevance of engaging with a network of local interest groups to elevate the brand of Buttafuoco Storico together with the Oltrepò Pavese wine tourism. The Director of the consortium emphasised that the collective goal of the club, its partners, all local companies, the Department of Agriculture, the Chamber of Commerce, and local restaurants is to enhance the image of their territory.

> '*I believe the metaverse must be correlated with new activities on the territory, that in the future can be partnered with other consortia and entities of our territory. Other local groups can develop their virtual image and reach people far away from Oltrepò, ultimately providing higher visibility to the whole region in a way that is completely different from just reading a story on a website.*' – Consortium Member F

Furthermore, the consortium aimed to enhance Enoverse's visibility and credibility by engaging key public personalities and institutions in dedicated events. These events were conceived to showcase the consortium's brand and innovation behind Enoverse to a broader audience and attract media interest. As revealed in the interviews, Enoverse is part of a broader program involving external stakeholders to revitalise and promote the territory. Collaboration among diverse actors is a pivotal driver in positioning Enoverse as a resonating element within the public sphere, thereby advancing the reputation of the Oltrepò Pavese territory and its wine producers as a cohesive and innovative entity. The introduction of an avatar into a virtual territory is a means of creating and disseminating cultural artefacts and making the territory known. Each wine can be considered a self-portrait of the social and pedoclimatic terroir, encompassing factors such as the soil, environment, climate, history, culture, and geography. As emerged from our interviews, the primary objective of the Enoverse and the broader potential of the metaverse in the tourism industry is to promote the territory. Prior to analysing wine, it is imperative to gain an understanding of the context. This rationale supports the use of online tasting events as a method for conveying the characteristics of Oltrepò Pavese's

Table 1
Bonding and bridging social capital, synthesis of the results.

	Trust	Reciprocity	Cooperation
Bonding	- *Sense of belonging to the territory's heritage* - *Entrusting one stakeholder as key decision-maker*	- *Sharing ideas and concerns regularly* - *Collaborative problem-solving orientation*	- *Mutual support to achieve a common goal* - *Prioritising the collective interest over single brand goals*
Bridging	- *Establishing partnerships with tourism and agricultural entities* - *Developing shared communication plans*	- *Building a mutually beneficial relationship with the technology provider* - *Attracting external interest groups seeking innovative communication channels*	- *Strategic planning to facilitate sustained collaboration with external stakeholders* - *Engaging public figures and institutions*

wines through the narrative of the territory and its cultural heritage. Table 1 summarises the interview findings.

4.2.4. Actor connectivity and social network

Based on the insights gathered from our interviews, venturing into the metaverse fostered strong connections and network reinforcement among consortium members. This initiative has indubitably reinforced internal communication by uniting a heterogeneous group of companies, encompassing both small and large enterprises affiliated with the consortium, as well as individuals from diverse generational backgrounds who collectively strived toward a unified objective. To achieve a stronger social bonding, the Club del Buttafuoco Storico organised internal meetings involving all members, with the primary aim of raising awareness about the inherent value of the metaverse in promoting the Oltrepò Pavese region. The Director of the consortium, who acted as a mediator between the members and provider, presented the main characteristics of Enoverse as a disruptive communication channel for both the consortium and the territory. After sharing the need for an authentic virtual experience capable of representing all facets of the consortium, each member presented their own winery traditions and heritage to both the director and fellow members. As a result of this exchange of knowledge, all members enthusiastically embraced the initiative under the guidance of the director, with the common goal of communicating and making the traditions and values of the consortium tangible in Enoverse. In the words of a consortium member: *'every partner is open to tell their story and to make it as real as possible in the metaverse'*. Each member made an indispensable contribution to achieving a certain level of authenticity, as exemplified by Enoverse. The wineries shared their unique key features and production peculiarities to comprehensively represent the excellence of the Oltrepò Pavese wine offering. Embracing such an innovative initiative, particularly within a rural context, encourages collective endeavours to advance the organizational mindset of the consortium. As one of the club members explained, each actor contributes to their area of expertise. The partners concentrated on wine production and tradition, the technological provider addressed the technical aspects, and the director served as a unifying force. Each actor is involved in the venture by sharing internal knowledge. The objective is to achieve a perfect blend of technology, innovation, and tradition.

Our study emphasises the transformative impact of the metaverse on fostering dialogue and collaboration among consortium members. It highlights the effort and commitment required from each member to understand the significance of virtual environments for rural tourism promotion while shifting toward a more dynamic and forward-thinking organizational culture:

> *'This initiative has certainly brought a breath of fresh air that has strengthened or at least encouraged a dialogue that did not exist before. The conversation [among producers] has involved effort and commitment to understand the scope of the innovation and its added value.'* – Enologist

Encouraging collaboration among members facilitates the sharing of the craftsmanship behind products. This is in line with changing consumer expectations, where consumers desire transparency and genuine connections between artisans and their products. Thus, Enoverse strengthens relationships within the consortium, and enhances trust and engagement with end consumers. Notably, one of the club members underscored contemporary consumers' appetite for insight into the narrative behind a product. The desire for transparency is an additional value artisans can provide. As 'wine artisans', the members of the club are personally and consistently accountable for the quality and provenance of their products. The opportunity for consumers to gain an authentic understanding of the wine-growing network within which the products are crafted enhances their trust in our products and wine.

5. Discussion

The results show that the social capital theory is a useful lens for investigating how a group of autonomous agents with divergent agendas appoints (and funds) a third party to represent their interests in a virtual environment. Indeed, social capital theory considers the key elements of multi-sided collaboration necessary for ventures into the metaverse. Specifically, it explains how rural tourism entities can approach the metaverse to communicate their core values, traditions, and products. According to Flora (2004), and Zahra and McGehee (2013), openness to new opportunities is derived from high levels of bridging and bonding social capital. These findings indicate that the development of social networks that sustain social capital promotes the pursuit of shared objectives within the destination context (Viren et al., 2015; Pavlovich, 2003). High levels of both bridging and bonding social capital were found in the Buttafuoco Storico case study, which resulted in pioneering projects such as Enoverse. Broad participation in this initiative has led to an inclusive, complete, and accurate representation of the consortium in the metaverse.

A cohesive community with strong bonding capital entails confidence and openness in exploring opportunities for bridging capital, leading to increased openness to venture into the metaverse for destination promotion. Social capital has been confirmed as a source of innovation in the tourism industry and can improve organisations' business performance (Kim & Shim, 2018), allowing access to marketing and innovation opportunities (Lee& Hallak, 2020). Our analysis of the Enoverse case study suggests that social capital theory could be a valuable tool for understanding how organisations can leverage virtual environments for destination promotion.

The second relevant contribution of this study relates to the essence of metaverse-based innovation. The objective of making the Enoverse experience more authentic requires the consortium to involve as many stakeholders as possible. This approach creates a virtuous cycle that positively affects stakeholder engagement. To improve the authenticity of the virtual experience, a larger involvement of stakeholders is needed, which in turn creates an emulation effect that encourages more stakeholders to join the innovation. The metaverse facilitates wider local linkages (Urry, 2007), which is especially relevant for small entrepreneurial ventures, such as winemakers, as they can significantly improve winery performance (Franken, 2018). This resulted in the possibility of developing an experience representing most of the destinations and territories, if not all. As stressed by a wine producer: *'it's important that visitors have an experience in the metaverse that is realistic, in such a way that when they [physically] visit the vineyard they see and recall what was conveyed to them in the metaverse'*. This also suggests a possible role for virtual environments as drivers of stakeholder engagement in collective innovation, an emerging dynamic in the realm of metaverse initiatives focused on urban planning endeavours (i.e. the Helsinki Innovation District Program). The metaverse also fosters interactions and collaboration with tourists, enabling technology-mediated virtual experiences. This confirms its key role in the tourism context in supporting joint value creation (Liu, 2023).

Nonetheless, this is the third main contribution of this study, because stakeholder engagement does not necessarily imply stakeholder participation. Our case study demonstrates that the radical nature of such an innovation can overwhelm individual stakeholders who may lack the capacity to fully comprehend and govern it. This underscores the pivotal role of the decision maker (in this instance, the director of the consortium) and the technological partner (in this case, the provider). Therefore, the project was developed on behalf of the consortium and relevant decisions were made, but not according to a fully participative approach. This situation recalls the dynamics of observed innovation delegation, even recently, for instance, by Colombo et al. (2021), which is a controversial point that will require further research in the future. On the one hand, for instance, Li (2006)contended that lower levels of stakeholder participation may allow for faster development of

innovation due to a relatively lower level of constraints and still allow one to pursue collective welfare. On the other hand, for instance Tosun and Jenkins (1996)observed that delegating decision-making (often referred to 'tokenism' in this kind of literature – e.g. Lamberti et al., 2011) may create unequal attention to innovation by some agencies or unbalanced benefits among stakeholders.

In line with Enoverse's main features and goals, the Consortium leveraged the metaverse as a powerful communication tool. The potential for immersion beyond the two-dimensional realm involves countries other than Italy, enabling visitors from all over the world to gain an authentic and engaging understanding of what they can expect without the need for a physical presence. Thus, the metaverse proves to be a useful tool for communicating a territory's traditions and heritage in an authentic manner, ultimately promoting inclusivity and remote participation for visitors without geographical limitations. As underscored by a consortium member we interviewed, *'the creation of something like Enoverse makes the enotourism accessible also to people who, for economy, for time, for various limitations, could not do it in any way'*. In addition, as pointed out in our case study, enabling the metaverse with CRM systems allows brands to gather and analyse the behavioural data of the audience. These data can be used by brands such as Club del Buttafuoco Storico to track visitors' provenances and preferences.

Venturing into a radical innovation for destination promotion propelled the overcoming of static organisational mechanisms typical of a rural context. In particular, the complexity introduced by the metaverse in creating an effective virtual environment to promote the excellence of a territory contributes to modifying the consortium's established system of relationships, decision-making processes, and knowledge-sharing practices. For instance, investing in the metaverse has facilitated bridging the generational divide within the club, ultimately leading to enhanced internal collaboration and the sharing of diverse expertise and experiences. The implementation of Enoverse established the director as a pivotal decision-maker, fostering a culture of trust and confidence among club members. Furthermore, Enoverse advocates the collection of information about the individual wineries that comprise the club. This proved advantageous in terms of internal cohesion and engagement of all wine producers. Our interviews unanimously showed that venturing into the metaverse considerably strengthened cooperation and connectivity within the consortium. Furthermore, the diversity of expertise required to develop such an innovative initiative suggests the potential for an expansion in the number of involved actors (e.g. experts, sommeliers, and public administration), which could ultimately result in the establishment of connections beyond the consortium. In fact, investing in a channel capable of authentically conveying the excellence of the Oltrepò Pavese territory through a realistic experience served to bind together the local stakeholders. Larger social networks are fostered through a complex process of knowledge-sharing among different actors with diverse competencies, all working to achieve a high level of authenticity in a virtual experience. Transitioning from implicit to explicit knowledge improves connectivity while transforming knowledge into a shared resource. The formalisation of tacit knowledge across various domains within a community improves social capital. In the context of the metaverse, this process extends beyond mere knowledge elucidation and requires the incorporation of additional skills to provide an authentic view of the experience. This process is described as cross-enrichment, in which different skill sets come together to enhance the overall understanding and engagement in the virtual environment. Hence, our study underscores the pivotal role of the metaverse in enhancing social networks and connectivity among actors in rural tourism. A shared vision drove a collective effort to disseminate the heritage of the territory to foster both a local identity and a winemaking tradition, a direction strongly championed and represented by Enoverse.

However, the case study analysis revealed several concerns and potential disadvantages associated with the use of the metaverse as a destination-promotion tool. First, it is necessary for a central actor to be appointed as the sole decision maker and intermediary between the producers (i.e. the consortium) and technology provider. This role may be considered analogous to that of a 'champion' of the initiative, a person who is personally invested in the topic and demonstrates a high level of commitment to advancing this type of innovation within the consortium. As emerged from our interviews, in the context of agriculture and viticulture, it is challenging for this figure to prioritise the metaverse. Stakeholder engagement is a crucial aspect to consider. It is incumbent upon the decision maker to ensure that, at the outset of the innovation process, all producers are engaged and willing to share the necessary information to accurately represent the territory and its unique characteristics and products. The process of knowledge-sharing and reciprocity becomes increasingly challenging with larger consortia or those not located in small regional areas, in contrast to the case studies under review. Although the metaverse has the potential to provide a revolutionary and multifaceted virtual experience that differs from traditional channels, it cannot replicate the full spectrum of real-life experiences. This aspect assumes greater significance when virtual environments are accessed via a desktop, resulting in a reduction in sensory engagement, and consequently, a decrease in the levels of immersion. When utilising Augmented Reality (AR) or Virtual Reality (VR) headsets to access virtual environments, the distinction between tangible and virtual experiences is less pronounced, yet still discernible. Based on estimates from Statista (2023), the number of users of both AR and VR is expected to exceed 100 million globally by the year 2027.

Although immersive technologies are still in their infancy, the endeavour to establish a high level of real-life mirroring in the metaverse results in a convergence between the tangible and the virtual, thereby underscoring their interdependence. Enoverse aspires to occupy a position between a traditional website and an in-person experience by striving to communicate a truthful anticipatory effect. In addition to emphasising real-life mirroring, Enoverse offers online taste experiences. These experiences enable sommeliers to showcase the qualities of the consortium's wines to consumers who are invited to the virtual experience and receive samples of featured wines beforehand. While taking place in a virtual setting that emulates real-world territory, these gatherings serve to heighten the anticipation of tangible, real-life experiences in a manner that traditional websites are unable to achieve.

The Enoverse was initiated with the objective of overcoming geographical limitations and making the wine world accessible to a global audience. Therefore, the anticipation of real-life experiences demonstrates the inclusivity of the metaverse, ensuring accessibility to individuals who are unfamiliar with or unable to visit the site, whether due to distance or financial constraints. In addition to the promotion of the territory to distant countries, the extended geographical scope holds the potential for more effective business-to-business interactions regarding products featured in virtual environments. Through Enoverse, users can participate in online events, interact with industry experts, virtually explore wineries, learn about wine production techniques, purchase wine and agro-food products, stroll through vineyards, and enjoy unique experiences, such as exploring territories.

From the consumer's perspective, online events facilitate participation in enological experiences without the need for travel, thereby enhancing remote accessibility to a virtual environment capable of conveying an authentic experience. Furthermore, attendees of these events had the opportunity to expand their knowledge of tourism through dedicated educational sessions led by experts in the field and sommeliers. The utilisation of an avatar for self-representation within the virtual environment facilitates enhanced engagement and interaction with experts and peers during the visit to the Oltrepò Pavese region. From the perspective of wine producers affiliated with the Club, Enoverse has improved its market reach, facilitating connection with a more extensive audience. This expansion has resulted in increased sales and enhanced global product visibility. Furthermore, offering virtual winery tours has enabled producers to not only exhibit their wines but also disseminate information regarding the cultural heritage and distinctive attributes of their local territories. This novel approach offers a distinct

opportunity to engage consumers with the narrative behind each wine bottle, thereby fostering a more profound connection to the product.

6. Limitations of the study and future research

This study sheds light on the multifaceted dynamics of rural tourism innovation through social capital in the Italian Winery Consortium. Investigations into bonding and bridging social capital have underscored the interplay between social networks, technological possibilities, and stakeholder engagement in shaping innovation pathways. In this light, the integration of the metaverse emerges as a pivotal strategy, amplifying destination promotion by creating immersive virtual experiences that captivate travellers during the travel inspiration phase in a more engaging and dynamic representation than conventional storytelling methods. To achieve this, it is crucial to provide visitors with a virtual experience that mirrors what they encounter in the physical world. From a consumer behaviour perspective, this study suggests the need for further investigation into how realistic and engaging experiences affect interest in and positive attitudes toward visiting a particular region. As the metaverse gains prominence as a conduit for destination representation, the insights gleaned from this study can guide rural tourism stakeholders, allowing them to unlock new avenues of engagement and amplify their regional appeal. By promoting social capital and metaverse integration, destinations can construct immersive experiences that resonate with travellers and empower local communities and stakeholders. These activities can be extended to real-life experiences and create cohesive connections with other local entities. For instance, hosting online tasting events and forming partnerships with neighbouring wineries can help them thrive within this virtual domain and significantly and effectively expand their reach.

From a social capital perspective, it is essential to have a choral effort in implementing innovative initiatives to deliver an authentic representation of rural territories. Our study highlights how the authenticity of a virtual environment is achieved through the contributions of all consortium members. The director of the consortium received clear guidance from each member on the messages and content to be conveyed in the metaverse, ensuring an effective representation of the complexities of rural territory excellence. Embracing such a groundbreaking initiative within a rural context necessitates that each actor adopts a forward-looking organisational mindset, both from an individual and collective perspective. This commitment potentially sets a virtuous cycle of motion, encouraging other local entities to participate in innovative ways of promoting rural tourism. Therefore, our study demonstrates that venturing in the metaverse to improve the accurate portrayal of a region accelerates the connection between actors and social networks, ultimately increasing both bonding and bridging social capital.

At the same time, this study encourages further research to elucidate whether the addressed topic is a niche topic or has the potential for wider application across the tourism industry. Such an empirical investigation of diverse tourism contexts holds promise for fostering a more nuanced comprehension of the reach and resonance of the subject matter within the sector. If rural areas are unique compared to other tourism contexts, both because of resource and capability constraints, they usually need to manage and access exclusive rural resources not present in other contexts. Collaborative (Madanaguli et al., 2022) tourism development through relationship building in a

multiple-stakeholder environment seems promising for other tourism contexts (Byrd, 2007), an approach that is still not widely adopted (Ruhanen, 2009). The lessons drawn from this study hold the potential for rural tourism development and the broader domain of destination management, where collaboration and innovation intersect to shape the future of travel experiences by leveraging the metaverse.

The analysis of this case study has some limitations. First, the scope and context of the case studies were limited. The results are hardly scalable in terms of their impact on social capital across the entire universe of medium- and large-sized consortia, where the governance structure is particularly complex. In larger consortia, it is challenging to appoint a single decision-maker who can effectively mediate between producers and technology providers. Regardless of the size of the organisation, the prioritisation of the metaverse presents a significant challenge in the context of tourism and the agricultural industry. Second, it is important to engage with stakeholders to accurately represent the unique attributes of a given territory. In the case of larger or geographically dispersed consortia, it is challenging to gather pertinent data from all producers to understand the diversity of the territory and its products. Third, the metaverse is unable to fully replicate the sensory richness of real-life experiences. Despite its potential for revolutionary change, the effectiveness of the metaverse as a destination promotion tool is contingent on significant investments in the design of the virtual environment and content strategy. Thus, it is apparent that robust commitment and engagement from all stakeholders are imperative to ensure the provision of a comprehensive range of competencies necessary to provide a virtual environment with authenticity.

CRediT authorship contribution statement

Francesco Di Paolo: Writing – review & editing, Writing – original draft, Validation, Methodology, Investigation. **Debora Bettiga:** Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Lucio Lamberti:** Writing – review & editing, Writing – original draft, Supervision, Conceptualization.

Impact statement

Through an in-depth case study analysis, this study advances literature on social capital theory by revealing how to bond and bridge social capital in the context of promoting rural tourism through the metaverse. The paper offers strategic insights for cultivating relationships in order to implement innovative initiatives within the rural tourism industry. The findings highlight the integration of the metaverse as a pivotal strategy for tourist inspiration.

Declarations of interest

None.

Acknowledgements

Appendix 1. – List of interviewees

1. Consortium Director
2. Consortium member A
3. Consortium member B
4. Consortium member C

5. Consortium member D
6. Consortium member E
7. Consortium member F
8. Consortium member G
9. Consortium member H
10. Consortium member I
11. Enologist
12. Provider, CEO
13. Provider, COO
14. Provider, Back-office Manager
15. Provider, Developer
16. Provider, Head Architect

Appendix 2– Table 2: Semi-structured interview protocol

Bridging social capital	• Is there communication between the consortium and organisations at other levels (local authorities, regions, and states) in the field of tourism promotion? • Who are all the actors involved in the initiative?
Bonding social capital	• Is there mutual trust between the different producers in the consortium? • Is there a reciprocal relationship (fair exchange) between the producers of the consortium? • Have informal social groups been formed to promote tourism in the area? • Is tourist community cohesive? Is every actor recognised for their own importance/role? • Is there a shared sense of purpose and future as part of the same tourist offer? • Is there cooperation between suppliers in the field of tourism?

Description of the case study	• Please explain the primary value you want to provide to both the consortium and the final consumer through this initiative.
	• How does Enoverse enable interaction with consumers? How does this stimulate curiosity and consequent engagement in visits to wine cells?
	• What is the goal of the initiative?
	• The initiative aims to: o inspire the visitor in the visit of the promoted territory
	  o make known the territorial wine excellence and its peculiarities
	  o increase traffic to events in presence
	  o create a link between consumer and territory after the visit
	• Are there KPIs?
	• What are the results achieved/to be achieved and with what timeframe?

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