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The impact of interactive technologies on the social experience: An empirical study in a cultural tourism context

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ABSTRACT

This article purports to explore the impact of the four types of experiences - education, entertainment, escapism, and aesthetics - proposed by Pine and Gilmore (1999) on the collective experience across a range of interactive technologies in a leading technology-empowered tourist destination – la Cité du Vin in Bordeaux. The findings reveal that passive and active technologies have different impacts on the visitor's social experience. Technologies that require visitors' active participation afford opportunities for verbal and physical interactions with other visitors. By contrast, passive technologies, providing recreational and artistic content to visitors without them having to interact with the technology, tend to preclude social interactions. This research contributes to the literature addressing the social experience phenomenon in a cultural tourism context. It also provides important implications for managers involved in the design and management of technology-empowered tourism experiences.

1. Introduction

Tourist attractions (e.g., heritage sites, museums, festivals, zoos, etc.) are increasing positioned as experiential contexts that attempt to provide a strong consumer experience in order to encourage loyalty and positive word-of-mouth. Pine and Gilmore (1999) propose a framework to understand and design consumer experiences that are relevant to the tourism sector. They categorize experiences along two dimensions: from passive to active participation and from absorption to immersion, creating four categories of experience: education, entertainment, escapism, and aesthetics (Pine & Gilmore, 1999; Stamboulis & Skayannis, 2003). Existing literature suggests that tourism organizations increasingly try to focus on providing all four kinds of experiences (Hosany & Witham, 2010; Oh, Fiore, & Jeoung, 2007). One popular way to achieve this is through the application of digital technologies ranging from interactive and transmedia tools to virtual reality (Bourgeon-Renault, Derbaix, Jarrier, & Petr, 2019). Investing in interactive technologies represents an opportunity to make visits more accessible, develop edutainment and, more generally, enhance the visitor experience. Previous research suggests that interactive technologies help to drive perceptions of autonomy, personalization, interactivity, and immersion (Larivière et al., 2017).

Prior research also highlights that tourist experiences are inherently hedonic and social (Carlson, Rahman, Rosenberger III, & Holzmüller, 2016; Rihova, Buhalis, Moital, & Gouthro, 2015). Social interactions among visitors shape and are shaped by the experience they live. Thereby, through involvement in social interactions (e.g., sharing ideas/opinions and developing conversation with companions or employees), visitors gain an overall better experience (Debenedetti, 2003). In particular, visiting a cultural tourism attraction nourishes "interactive sociality" both inside and outside the site (Jafari, Taheri, & vom Lehn, D., 2013). However, the growing use and reliance on interactive technologies may reduce human interactions in the consumption experience. For instance, interactions with mediation devices in museums prioritize the single individual and do not facilitate interactions, co-participation, or collaboration with companions (Heath & vom Lehn, 2008; vom Lehn and Heath (2016). This evidence suggests that the design of technology-driven interfaces rarely supports meaningful social interactions and that the individual's involvement with mediation devices during the visit weakens the connection with other members of the group.

Our research seeks to address the apparent paradox between the increasingly personalized experience afforded by interactive technologies and the reduction in social interactions that these technologies may cause. With the exception of Heath & Vom Lehn, 2008 and vom Lehn and Heath (2016), no study has examined how technology affects social interactions among visitors in a cultural tourism context. Against this background, this article purports to explore the impact of the four types

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of experiences - education, entertainment, escapism, and aesthetics - proposed by Pine and Gilmore (1999) on the collective experience across a range of digital technologies in a leading technology-empowered tourist destination – La Cité du Vin in Bordeaux.

This research contributes to the literature addressing the social experience phenomenon in a tourism context, which is under-researched (Rajaobelina, 2018). Although previous research has examined various facets of the collective experience (Debenedetti, 2003; Jafari et al., 2013; Rihova et al., 2015), to date the phenomenon has not been explored in an experiential and technology-intensive context, with the notable exception of two previous studies (Heath and Vom Lehn (2008); vom Lehn and Heath (2016)). This is an important gap when one considers the growing reliance on modern technologies to enable the co-creation of the cultural tourism experience and to increase visitors' engagement (Falk & Dierking, 2012; Neuhofer, Buhalis, & Ladkin, 2014; Rentschler & Potter, 1996). Our study addresses the apparent paradox between the increasingly personalized experience afforded by interactive technologies and the reduction in social interactions that these technologies may cause. Furthermore, our second contribution, trough the empirical application of the framework proposed by Pine and Gilmore (1999), consists in identifying which dimensions (active / passive; absorption / immersion) have an impact on the collective experience. We thus extend works by Heath and Vom Lehn (2008) and vom Lehn and Heath (2016), which are mainly focused on the learning/education experience, and deepen works by Neuhofer, Buhalis, and Ladkin (2012); Neuhofer et al. (2014) by exploring technology-empowered experiences from a social perspective. Finally, previous research has traditionally examined the collective experience from a general, holistic perspective (Carlson et al., 2016; Carù & Cova, 2015), focusing on the entire on-site tourist experience. Because a tourist attraction is often designed to provide a range of experiences (Hosany & Witham, 2010), it is challenging to characterize the social experience at the level of the entire attraction or site. A macro-view of the context is thus likely to lead to an incoherent description of the characteristics of the social experience. Our study recognises the limitations of a holistic, high-level perspective. Adopting a lower level of granularity enables us to distinguish among different categories of experiences (i.e., entertainment, aesthetics, etc.), document the interactive technologies employed, and identify the various facets of social experience across each category. This approach makes it possible to compare the social experience at a level where it can be more directly identified and explained.

This article first provides a theoretical review built on (1) the social dimension of cultural tourism experiences and (2) interactive technologies in cultural tourism contexts, followed by the description of the presumed paradox. Our general research methodology is then described. The case study was conducted at La Cité du Vin in Bordeaux, a leading experiential wine museum that is composed of 19 technology-empowered thematic modules. In the first stage of our study, these 19 modules are examined and classified into the four categories of experiences proposed by Pine and Gilmore (1999). In the second stage, the social experience is explored across these four experiential categories. The methods and findings relating to these two stages are described in detail. The article concludes with a discussion of our contribution, main implications for practice, limitations, and future research avenues.

2. Theoretical background

The co-creation concept provides useful theoretical insights to understand the visitor experience in the tourism sector (Neuhofer, Buhalis, & Ladkin, 2013; Sugathan & Ranjan, 2019). Service-dominant logic highlights the importance for firms to develop offerings that incorporate the customer as a resource to co-create value (Vargo & Lusch, 2008). Value creation is understood to occur through the interactions that take place when an offering is being consumed (Ballantyne, Frow, Varey, & Payne, 2011). In other words, value is experiential: consumers derive value when they experience an offering. To understand experience from a co-creation perspective, interactions with the social, physical, and virtual elements of the context are key (Akaka, Vargo, & Schau, 2015; Minkiewicz, Bridson, & Evans, 2016). Interestingly, technology adoption changes this context and modifies the role of the visitor (Neuhofer et al., 2014), who takes an active role in co-creating the experience (Gretzel & Jamal, 2009; Minkiewicz, Evans, & Bridson, 2014). In this article, we focus specifically on the social and technological aspects of experience co-creation. We seek to better understand the paradox between the social dimension inherent to the tourist experience and the individualization of the experience induced by technology.

2.1. Cultural tourism experiences as primarily social experiences

Marketing and tourism scholars have argued that consumption of tourism and hedonic offering often takes place in socially constructed contexts, where interactions and shared experiences with other consumers form a key part of the experience (Levy, 2010; Rihova et al., 2015; Zomerdijk & Voss, 2010). Research by Rosenbaum and Montoya (2007); Rosenbaum and Massiah (2011) conceptualized a “social servicescape” as comprising consumers and employees who are encapsulated in a consumption setting. Furthermore, they define a servicescape's social dimension as containing the following stimuli: employees, customers, social density, and displayed emotions. In our postmodern era, one of the most important elements for creating a positive consumption experience is the collective dimension. Consumers share and shape experiences together, which makes them more enjoyable, valuable, and memorable (Carù & Cova, 2015).

Some authors contend that tourism and cultural experiences are predominantly considered not as aesthetic or intellectual but as social (Carlson et al., 2016; Gainer, 1995; Pulh, Marteaux, & Mencarelli, 2008). Most people visit museums and tourist sites in groups and those who visit alone regularly meet and talk with other visitors or staff members. Much of the social interaction in these contexts is a way to connect with one another and find meaning together. The question of social interactions in cultural tourism experiences has been the topic of numerous studies with authors agreeing that the social dimension is a primary factor in visitors' motives, satisfaction, and engagement (Debenedetti, 2003; Falk & Dierking, 2012; Goulding, 1999; Thyne, 2001).

While focusing on consumer-based experiences at contemporary museums, Goulding (1999) highlighted social and group motivations. She showed how a heritage site could be used as a stage for social interactions that reinforces bonds through a common experience. In the same way, Thyne (2001) pointed out the very clear social orientation of museum visitors and brought to light the prevalence of socially oriented values, such as fun and entertainment and warm relationships with others. More specifically, Debenedetti (2003) analyzed the role played by the presence or absence of companions in the individual experience of visiting art museum. He found that visiting a museum is an opportunity for visitors to maintain and deepen bonds of friendships, family, or affection and that actively sharing this experience serves to transform the cultural into the social. He identified four modes of socially appropriating the museums: the fusion visit (visiting together), the pursuit of social contact (meeting other visitors and guides but also art professionals and artists), the separated visit (visiting alone but finding companions periodically), and the private experience (visiting alone). Departing from this previous research stream by focusing on how sociality shapes consumption experiences, Jafari et al. (2013) conducted a study stressing how the museum experience nourishes sociality. They use the term interactive sociality to explain how visitors meaningfully socialize in the context of the museum (by strengthening existing ties and establishing new ties) and extend their sociality to other domains outside the museum (in offline and online contexts). Magee and

Gilmore (2015) explored dark heritage sites (i.e., sites associated with death, disaster, suffering, and tragedy) and emphasized the socially symbolic dimensions that are used with signs, symbols, and artefacts covering socio-collective meanings. Findings of their in-site studies recognized the important role of site managers and other visitors as facilitators for socially symbolic communication and engagement at these sites.

In another study centered on group-oriented event tourism, Carlson et al. (2016) investigated the communal and individual mechanisms that simultaneously shape the consumer experience. They argue that the quality of peer-to-peer interactions plays a significant role in shaping an individual consumer's experience in a tourist context, whereby the experience of each consumer can influence that of fellow group members. Particularly, they found that perceived sociability of the event, peer-to-peer interactions, and communitas drive communal experiences.

Thereby it seems tourism experiences in general, and cultural tourism experiences in particular, are inherently social experiences because consumers share and co-create their experiences with their companions (e.g., friends and family) but also with other visitors and staff members. Museums and tourist sites are social spaces where some people might even feel a sense of belonging (Jafari et al., 2013). Some authors have referred to them as third places, which are not home or work, and where people gather voluntarily, informally, and frequently (Oldenburg, 1999; Slater & Koo, 2010). Companionship and emotional support received from employees and other customers in third places lead to high levels of commitment toward future patronage (Rosenbaum, 2006).

2.2. Interactive technologies in cultural tourism contexts

Rentschler and Potter (1996) argue that technology plays a major role in supporting the development, renewal, and competitiveness of cultural organizations. They make a compelling argument in favour of the adoption of modern technology devices to improve the offering of tourism and cultural organizations, and consequently enhance the experience of the consumer. Many organizations have since implemented interactive technologies allowing a renewed positioning of their offering. The concept of interactive technologies refers to the interactivity between a consumer and an interface that is driven or supported by a technological device. Existing literature suggests that such technology enhances interactivity between visitors and exhibits (Adams, Luke, & Moussouri, 2004; Heath & vom Lehn, 2008) and, more generally, the experiential aspect of the cultural tourism experience. Equipment and applications relating to new technologies seem to provide new channels for the diffusion of culture and are part of a renewal of aesthetic and cognitive consumer experiences (Pulh et al., 2008). For instance, museum visitors can often immerse themselves in re-created environments that surround them with high-definition video images, high-fidelity sounds, virtual reality, smells, textures, colors, and vibrations (Falk & Dierking, 2012).

Recent research in tourism (Cantino, Giacosa, Alfiero, Shams, & Ferraris, 2019; Femenia-Serra, Perles-Ribes, & Ivars-Baidal, 2019; Neuhofer, Buhalis, & Ladkin, 2015) has introduced the term “smart technologies”, a derivation of the concept of “smart tourism destination” and “smart cities”, which are defined as specific products and services adding value to tourist experiences in a concrete manner by fostering higher interaction, co-creation and personalisation levels. These advanced technologies include, among others, sensors, augmented and virtual reality, ubiquitous connectivity through Wi-Fi and other networks, mobile apps, latest generation websites and social networks, chatbots, etc.

Museums and heritage sites are nowadays strongly interested in technological advancements, with augmented reality (AR) constituting one of the key emerging technologies used to enhance visitor satisfaction (Tsai, 2019), to improve visitor experience and to encourage value co-creation (Serravalle, Ferraris, Vrontis, Thrassou, & Christofi, 2019). Javornik et al. (2019) investigated AR applications in an historical site context to explain how different types of content - such as text or image – can affect the flow experience as well as affective and behavioral responses. They showed that a combination of both images and text seemed to enhance the user experience by acting like a ‘guide’. Tom Dieck and Jung (2018) conducted focus groups with tourists visiting Dublin with the help of a mobile AR application. They revealed that seven factors influence tourists' acceptance of mobile AR applications including information quality, system quality, usage cost, recommendations, personal innovativeness, risk, and facilitating conditions. These authors also called for the use of more qualitative techniques to explore the technology acceptance model (TAM) in order to get a deeper understanding of users' perceptions. All these changes are part of a broader trend that goes beyond tourism and cultural activities. In many sectors, interactions between customers and providers become fully technology-generated as technology increasingly acts as substitute for employees (Larivière et al., 2017).

Works by Neuhofer et al. (2012, 2014) provide a conceptualization for developing an integrated understanding of technology-oriented tourism experiences. These authors highlight that the implementation of technologies has caused radical changes in the tourism sector. Technology adoption has indeed brought major implications for not only the way travel is planned (pre-tourism experience) and shared (post-tourism experience) but also for the way the tourism product is created and consumed (on-site experience). They propose an “experience hierarchy” including four different experience levels: (1) conventional experience (in which technology is non-existent or restricted), (2) technology-assisted experience, (3) technology-enhanced experience, and (4) technology-empowered experience. Whereas technology plays a mediating role in the case of technology-assisted and technology-enhanced experiences, technology constitutes the core of the experience in the last level of experience. The authors highlight the technology-empowered experience as the most distinct and valuable experience, which can be achieved by integrating immersive technological solutions to enable the tourist to become highly involved, participative, and to co-create his/her own experience. For instance, artworks, objects, and artefacts are replaced by digital displays and digitally enabled interactive activities in a museum. From this perspective, technology is seen as pervasive – it is needed for the experience to happen.

Other authors (Verhoef et al., 2009) emphasize a distinction between passive technologies, which provide appropriate information/content to customers and don't require interaction with the technology, and active technologies, which require customers' active participation. They assume that these two types of technologies may have different impacts on consumer experiences. Relying on mediation technology devices, Jarrier and Bourgeon-Renault (2012) differentiate between fixed (e.g., interactive terminals) and mobile (e.g., audio-guides) mediation devices and explore the impact of both devices on visitors' behavioral intentions in the context of fine arts museums. They found that although mediation devices make people want to visit museums, they do not necessary encourage loyalty but may attract visitors to another museum with mediation devices.

Heath and Vom Lehn (2008) explore the ways in which new technologies can communicate scientific facts and enhance learning and engagement in science centers and museums using ethnographic and video-based methods. They focus on the degree of interactivity allowed by technologies and assume that new technologies are used to design exhibits that enable visitors to interact and thereby become more immersed in, and engaged with, matters of scientific interest. They finally conclude that interactive technology adopted in science museums and centers tends to support the creation of independent activities rather than interdependent activities, conflates “interactivity” with social interaction, and thereby undermines the informal educational contribution that such exhibits are thought to achieve. More specifically, Pallud (2017) proposes and tests a model to assess visitors' learning and

engagement with interactive technologies in the context of a history museum. She demonstrates that IT dimensions, namely, ease-of-use and interactivity, influence emotional processes (authenticity and cognitive engagement), which in turn influence learning. Minkiewicz et al. (2014), studying a heritage consumption experience, show that technology and interactive displays immerse consumers and add life and a sense of relevance to the experience. Many consumers see the capacity to use technology as a personalization tool and as a way to enjoy a sense of freedom and choice when participating in such an experience.

In sum, in cultural and tourism contexts that rely on technology, consumers may thus take a more active role in personalizing and co-producing the experience (Gretzel & Jamal, 2009; Minkiewicz et al., 2014). For instance, technologies embedded within an exhibition or carried by the visitors themselves (e.g., personal smartphones) allow individuals to engage in highly experiential and personalized experiences (Falk & Dierking, 2012). More generally, interactive technologies are assumed to allow for active participation, customization, and personalization of the experience and are thought to support the provision of stronger experiences (Neuhofer et al., 2014).

2.3. The relationship between interactive technology and social interaction: A paradox?

On the one hand, prior research strongly suggests that cultural tourism experiences are inherently social experiences. This is particularly true in the case of museum experiences. Most people visit museums in groups, either with family or with friends. They clearly want to share, and they will approach the museum as a social experience. On the other hand, the addition of technology and media into museums has opened up opportunities for varying degrees of depth of information and options that facilitate individual flexibility and choice (Falk & Dierking, 2012). With new technologies, consumers personalize their experience through choosing a self-directed path based on their interests, using experience spaces in their own way (Minkiewicz et al., 2014).

However, interactive technologies delineate and constrain the engagement of visitors in ways that do not necessarily facilitate co-participation and collaboration among visitors. Works by Heath and Vom Lehn (2008) and vom Lehn and Heath (2016) highlight that different interactive tools and technologies do not encourage social interactions and tend to be designed for single users. They argue that the design of technology-driven interfaces rarely supports meaningful social interactions and that the individual's involvement with mediation devices during the visit weakens the connection with other members of the group. This research builds on this apparent paradox between the social dimension of cultural tourism experiences and the increased integration of interactive technologies in these contexts.

3. Research context

Our case study was conducted at the Cité du Vin museum in Bordeaux, a leading experiential and technology-empowered tourist destination. The permanent exhibition "embarks visitors on a sensory adventure to discover the cultures and civilisations of wine (…) across time and space."[1] The experience takes place in a 3000m^2 open space containing 19 thematic areas (referred to as modules) and comprising more than 220 audiovisual productions. Attracting more than 400,000 paying visitors yearly, this museum is a top tourist destination in the southwest of France. According to a March 2019 survey (N = 201), visitor satisfaction amounts to 8.09 out of 10, suggesting that visitors are generally satisfied with the experience. This survey also found that 96% of visitors visit the museum in groups of more than two adults.

[1] https://www.laciteduvin.com/en/experience-la-cite-du-vin/the-permanent-tour

There are no employees inside the permanent exhibition. Instead, a wide range of interactive technologies support the creation of the visitor experience in this technology-empowered context (Neuhofer et al., 2014). The equipment includes more than 50 video projectors, 100 video servers and players, 200 screens, a dozen audio players, 20 motion detection cameras, 40 aroma machines, and nearly 300 infrared detectors. A range of technologies provides the core experience in each module. These technologies aim to promote interactivity, offer an immersive experience, and make the cultural and living heritage of wine easily accessible to visitors. For example, the World Wine Tour module uses videos of winemaking regions filmed from a helicopter and automatically played end-to-end on wall screens. At the Terroir Table, visitors select from a range of winemakers on a digital touch table. The chosen person is then projected onto an interactive vineyard landscape to give the impression that he/she is talking "live" about their passion for their wine. Additionally, all visitors are equipped with an individual hand-held digital guide with an "open" headset (the visit companion) that purports to enable a personalized discovery of the museum. It relies on interactive technology to detect and activate multimedia animations in each module. In some modules, the device detects the visitor's position and automatically triggers multimedia content and animations via an optical process based on infrared detectors. Other modules invite visitors to select and activate from a range of proposed multimedia animations by "tagging" the guide onto designated spots positioned on the equipment.

The fieldwork was structured into two main studies, which are presented in turn in the following sections.

4. Study 1: Classifying the modules into categories of experiences

4.1. Data collection and analysis

Study 1 was concerned with understanding and classifying the 19 modules of the museum into the four categories of experiences proposed by Pine and Gilmore (1999). Here, we rely on a positivist approach, beginning with an existing theoretical framework and using case study data to generate our findings (Easterby-Smith et al., 2002). Previous studies have shown that Pine and Gilmore's framework is valid and reliable across multiple tourism contexts (see e.g. Oh et al., 2007; Hosany and Witham, 2010; Quadri-Felitti and Fiore, 2012, 2013). We compared and contrasted the provider's perspective (i.e., how was the experience designed) and the visitor's perspective (i.e., how was the experience perceived) to assess each module and supports the classification into experiential categories. We obtained a rich evidence base providing a comprehensive and detailed understanding of each module (i.e., description of the experience, expected and actual visitor reactions and responses, type and role of technology). Eight interviews with La Cité du Vin staff members involved in designing and managing the visitor experience were carried out. Interviewees included the scientific director, the director of cultural affairs, the marketing director, the customer services manager, the director of scenography, the scenography project manager, the IT director, and the multimedia director. Total interview time amounted to approximately 16 h. Relevant documentation (e.g., 300-page scientific document describing in detail the characteristics of each module and expected visitor outcomes as well as two press briefings and two fictional visitor scenarios) was also obtained. Moreover, face-to-face interviews were conducted with 33 visitors immediately after their visit. The visitor sample is diversified in terms of age, gender, and origin to ensure the capture of a wide range of perceptions. Visitors were interviewed in the 35-m-high belvedere, where visitors are invited to taste a free glass of wine with a panoramic view of Bordeaux and the surrounding area. A plasticized A4 sheet featuring the name and picture of each module was used to facilitate visitor recollection of the actual experience. Visitor interviews lasted between 10 and 15 min on average. Interview guides are provided in the web appendix. All interviews were transcribed verbatim and, along

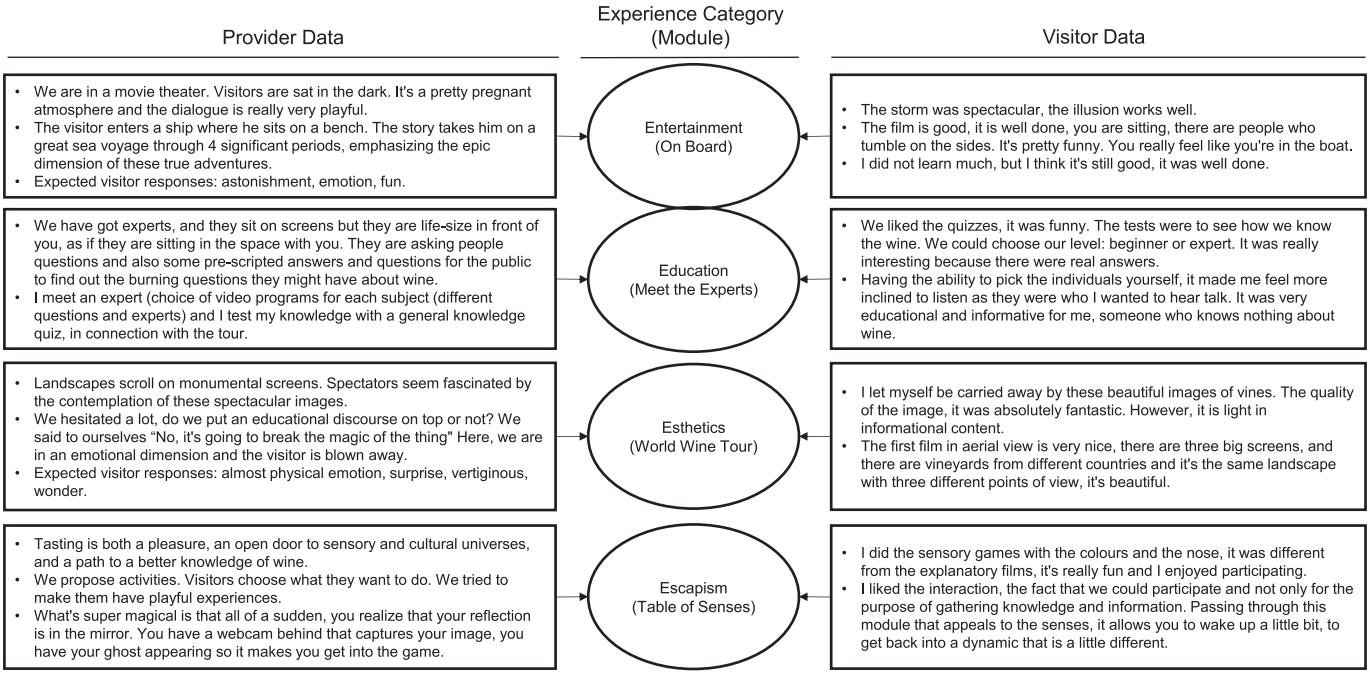

Fig. 1. An illustration of the data analysis process.

with all of the documentary evidence, imported and managed using NVivo. We followed rigorous inductive logic procedures informed by Gioia, Corley, and Hamilton (2013) to analyze the data. Fig. 1 illustrates the results of these procedures by showing how four modules were classified into the four experiential categories.

4.2. Findings

Data analysis focused on classifying the 19 modules into the four categories of experiences of Pine and Gilmore (1999) described by two dimensions. The first axis of the framework describes the extent of consumer participation in the experience. The second dimension differentiates between absorptive (i.e., involving the mind) and immersive (i.e., mobilizing the entire self) experiences. Each module was found to fit a category, which suggests that the study context provides appropriate coverage of the relevant conceptual domain. In the next sections, we provide a generic description of each category (i.e., education, entertainment, escapism, and aesthetics) and an illustration of two exemplar modules per category.

4.2.1. Education-oriented modules

Eight modules are classified as being education-oriented. They typically comprise a series of short didactic activities enabled by technologies requiring the visitor's participation to select and access a range of informative audio and video contents. Active technologies, in the form of digital touch tables, tactile activity stations, touch screen tablets, and interactive giant world globes, for instance, provide the core experience. Additionally, the digital guide must be employed to activate multimedia animations and deliver audio content via the headset. In these modules, visitors must perform a range of technology-mediated tasks to have the experience. In other words, visitors' active participation is necessary for the experience to happen. Visitor participation takes different forms: (1) providing preferences about the type of content to access (e.g., visitors choosing which winemaker they want to listen to on a touch table or tagging the digital guide to trigger audio and video content), (2) providing knowledge (e.g., visitors taking wine-related quizzes and selecting themes using the digital guide), and (3) performing physical activities (e.g., visitors waving their arms around a digital disk to move it and release information).

4.2.2. Entertainment-oriented modules

Four modules are classified as being entertainment-oriented. These are characterized by passive technologies such as videos, animated pictures and panels, and audio content supporting the provision of recreational experiences. For instance, three modules broadcast films automatically and continuously on extra-large screens. The fourth module proposes a digital banquet projected onto dinner tables with virtual guests sitting at the tables making the visitors feel as if they are watching a live performance. Visitor participation is not required in these modules to access the core experience. For instance, visitors do not have to use the digital guide because video and audio content (e.g., music, dialogues) are triggered and played automatically.

4.2.3. Aesthetics-oriented modules

Five modules are considered aesthetics-oriented. These modules provide spaces for contemplation, relaxation, and reflection. Typically, various relationships (e.g., wine and love, wine and religion, wine and landscapes, people and wine) are examined through works of art, music, literature, and cinema with a primary focus on recreational content. Passive technologies form the core experience as films and visual compositions are projected onto mural screens, ceilings, a screen mosaic, and an individual screen. Audio animations are automatically detected and triggered by the digital guide.

4.2.4. Escapism-oriented modules

Two modules are classified as escapism-oriented. Each module offers a series of short sensorial and playful activities to engage visitors in the experience and enable them to access and understand key messages. Escapism modules make use of active digital and interactive technologies (e.g., digital touch screens, 3D images, and aroma-diffusion equipment) to power the core experience. For example, visitors learn to taste wine with pleasure by challenging their senses, taste colors and playing with images and smells. The role of the mediating technology (i.e., visit companion) is limited.

Table 1
Background information on the sample of respondents.

Group	Name*	Age	Gender	Wine knowledge**	Characteristics of the group
1	Jean	64	Man	Amateur	Friends
	Suzanne	67	Woman	Amateur	
	Benoît	65	Man	Amateur	
	Julie	62	Woman	Amateur	
2	Sophie	22	Woman	Amateur	Sisters
	Manon	24	Woman	Connoisseur	
3	Simon	63	Man	Novice	Friends
	Astrid	55	Woman	Professional	
4	Owen	27	Man	Novice	Couple without children
	Jill	23	Woman	Novice	
5	Madeleine	54	Woman	Novice	Mother and daughter
	Lisa	27	Woman	Novice	
6	Christian	45	Man	Amateur	Family
	Blandine	44	Woman	Amateur	
	Romane	14	Girl	Novice	
	Mathilde	12	Girl	Novice	
7	Philippe	62	Man	Novice	Couple without children
	Céline	56	Woman	Novice	
8	Matthew	34	Man	Professional	Couple without children
	Kirsten	35	Woman	Professional	
9	Gérard	53	Man	Amateur	Couple without children
	Nathalie	50	Woman	Amateur	
10	Frédéric	26	Man	Connoisseur	Couple without children
	Valérie	28	Woman	Novice	
11	Arthur	38	Man	Amateur	Friends
	Julien	37	Man	Amateur	
12	Michel	63	Man	Connoisseur	Couple without children
	Estelle	63	Woman	Connoisseur	
13	Adrien	43	Man	Amateur	Couple without children
	Agathe	41	Woman	Amateur	
14	Vincent	45	Man	Novice	Family
	Emilie	42	Woman	Novice	
	Emma	16	Woman	Novice	
15	Laurent	35	Man	Connoisseur	Couple without children
	Anne-Sophie	36	Woman	Connoisseur	
16	Charles	47	Man	Connoisseur	Couple without children
	Kate	35	Woman	Connoisseur	
17	Harry	72	Man	Amateur	Couple without children
	Judy	68	Woman	Amateur	
18	Ludovic	54	Man	Amateur	Couple without children
	Nicole	56	Woman	Amateur	
19	Louis	65	Man	Amateur	Couple without children
	Marie	64	Woman	Amateur	
20	David	47	Man	Amateur	Couple without children
	Pauline	43	Woman	Amateur	
21	Francis	49	Man	Amateur	Couple without children
	Christelle	45	Woman	Amateur	
22	Guillaume	31	Man	Amateur	Friends
	François	32	Man	Novice	
	Olivier	31	Man	Novice	
	Benjamin	34	Man	Novice	
23	Paul	59	Man	Connoisseur	Couple without children
	Adeline	54	Woman	Connoisseur	
24	Bonnie	37	Woman	Amateur	Work colleagues
	Jane	35	Woman	Amateur	
25	Caroline	47	Woman	Amateur	Friends
	Stéphanie	46	Woman	Amateur	
26	Inès	32	Woman	Connoisseur	Couple without children
	Elsa	27	Woman	Connoisseur	
27	Xavier	62	Man	Amateur	Couple without children
	Sylvie	65	Woman	Amateur	

* Pseudonyms have been used for all visitors.
** Visitors stated their perceived level of wine knowledge.

5. Study 2: Exploring the social experience across the four experiential categories

5.1. Data collection and analysis

Study 2 explores the collective experience across the four categories of experiences, represented by the 19 modules of the museum. We rely on inductive logic to move toward theory through the development of a conceptual framework based on our emergent findings (Colquitt and Zapata-Phelan, 2007). The dataset comprises non-participant observations inside the museum and 27 semi-directed interviews with groups of visitors (couples, family, groups of friends, etc.). Respondents include local residents, French tourists from other regions, and foreign tourists (from the UK, USA and Spain). Table 1 provides background information about the sample. The data collection process took place at four separate events (i.e., two rounds of observations and two rounds of interviews) over a one-month period. Data were collected by the two researchers working in tandem. This configuration provided the researchers with several occasions to discuss the data that were being collected in real time as well as to reflect on it between rounds. Initially, the researchers were given free and unrestricted access to the permanent exhibition on two separate afternoons to observe the social experience. A blank observation sheet is included in the web appendix. Our intent was to identify and describe the presence (or absence) of social interactions among visitors in four preselected modules, each representing an experiential category as described in Study 1. We focused on determining if and how visitors interact with each other before, during, and after experiencing the module (e.g., verbal and non-verbal interactions, performing activities together), eliciting the reasons why they interacted (e.g., helping each other, deciding what activity to perform), and describing the content of these interactions (e.g., talking, laughing). Interviews took place in the belvedere immediately after the visit. Unaccompanied visitors were not solicited. A visual aid featuring the modules was used to minimize recollection bias. The interview guide is included in the web appendix. As our sole focus was to examine the social experience across the modules that visitors experienced together, interviews were short, lasting between 6 and 12 min on average. All interviews were recorded and transcribed verbatim.

The dataset was analyzed using thematic analysis (Miles & Huberman, 1994), whereby observational and interview data relating to the presence or absence of social interactions among visitors were coded and organized into four discrete categories (i.e., the four types of experiential zones proposed by Pine & Gilmore, 1999) and sub-categories (i.e., the museum's 19 modules). Systematic comparative analysis was then undertaken first within each sub-category and then within each category to facilitate the emergence of similarities and differences in the data. Finally, emergent patterns were compared and contrasted across the four types of experiential categories to describe and explain the social experience across the spectrum of technology-based experiences. It became clear that we arrived at theoretical saturation (Bowen, 2008) toward the end of the coding process because reviewing new interviews provided no new information and newly coded data was virtually always consistent with previously coded data. The coding of the final eight interviews and the subsequent analysis confirmed the picture of the phenomenon that was emerging.

It is important to discuss how this research addresses the criterion of reliability (Yin, 2003), which corresponds to the notion of dependability in qualitative research (Miles & Huberman, 1994). Both concepts are similar and evaluate whether other researchers using the same procedures and techniques in the research process would obtain the same results and come to the same conclusions (Miles & Huberman, 1994; Yin, 2003). Several steps were taken at each key phase of the research process to maximise reliability/dependability. First, following recommendations by Yin (2003), structured data collection instruments in the form of interview guides and observation sheets were developed and used to document and ensure the traceability of the research process (see the web appendix). Second, data collection involved multiple sources of information (i.e. staff interviews, museum documentation, visitor interviews, and non-participant observations) to enable triangulation and ensure the robustness and consistency of the data (Eisenhardt, 1989). Third, as suggested in the case study quality assessment framework developed by Goffin, Åhlström, Bianchi, and Richtnér (2019), the data were coded in an independent fashion by two

researchers. The two members of the research team coded the data independently before coming together to discuss and agree on the outcome. Any disagreements were resolved by the inclusion of a third researcher in the process. This technique helped to avoid subjectivity and bias in the data analysis process.

5.2. Findings

Although most visitors come as a part of a group, the design of the permanent exhibition does not intend to support the creation of collective experiences. The permanent exhibition was conceived as an individualist experience rather than a social one. In particular, designers and managers anticipated that relying on the digital guide's headset to access audio content would reduce opportunities for verbal exchanges among visitors. Interestingly, data strongly suggests that the audio guide and headset (mediating technology) were not seen as major barriers to the manifestation of social interactions. Most visitors reported that having to wear a headset for the duration of the entire experience resulted in them feeling somewhat separated and isolated from fellow visitors. However, this feeling was moderated by the headset design. The headset is open and off the visitor's ears, which allows listening to background sounds and taking part in discussions. Additionally, admission includes a free glass of wine at the belvedere after the visit, which provides an opportunity to socially engage with fellow visitors after the core experience.

The findings reveal the existence of a range of social interactions among visitors within the museum space. Social interactions manifest themselves differently in each type of experiential category. More specifically, we find that modules relying on active technologies (i.e., education-oriented and escapism-oriented modules) enhance social interactions to a much larger extent than modules in which passive technologies form the core experience (i.e., entertainment-oriented and aesthetics-oriented modules). Findings are detailed in the next sections[2].

5.2.1. Education-oriented modules

Findings suggest that visitors have many verbal and physical interactions within their groups in education-oriented areas. These interactions have a positive effect on the experience of individual visitors and on the perceived value of that experience.

First, we found that visitors share views and opinions about the content of education-oriented modules, which becomes the focal topic of conversation. This is the most basic type of social interaction that we identified in our data. This result is consistent with the concept of mutual enrichment identified by Debenedetti (2003) as one of the functions fulfilling and shaping the collective experience. The following quotes illustrate this point:

We just randomly picked one of the activities and just listened. She picks one and we just talk about it right after. Then I pick the other one and we went like this on all of the activities in this area. (Ludovic (54) and Nicole (56), couple, wine amateurs).

So like if I did one and Owen was doing a different one, I'd like call him over and say this one's really cool, like listen to this one and we'd just talk about what we heard. (Owen (27) and Jill (23), couple, wine novices).

A related but conceptually distinct form of social interaction occurs when visitors look to acquire new knowledge or to deepen existing knowledge through interacting with their fellow group member(s). This situation is especially pronounced in groups composed of people with varying levels of expertise in the focal topic (i.e., wine in this case). Typically, the less knowledgeable visitor would turn to their more "expert" companion to ask questions aimed at clarifying the information given and to ensure they understand it. This finding resonates with Debenedetti (2003), who noted that expert visitors can increase their prestige by imparting knowledge to fellow visitors. For instance, two sisters described their experience at the *E*-Vine module:

Sophie: I asked you a few questions because you see, you know more about wine than me. There were inevitably terms that I did not necessarily understand.

Manon: So she was asking me. (Sophie (22) and Manon (24), sisters, wine amateur and connoisseur).

Third, we found that testing and challenging each other in a friendly and amicable fashion was an important part of the experience for many groups. Results suggest that quizzes and games are more fun to complete in teams than solo. This is best exemplified in the Meet the Experts module where visitors sit together, although the chair is not designed to accommodate more than one person at a time, to take wine-related quizzes collectively. The process of helping, comparing, and contrasting each other's answers enhances the educational experience of all group members. A visitor went as far as to claim that she would have given up quickly on the module had she been alone.

Gérard: We did it side by side, because we helped each other. The seats were wide enough for two.

Nathalie: Oh yes, we helped each other.

Gérard: It's fun, it was like a challenge! We each give our answer and then we finally choose one and we see who's right or wrong.

Nathalie: There were a couple of questions where you acted quite confidently about the answer and I had a different answer and I was right!

(Gérard (53) and Nathalie (50), couple, wine amateurs)

Physical interactions involve performing activities together and helping each other. The idea of "doing something together" takes a productive perspective (Bateson, 2002) and refers to situations in which visitors jointly participate in an activity and perform it in a collective fashion. For instance, the Metamorphosis of Wine, a module focused on the winemaking process, invites visitors to make a barrel using virtual tools and components. Visitors found it fun and enjoyable to perform this activity together, rather than individually.

It was the place where one could exchange and consult each other. There are answers to give and tools to pick as well as parts to look for strapping the barrel for instance. It was really a very interesting moment. For me it was the ability to share the task with her that was particularly enjoyable. (Francis (49) and Christelle (45), couple, wine amateurs).

We interacted a lot when we made the barrel because it was funny. We had to go and find parts to build the barrel. When she saw me struggling, she said to me: "Well, no, take that one, and that one." Alone, I would have not continued! (Caroline (47) and Stéphanie (46), friends, wine amateurs).

Finally, the findings suggest that visitors engage in actions intended to assist other visitors (from within the same group or from other groups) in using the technology to activate the module and access the associated audio and video content. These interactions represent a form of collaboration enabling visitors to familiarize themselves with the interactive technologies at hand and to live the experience as intended by the provider. Collaboration among visitors can be linked to the concept of social support introduced in the context of customer communities (Rosenbaum, and Massiah, 2007) as well as to the practice of "helping" (Carù & Cova, 2015), referring to prosocial actions intended to help other consumers.

It's just that they did not understand how it worked, so Emma showed them. (Vincent (45), Emilie (42), and Emma (16), family, wine novices).

5.2.2. Escapism-oriented modules

Findings reveal that the only escapism-oriented module studied, the Table of Five Senses (we were unable to collect any data on the second

[2] Roughly 70% of the quotes provided in the paper have been translated from French to English by the authors and then verified for accuracy and completeness by a professional translator.

escapism-oriented module because of technical issues), supported the occurrence of frequent interactions. This sensorial module appears to be particularly suited to socializing.

For a large majority of visitor groups, performing an activity together that involves and stimulates the senses (in this case, smelling an odor or touching an object) encourages them to share their perceptions about the experiences they just lived. Although interpretations of smells and touches are personal, visitors are very keen to share their perceptions with one another and compare them to discover if they felt similar or different perceptions. This provides a fun and friendly way to compete and challenge each other to identify the correct odor or object. This situation can be explained through the lens of Festinger's (1954) social comparison theory. Accordingly, individual visitors compare their perceptions with those of their friends or relatives as a way to reassure themselves. In this case, it fulfils the function of enjoyment. The challenges proposed by the Table of Five Senses can even lead to some "exulting" behavior (Carù & Cova, 2015) involving the display of strong feelings and lively triumphant joy when visitors guess right answers about wine scents. Playing the guessing game together is seen as an opportunity to enhance the learning experience by making it more fun and convivial. Several visitors stated that it is better to perform this kind of activity as part of a group than alone.

We would smell it and then each guess what the scent was and then we would squeeze it to see what the answer was. It was fun. I like that it's not just about reading. You get to do something together, kind of a game, you share what you are thinking rather than just keeping it to yourself. It's better if you can talk to someone during the experience. (Matthew (34) and Kirsten (35), couple, wine professionals).

Some visitors reported seizing the opportunity provided by the sensorial activities to explore the topic at hand in more depth. The absence of audio content, apart from short instructions on how to use the module, was seen as a factor facilitating interactions and the mutual enrichment (Debenedetti, 2003) that resulted from these exchanges.

We had quite a bit of discussion there, didn't we? We discussed what the smells were and whether we liked them or didn't like them. It did engender quite a bit of discussion around the smells and what goes behind the smell, etc. (Harry (72) and Judy (68), couple, wine amateurs).

5.2.3. Aesthetics-oriented modules

The findings suggest that interactions in aesthetics areas are largely limited across most groups of visitors. The evidence suggests that visitors see these areas as contemplative and relaxing spaces that one enjoys in silence. They provide the opportunity for visitors to slow down and take a break from educational activities by looking at beautiful pictures and listening to music. Visitors suggest that the aesthetics module encourages individual meditation and relaxation, which provide a welcome distraction from the otherwise bustling atmosphere of the museum.

It's a moment of relaxation, where we do not necessarily share, yes that's it: we contemplate! Contemplation is not bad either! (Francis (49) and Christelle (45), couple, wine amateurs).

I liked the moment we were a little lying [down]. We did not speak at all! The poetry is nice; I told him a few words and after he was almost asleep! (Paul (59) and Adeline (54), couple, wine connoisseurs).

But mostly that is not to talk. That area is just to stay and relax and listen to the music. (Guillaume (32), François (32), Olivier (31), and Benjamin (34), friends, wine amateurs and novices).

It was about love too so it was good. And then, the position. We are lying down a little. We look at the ceiling. I found it super nice. We did not talk much. We were together and we contemplated without really interacting directly (Laurent (35) and Anne-Sophie (36), couple, wine connoisseurs).

Moreover, aesthetics-oriented modules provide relatively limited informational or educational audio and video content about wine to capture the attention of visitors. Instead, these modules present various works of art, music, literature, and cinema on a superficial level. This goes some way to explain why several visitors reported having virtually "nothing to talk about," such as Jill:

There was no audio on the first one so we didn't have as much to discuss 'cause it was just the video. There were sounds and dialogues, but nothing concrete. There was no information or, let's say, no informative content. We sat and watched and we did not talk at all. (Owen (27) and Jill (23), couple, wine novices).

Nonetheless, findings suggest that the presence or absence of social interactions within a group depend on the visitors' level of engagement with and personal connection to the topic. We found evidence that visitors interacted with each other to discuss common interests relating to previous experiences or future projects that would be directly connected to the content of the zone. On such occasions, talking to someone close (e.g., a relative or a friend) is an integral part of the experience and is seen as a way to enhance it. For instance, Kirsten describes her social experience with her friend in the World Wine Tour module:

We did interact a lot in this area because we actually both work in wine so we were talking, you know, comparing which regions we've been to, which ones we haven't been to, which ones look beautiful that we don't know and I like that there isn't any dialogue to listen to, just classic music. (Matthew (34) and Kirsten (35), couple, wine professionals).

Similarly, Jill noted that religion does not resonate with her and her husband and that they do not relate to it easily. Consequently, they attended the Divine Wine module but did not feel the need or the desire to discuss the topic further between themselves "because we are not religious ourselves." Clearly, the context of the zone explored by visitors influences the enactment of the collective experience.

5.2.4. Entertainment-oriented modules

The findings reveal that visitors have very limited social interactions in entertainment-oriented modules. They are designed to immerse visitors in the experience by relying on large-screen videos, digital characters (holograms), music, and sounds. Typically, immersed visitors concentrate on what they see or watch as well as on what they hear, which makes it inappropriate or difficult to talk. This is illustrated by the following discussion regarding the On Board module:

Harry: We would just sit down together and listen.

Judy: It's like a movie so we are not really talking during it. We are just having to concentrate on watching and listening to it.

Harry: If we were to talk to each other you'd …

Judy: You would miss the action going on screen.

Harry: Yeah, you felt in the middle of the action.

Judy: We were captivated and people around us did not talk either! (Harry (72) and Judy (68), couple, wine amateurs)

This view was echoed by other groups of visitors who feared that interacting with someone during the show would lead them to miss a piece of the action or an important dialogue. This would likely damage their individual experience by hampering their ability to fully understand the content of the module. This was the case for Francis and Christelle, who described their experience of the Banquet of Illustrious Men as follows:

It was funny to see this person, who is alive, surrounded by dead celebrities, it was very funny. If you want to hear the dialogues, you cannot talk. It was, how should I say, literary. If we talked, we ran the risk of missing the next line. So, we listened closely to what the characters were saying. (Francis (49) and Christelle (45), couple, wine amateurs).

In connection to this experience, one group of visitors reported talking to each other briefly within On Board. Having missed the beginning of the projection, David (47, wine amateur) and Pauline (43, wine amateur) felt the need, alternatively, to check with each other to see if he or she understood properly a specific aspect or part of the module's content and messages as well as to ask for the other person's

viewpoint and obtain clarification.

6. Discussion and conclusions

6.1. Implications for theory

This research contributes to the literature addressing the social experience phenomenon in a tourism context, which is under-researched (Rajaobelina, 2018). Although previous research has examined various facets of the collective experience (Carlson et al., 2016; Jafari et al., 2013; Rihova et al., 2015), to date the phenomenon has not been explored in an experiential and technology-intensive context with the notable exception of two studies performed by Heath and Vom Lehn (2008) and vom Lehn and Heath (2016). This is an important gap when one considers the growing reliance on modern technologies to enable the co-creation of the cultural tourism experience (Neuhofer et al., 2014; Rentschler & Potter, 1996). The main contribution of this research is to propose that the active and passive nature of technology is an important antecedent of the collective experience. Specifically, we find that passive and active technologies have different impacts on the visitor's social experience. Technologies that require visitors' active participation afford opportunities for verbal and physical interactions with other visitors, suggesting a link between visitors' active participation in the creation of their own experience and social interactions. This can be achieved through the implementation of technologies that support the stimulation of the visitors' cognitive abilities and that of their senses of smell and touch. Situations in which visitors perform a series of short didactic and sensorial activities (e.g., completing quizzes, smelling aromas, touching objects) provide the opportunity for fellow visitors to reflect and share between activities. Additionally, visitors with different levels of expertise in the topic at hand and varying abilities to interact with the technology appear to be particularly likely to engage in interactions. Typically, technology-empowered experiences that are designed for education and escapism (Pine & Gilmore, 1999) are highly suitable to the enactment of the collective experience. Social interactions can take a range of forms including sharing perceptions, providing and acquiring knowledge, playing together, helping each other, and performing sensorial activities collectively.

By contrast, passive technologies, providing recreational and artistic content to visitors without them having to interact with the technology (Verhoef et al., 2009), tend to preclude social interactions (e.g., through the provision of continuous information and multi-sensorial stimuli). In these situations, the role of technology is to fully capture the visitors' attention for a sustained period, making social interactions an impediment to the realization of entertainment- and aesthetics-oriented experiences. However, some evidence challenges a strict dichotomy between active and passive technologies and suggests taking a more nuanced view. When fellow visitors have a personal connection with the content of a specific topic or issue supported by passive technologies (e.g., watching a movie or observing digitally enabled artworks), they tend to engage in short verbal interactions, emphasizing the relationship between them and the content. Finally, it must be noted that according to the evidence collected, a lack of interaction among visitors in entertainment-oriented and aesthetics-centric contexts does not have a negative impact on the perceived quality of the experience and the resulting satisfaction. Fig. 2 summarizes our main results and highlights the antecedents (characteristics of technologies and visitors) of the social experience.

A secondary contribution of this research lies in the unit of analysis employed and the implications it affords for theory and practice. Previous research has traditionally examined the collective experience from a general holistic perspective (Carlson et al., 2016; Carù & Cova, 2015; Jafari et al., 2013; Rihova et al., 2015), focusing on the entire on-site tourist experience. Because a tourist attraction is often designed to provide a range of on-site experiences (Hosany & Witham, 2010), it would be challenging to characterize the social experience at the level of the entire attraction or site. A macro-view of the context is thus likely to lead to an incoherent description of the characteristics of the social experience. By contrast, the unit of analysis in our study is at the level of individual interfaces (i.e., the 19 modules). We explore the characteristics of the social experience across a range of specific and distinct modules, a narrower unit of analysis than the entire on-site experience. Our approach is more focused and theory-driven in that Pine and Gilmore's (1999) framework describing four categories of experiences was used in order to examine an experiential tourism context. It is also justified from an empirical perspective because the museum is organized into 19 separate thematic modules. Adopting a lower level of granularity enables us to distinguish among different categories of experiences (i.e., entertainment, aesthetics, etc.), document the interactive technologies employed, and identify the various facets of social experience across each category. This approach makes it possible to compare the social experience at a level where it can be more directly identified and explained. This focus is both appropriate and desirable to develop a sound theoretical understanding of the phenomenon as well as to support the formulation of useful practical recommendations for managers.

6.2. Implications for managers

This study examined visitors' social experiences with interactive technologies, thus providing important implications for managers involved in the design and management of technology-empowered tourism experiences (Neuhofer et al., 2014). The way in which tourist attractions apply innovative technological solutions influences the appeal of these attractions for prospective visitors. An increasing number of cultural tourism sites invest in interactive technologies, but they lack feedback on visitors' perceptions of their novel offerings. On a very general level, our research provides supporting evidence for the view that interactive technologies should not be obstacles to visitors' enacting the collective experience. This is especially important when one considers that most visits are done, at least at the outset, in small groups. For example, interactive mediation devices (e.g., the “travel companion,” an individual hand-held digital guide in use at La Cité du Vin) are typically designed for personal use. Yet, they should also allow visitors to interact with one another during the experience and encourage groups of visitors to stay together for the duration of the visit so that visitors can exploit the opportunities for social interactions afforded by active technologies.

Moreover, the social dimension in cultural tourism experiences is an important feature of learning, visitors' enjoyment, and engagement. Cultural tourism attractions should also provide occasions for non-family as well as family-based groups to take part in a range of activities together during the core, on-site experience (Debenedetti, 2003). Heath and Vom Lehn (2008) highlight that the majority of multiuser interactive installations in museums and galleries are not designed to enable the participation of more than one person simultaneously. Social interactions are often limited to an exchange of glances or to the provision of assistance in understanding how to take part in the activity. Our findings suggest, however, that the design of technological solutions and interactive digital tools should support increased co-participation and collaboration among visitors. Specifically, emphasis has to be given to the deployment of active technologies (requiring visitors' active participation) encouraging group-based experiences, such as cognitive activities (e.g., quizzes to challenge each other) and bodily activities stimulating visitors' senses (e.g., smelling and touching and comparing respective perceptions). More space also has to be dedicated to experiences that can be “played” and achieved collectively (e.g., the module Meet the Experts at La Cité du Vin provides a seat for a single person, but our data suggest that the module is often experienced in groups of two or three).

Finally, Pine and Gilmore (1999) and other authors (e.g., Oh et al., 2007) have argued that successful consumer experiences should

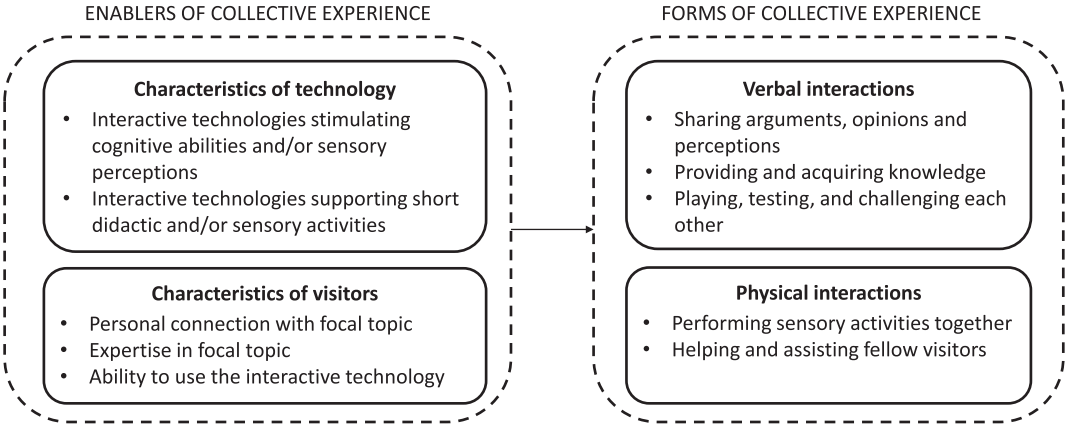

Fig. 2. Emergent conceptual model.

integrate the four experiential categories into the context in which the experience takes place. Yet, detailed guidelines on how to achieve this are not forthcoming. Our findings suggest that it is useful to conceptualize the overall experience as a series of stages (thematic modules, in our case) that comprise the visitor journey. Tourism managers can design each stage to embody a specific category of experience while ensuring that all four categories are represented on the site, providing a good degree of variety along the visitor journey (see Ponsignon, Durrieu, & Bouzdine-Chameeva, 2017). This logic also applies to interactive technologies. Applying a diverse set of interactive technologies seems important to support the creation of a range of social experiences. For instance, passive technologies employed in aesthetics-oriented and entertainment-oriented zones contribute to making the global experience more varied and stimulating.

6.3. Limitations and future research

This study has several limitations, which may be addressed in future research endeavours. First, Study 1 revealed that only two modules fit into the escapism experience category. Other categories comprise between five and eight representative modules. Given that the escapism module studied provided rich insights into the collective experience, future research could specifically focus on escapist contexts to enrich and extend our findings. The second limitation relates to the data collection procedure employed in both studies. Visitors spend between two and four hours in the museum. Interviews took place immediately after the visit in the relaxed and quiet environment of the belvedere. Although visitors were able to reflect on their overall journey in the museum, they sometimes found it difficult to remember exactly what they did and felt in each module. In-situ observations made in Study 2 somewhat contributed to addressing this recollection bias. Nevertheless, it would be interesting to conduct interviews immediately after the experience at individual modules to enable a more in-depth and unbiased investigation of the phenomenon. Third, the visitor experience is a journey composed of a range of different stages. The order in which the thematic modules are visited may influence the perception and interpretation of the actual experience. This work does not take the dynamic and cumulative nature of the experience into account (Kranzbühler, Kleijnen, Morgan, & Teerling, 2017). Fourth, respondents include local residents, French tourists, and foreign tourists (from the UK, USA and Spain). This suggests that the findings are not specific to a particular nationality or culture. Still, it would be interesting to replicate this research with respondents from other countries. Fifth, visitor interactions focus mostly on the theme of the museum (i.e. wine). The findings could be transferrable or applicable to other theme-based museums, as long as visitors share a common interest in the chosen theme. This provides another interesting avenue for future research. Sixth, tourism offerings focus on several experiential dimensions simultaneously. To address this 'one size does not fit all' issue, we take a low-level unit of analysis to examine the museum's 19 individual modules. Multiple experiential dimensions were identified in many modules. However, the data suggests that each module has a primary task (e.g. to entertain or to educate). We classified each module based on the one particular kind of experience that is regarded as 'dominant'. Seventh, whilst this article is focused on social aspects, cultural tourism experiences are multidimensional and significantly richer. Previous research has shown that they often include intellectual, aesthetic and spiritual dimensions (Colbert & Dantas, 2019; Goulding, 1999; Jafari et al., 2013; Rentschler, Jogulu, Kershaw, & Osborne, 2012). A detailed exploration of the cultural tourism experience from these perspectives is however beyond the scope of this articleFinally, we gathered interesting, albeit anecdotal, evidence suggesting that collective experiences may be more memorable than solo experiences. Future research should also investigate the determinants of a memorable visitor experience and the potential relationship between memorability and the social dimensions of the visitor experience.

7. Conclusion

This study explores the presence (or absence) of social interactions across a spectrum of visitor experiences (Pine & Gilmore, 1999) in a leading technology-centric wine museum. The findings reveal that passive and active technologies have different impacts on the visitor's social experience. Technologies that require visitors' active participation afford opportunities for verbal and physical interactions with other visitors. By contrast, passive technologies, providing recreational and artistic content to visitors without them having to interact with the technology, tend to preclude social interactions. This study provides important implications for managers involved in the design and management of technology-empowered tourism experiences. Further studies aimed at better understanding the co-creation of such experiences are needed.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tmp.2020.100723.

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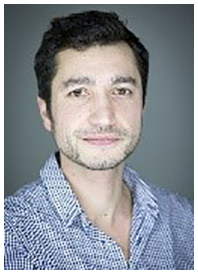

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