Wine tourism: a multisensory experience

ABSTRACT

This study sought to identify the main themes of sensory experiences of Douro wineries shared online by tourists. Douro is a demarcated wine region famous for Port, which is on the United Nations Educational, Scientific and Cultural Organization's World Heritage List. The research used 470 visitor reviews posted on the TripAdvisor website, which referred to experiences of the five regional wine brands that run wine hotels. Mixed content analyses extracted the main themes from the reviews, as well as identifying concepts associated with the five senses. The results include 12 main themes: wine, view, staff, room, hotel, food, restaurant, pool, service, Douro, delicious (food and wine) and comfort. Most concepts are linked with sight and taste, followed by hearing, with only a few reviews mentioning touch or smell. These findings have managerial implications for wine tourism, contributing to a better understanding of how sensory dimensions create memorable experiences for visitors.

Wine tourism; Web review; content analysis; five senses; Douro valley

Introduction

Wine tourism research has developed substantially since the mid-1990s. This tourism sector encompasses activities such as visiting vineyards, wineries, wine festivals and wine shows for tastings, in which wine experiences are the primary reason for visits (Hall, Longo, Mitchell, & Johnson, 2000). Wine tourism thus refers to activities motivated by tourists' desire to taste new wines and learn more about the traditions and cultures of wine-producing areas.

Wine tourism products comprize bundles of activities, services and benefits that constitute experiences that require cooperation between tourism and agriculture to generate potential mutual benefits (Carmichael, 2005). Experiences of these products are directly based on agricultural land use and wine production, so studies have naturally highlighted the experiential dimension of wine tourism (Carmichael, 2005; Cohen & Ben-Nun, 2009; Hojman & Jones, 2012; Pikkemaat, Peters, Philip, & Secco, 2009; Quadri-Felitti & Fiore, 2012, 2013). In the literature on tourism marketing, this dimension is placed at the centre of tourism consumption patterns, making tourism experiences a central concept for both practitioners and academics (Bosangit, Hibbert, & McCabe, 2015).

In general, wine tourism involves the senses and emotions, including pleasure in pastoral settings. The expanding body of research on customer experiences, while still evolving, is thus quite relevant to wine tourism (Bruwer & Alant, 2009; Carmichael, 2005; Quadri-Felitti & Fiore, 2012). Recently, scholars have stressed the need for more research on the sensory dimensions of tourist experiences, as this factor can contribute to better tourism management and improve visitor satisfaction (Gilmore & Pine, 2002; Pan & Ryan, 2009). Therefore, a large research gap (Beames, 2003; Thanh & Kirova,

2018) appears to exist in wine tourism, in which holistic sensorial studies could contribute to a fuller understanding of the complex, multidimensional nature of tourist experiences.

Overall, wine tourism includes three production levels that differentiate it from – and add complexity compared with – other fields of tourism. These levels correspond to the primary (i.e. vineyard management of grape production), secondary (i.e. wine production) and tertiary (i.e. services,

accommodations and restaurants) sectors. Apart from some conceptual research (Martins et al., 2017), most of the existing literature on wine tourism's sensory dimensions focuses on one or two senses – usually sight and taste – used in visitors' experiences of wineries, wine routes or wine events.

The present study's primary objective was thus to identify the main themes associated with multisensory experiences, namely, hearing, sight, smell, taste and touch, in wine tourism based on Web reviews. The research questions addressed were:

(1) What are the themes and associated concepts of sensory experiences in wine tourism shared online by tourists?
(2) What are the most frequent senses mentioned in these online reviews?
(3) What are the main concepts linked with each sense?

This paper is structured as follows. The next section provides an overview of the literature on sensory experiences in tourism. The methodology is then described, including the research context and data collection and treatment procedures. The results section presents the analyses of sensory experiences in wine tourism. The final section offers this study's theoretical contributions and managerial implications.

Literature review

Senses as dimensions of tourism experiences

Tourism was one of the pioneering examples of the experience economy (Quan & Wang, 2004) since it consists of consumption experiences of composite products comprising lodging, food, transportation, souvenirs and leisure activities (Mossberg, 2007; Otto & Ritchie, 1996). Since 'everything tourists go through at a destination can be [an] experience' (Oh, Fiore, & Jeoung, 2007, p. 120), the multisensory nature of tourism products has become a major focus of research. Stimulating the senses is crucial to engaging consumers emotionally and intellectually when they interact with products and services (Pine & Gilmore, 1998; Schmitt, 1999; Walls, Okumus, Wang, & Kwun, 2011) and thereby providing memorable experiences that create competitive advantages for destinations.

The study of sensory dimensions of tourists' experiences has thus recently been recognized as crucial to supporting decision makers who need to enhance tourism products (Gilmore & Pine, 2002; Pan & Ryan, 2009). Some studies have paid more attention to specific senses such as sight (e.g. Adler, 1989; Mateucci, 2013), hearing (e.g. Pilcher, Newman, & Manning, 2009), smell (e.g. Dann & Jacobsen, 2003), taste (Bruwer, Coode, Saliba, & Herbst, 2013). However, research results have generally shown that no single sense appears to dominate tourists' overall experiences consistently (Cohen & Cohen, 2019). In addition, different sensory information can be clustered to form themes and used to communicate destinations' offers and enhance and promote specific experiences sought by groups of tourists with different profiles (Agapito, Valle, & Mendes, 2012).

Tourists' experiences of places and their surrounding environments are strongly related to the senses as these experiences originate directly from physical contact. This generates multisensory impressions made up of not only visual images but also the associated sounds, smells, tastes and textures (Heide & GrØnhaug, 2006). Since tourists' experiences are multisensory (Franklin & Crang, 2001), successful tourism destinations need to attract tourists by offering more than just visual stimuli and providing experiences involving all the senses (Dann & Jacobsen, 2003).

Tourism experiences are dynamic, reflective processes that include sub-experiences that generate sensory outcomes (Schmitt, 1999). Tourism researchers have followed the division and hierarchy of external senses developed by the Greek philosopher Aristotle: sight or vision, hearing or audition, smell or olfaction, taste or gustation and touch or tactile perception (Cohen & Cohen, 2019). Sensorial stimuli are processed by the human body's sense organs (i.e. eyes, ears, nose, mouth and skin), which are gateways leading to cognitive and emotional responses (Kim & Fesenmaier, 2017). Thus, travellers' bodies sense and mediate the relationship between places and meaning (Tuan, 1977).

Stimulating the five senses in tourists' experiences can increase their retention in memories (Meacci & Liberatore, 2018). Hence, 'the more senses an experience engages, the more effective and memorable it can be' (Pine & Gilmore, 1998, p. 104). Each tourist has a subjective experience of the destination, which is a result of how these individuals' five senses, either singly or together, perceive and interpret experiences (Hulten, Broweus, & van Dijk, 2008).

Tourism products should focus on a holistic approach to sensescapes (Agapito, Mendes & Valle, 2013), adding to landscapes other kinds of 'scapes' such as soundscapes, tastescapes, haptiscapes and smellscapes (Agapito et al., 2012; Kastenholz, Carneiro, Marques, & Lima, 2012). The relevance of studying sensorial experiences derives from two main factors (Agapito, Mendes, & Valle, 2013). First, the five senses allow consumers to develop perceptions of the world around them, and, second, sensory stimuli influence consumer behaviours.

Empirical research on sensory tourism experiences

The managerial implications of sensory dimensions of tourists' experiences explain the growing number of empirical studies on this topic. Overall, sight or 'the tourist gaze' (Urry, 2002) remains the most often investigated sense (Pan & Ryan, 2009) in relation to tourists' overall experiences (Feighey, 2003; Mossberg, 2007; Walls et al., 2011).

Sensory studies have focused on different kinds of tourism including rural (Agapito, Valle, & Mendes, 2014; Carneiro, Lima, & Silva, 2015; Daugstad, 2008; Fairweather & Swaffield, 2002), heritage (Ditoiu & Caruntu, 2014; Galloway, 2018; Liu, Wang, Liu, Yao, & Deng, 2018), music (Mateucci, 2013), urban (Mateucci, 2013; Ye & Tussyadiah, 2011), nature (Markwell, 2001) and film tourism (Kim, 2012), lodging (Guzel & Dortyol, 2016). Some sensory research has also investigated food tourism destination image (Dias, Correia, & Cascais, 2017; Lee, Gretzel, & Law, 2010) and travel journalism (Pan & Ryan, 2009). Studies on tourism marketing have further included more empirical research on multisensory destination images (Dias et al., 2017; Ditoiu & Caruntu, 2014; Xiong, Hashim, & Murphy, 2015; Xiong et al., 2015).

Various studies have analysed data on only one sense, such as sight (Mateucci, 2013), taste (De Jong & Varley, 2017) or hearing (Pilcher et al., 2009). A few researchers have also adopted a multisensory approach (Dias et al., 2017; Isaccson, Alakoski, & Bäck, 2009; Meacci & Liberatore, 2018; Pan & Ryan, 2009; Xiong et al., 2015). Xiong et al. (2015) observe that the five senses interact with each another, offer tourists clear, unique memories and develop a multisensory image of each destination. Visual images include, for example, green mountains and rivers, while auditory impressions can be of traditional songs, gustatory impressions of local wines, olfactory impressions of local cuisine and tactile impressions of wind blowing on the skin at night.

All these research streams have used both quantitative and qualitative methods. Some studies have employed questionnaires (Agapito, Valle & Mendes, 2017; Agapito et al., 2014; Kim, 2012; Liu et al., 2018), while others have used interviews (Carneiro et al., 2015; Xiong et al., 2015), focus groups (Markwell, 2001), an experimental design (Lee et al., 2010), participant observation (Galloway, 2018; Mateucci, 2013) and content analysis of postcards or tour brochures (Markwell, 2001). Still other research has concentrated on food souvenirs (Lin & Mao, 2015) and Web reviews (Guzel & Dortyol, 2016). See Table 1 for a summary of relevant studies.

Overall experiences in wine tourism

The sensory nature of wine tasting explains the growing volume of multisensory research on this topic. However, wine tourism involves more complex experiences than wine tasting alone because this sector is the convergence of various services, facilities and activities included in wine tourism products (Carmichael, 2005; Pettigrew & Charters, 2006; Quadri-Felitti & Fiore, 2012; Scherrer, Alonso, & Sheridan, 2009). Wine tourism is considered a specialized area of tourism (Hall et al., 2000) that includes activities from three levels of production. These are vineyard management of grape production (i.e. primary sector), wine production (i.e. secondary sector) and accommodations and restaurants located in wine regions (i.e. tertiary sector). Wine tourists visit vineyards, wineries, wine festivals and wine shows, as well as engaging in wine tasting, experiencing wine regions and enjoying scenery (Carlsen, 2004; Marzo-Navarro & Pedraja-Iglesias, 2009).

Regarding educational experiences in wine tourism, these play a significant role in creating visitors' memories and ensuring their satisfaction (Quadri-Felitti & Fiore, 2013). The most common educational activity is wine tasting, followed by wine-food pairing events at local restaurants. The sight and taste senses are often emphasized, especially when wineries provide home wine-making seminars or partner with chefs and local farmers to offer culinary classes (Quadri-Felitti & Fiore, 2013).

Wine tourists seek experiences that are 'a complex interaction of natural setting, wine, food, cultural, and historical inputs and above all, the people who service them' (Charters, 2006, p. 214). The sense of sight is noted by these tourists because of the beauty of winescapes, including vineyards, picturesque main streets and typical architecture, which offer rewarding aesthetic experiences to visitors (Urry, 1995). Tourists also attempt to escape daily reality during their holidays in wine destinations (Thanh & Kirova, 2018) by enjoying wines and typical facilities, such as accommodations, restaurants and cafes, related to wine, as part of aesthetic experiences within wine destinations (Quadri-Felitti & Fiore, 2012).

The very nature of wine tourism involves indulging the senses not only through wine products but through all aspects of winescapes (Hall et al., 2000) including vineyards' aesthetics, wineries' atmosphere and authentic environments associated with wine tourism. Therefore, an experiential view of consumption in wine tourism is easily justified (Bruwer & Alant, 2009). Sensory experiences induce emotions, so wine consumption can be considered an aesthetic experience from this perspective as well (Charters & Pettigrew, 2005). The chance to taste wine and enjoy the design of wineries creates sensory stimulation for visitors, whose sensory experiences are optimized by a perceived pleasant atmosphere (Orth & Bourrain, 2005).

However, only a few researchers have studied the sensory dimensions of wine tourism experiences to any great depth. Among these are Fernandes and Cruz (2016), who studied the dimensions of quality in tourists' experiences of Port wineries. The cited research's results indicate that functional benefits and environments – including their sensory dimensions – have a negligible impact on visitors' experiences. Martins et al. (2017) adopted a more holistic approach and proposed a model for the implementation of multisensory virtual wine tourism in the Douro region.

Various marketing studies have also been carried out on the senses' influence on wine shopping and consumption experiences (e.g. Areni & Kim, 1993; Hummel, Delwiche, Schmidt, & Hüttenbrink, 2003; North, Hargreaves, & McKendrick, 1999). For example, Hummel et al. (2003) concluded that the shape of glasses influences consumers' perceptions of wine aromas. Areni and Kim (1993) found that background classical music in wine stores influences shoppers to buy more expensive items. North et al. (1999) report that music stereotypically associated with specific nations influences supermarket customers' selection of wines.

The existing literature on wine tourism's sensory dimensions focuses primarily on visitors' experiences of wineries, wine routes or wine events. Thus, overall experiences in wine tourism still need to be studied from a multi-sensorial perspective. The present research, therefore, sought to identify wine tourists' various sensory experiences during the entire course of their trips, based on narratives shared online in the post-purchase phase.

Methodology

Research context

The Douro valley is located in the northeast of Portugal. This region's cultural landscape of wine production is recognized as a United Nations Educational, Scientific and Cultural Organization World Heritage Site (UNESCO), especially because of the area's famous primary product – Port wine. The Douro Demarcated Region dates from 1756, so it is one of the oldest demarcated wine regions in the world. The region further produces both red and white non-fortified wines and has two official wine routes: the Port Wine Route and the Cistercian Vineyards Route. Thus, the area's main economic base is viticulture and tourism (Rebelo & Caldas, 2013).

This region has unique characteristics regarding wine, tourism and culture, so the wine industry is naturally linked to cultural heritage and related tourism. The multiple impacts of this heritage and tourism on the wine industry are evident in wine sales to tourists of Port wine and Douro region brands. A new segment of demanding consumers understand the concept of terroir, so many also prefer experiences that associate these wines with the region's landscape.

Data collection

The target population for this study was wineries offering at least one wine brand and an associated wine hotel located in the Douro region. The research involved analysing Web reviews shared on the TripAdvisor website, which is considered the largest online travel community in the world (Lu & Stepchenkova, 2012). The five main wine brands selected for this study based on data availability were Quinta da Pacheca, Quinta de la Rosa, Quinta do Vallado, Quinta Nova de Nossa Senhora do Carmo and Quinta do Castro.

The data were collected and stored on an Excel spreadsheet including the following variables: wine property, review title, review, review date, traveller type (i.e. couple, single, family, friends or business), nationality, age group, gender and overall satisfaction rating. The rating included the categories of 1 ('Terrible'), 2 ('Poor'), 3 ('Average'), 4 ('Very good') and 5 ('Excellent'). The reviews avail- able for each hotel resulted in a final database of 100 reviews each for 4 wineries and 70 for 1 winery that did not have enough reviews to meet the target of 100 reviews in English – for a total of 470 reviews with 60,613 words. Similar to previous studies using this type of data (Bro- chado, Stoleriu, & Lupu, 2018; Brochado, Troilo, & Shah, 2017; Lupu, Brochado, & Stoleriu, 2017; Pearce & Wu, 2016; Tkaczynski, Rundle Thiele, & Cretchley, 2015; Wu, Wall, & Pearce, 2014), only English reviews were collected to simplify analyses. The total number of reviews is in line with prior research on single locations.

The guests that posted the reviews of winery experiences selected for the present study have a heterogeneous demographic profile (see Table 2). Approximately 57.6% are male. The 35–49 and 50–64 age groups combined make up 67% of the sample, and 69.8% travelled as a couple. The reviewers are from 40 different countries. Most of the respondents are European (51.3%), with the most representative countries being the United States (27%) and the United Kingdom (23%).

Data analysis

The research involved first manually identifying and classifying the statements from each review that describe sensory experiences and separating the text extracts into five columns – one for each sense: hearing, sight, smell, taste and touch. To guide this classification and organization of the textual data, definitions of each sense were gathered from previous studies. The results of this classification process reveal that 95% of the reviews include at least one sense and 52% describe two senses (see Table 3). Around 8% of the reviews report an intention to return, and 23% recommended the hotel and experiences offered. Chi-square tests revealed an association

Table 2. Sample profile.

Variable	Category	Count	%[a]
Gender	Female	194	42.4%
	Male	264	57.6%
Age Group	18–24	3	1.8%
	25–34	35	21.0%
	35–49	53	31.7%
	50–64	59	35.3%
	65+	17	10.2%
Region	Australia & New Zealand	29	8.1%
	Europe	184	51.3%
	Latin America	10	2.8%
	North America	136	37.9%
Traveller Type	Couple	120	69.8%
	Family	22	12.8%
	Friends	20	11.6%
	Single	9	5.2%
	Business	1	0.6%

[a]Demographic data were not available for all reviews.

Table 3. Sensory analysis: descriptive statistics.

Number of Senses	No of reviews	%	% Cum.[a]	Sense	Number of Reviews (%)	Number of Words
0	25	5%	5%	Sight	406 (83.38%)	12,853
1	73	16%	21%	Taste	358 (76.17%)	73,670
2	243	52%	73%	Hearing	118 (25.10%)	1,757
3	100	21%	94%	Touch	83 (17.66%)	898
4	29	6%	100%	Smell	10 (2.45%)	200

[a]Cum. = cumulative.

between the reviews that include a statement about the touch sense and the reviewers' intention to return ($x^2 = 5.744$; $p = 0.017$).

This study used mixed content analysis including different steps. In the first step, Leximancer software was employed as this programme is designed to help researchers analyse texts 'from words to meaning to insight' (Leximancer, 2013). Leximancer offers both conceptual and relational analyses, measuring not only the presence of defined concepts in texts but also the ways in which these concepts are interrelated. The purpose of concept learning is to discover clusters of words that travel together throughout texts (i.e. concepts). The software then organizes and groups the concepts into themes, providing as background information how often they appear together in a given text. After Leximancer conducts content analysis that identifies the main themes and concepts, the programme determines the frequency of co-occurrence between concepts, which is used to generate a concept map. Concepts that settle near one another on the map appear frequently together in the texts – often in the same segments. The final output is thus a concept map, in this case of Douro wine tourists' sensory experiences, with five tags for each sensory classification.

As in previous studies (cf. Brochado et al., 2019; Brochado & Brochado, 2019; Lupu et al., 2017), each theme was matched in the second step with a set of narratives extracted from the Web reviews that encompass the themes' main concepts. In the next step, Leximancer generated an insight dashboard quadrant report with the most relevant concepts for each sense in order to expand the concept map results. The insight dashboard facilitated the identification of the concepts (i.e. independent variables) associated with the five senses (i.e. dependent variables). The horizontal axis was defined as the relative frequency (i.e. logarithmic scale). If a section of text came from a particular sense category, this increased the chance that the relevant concept was coded in that text extract (i.e. a conditional probability).

The vertical axis was defined as the strength. If a concept was present in a text extract, this increased the chance that the text came from the relevant sense category (i.e. the reciprocal

conditional probability). Bayesian statistics were used to combine the relative frequency and strength to produce the prominence score – an absolute measure of the correlation between the sense category and concept.

Results

Overall analysis

Leximancer identified 12 themes in the reviews: wine (hits = 522), view (332), staff (309), room (289), hotel (287), food (271), restaurant (146), pool (127), service (80), Douro (77), delicious (food and wine) (64) and comfort (55). The concept map with all the themes and associated concepts is presented below. The tags are the senses (i.e. sight, taste, hearing, touch and smell).

The wine theme includes the concepts of wine (count = 420, likelihood of appearing in reviews = 66%), (wine) tasting (138, 22%), tour (123, 19%), Port (62, 10%) and lunch (45, 7%). This theme is mainly related to the sense of taste. A concept's brightness on the map shown in Figure 1 is related to its frequency so that, the brighter the concept, the more often it appears in the texts. Coloured circles with names surround local clusters of concepts. These clusters constitute themes and form around highly connected concepts that are the parents of thematic clusters.

One of the main focuses of visitors' experiences in wineries is wine tastings. The Douro region is specifically known for its Port wine brands, so these are the wines most often tasted by visitors. In their descriptions of tasting experiences, visitors shared their satisfaction with wine tastings accompanied by delicious lunches and memorable tours. The review excerpts illustrating this theme and the other themes below are followed by the winery visited and the reviewer's gender, age or age group, nationality and satisfaction rating, whenever this information was available.

A guest shared, '[this was an e]xcellent wine tasting [experience.] The visit was followed by a wine tasting session where two wines (muscatel & red) were offered, followed by a 20-year Oporto [*sic*] and LBV Oporto [*sic*]' (Quinta da Pacheca, male, 26, Canadian, 5). Another guest wrote, '[we had a r]eally good lunch shared with the vineyard grape pickers[. We drank] copious amounts of wine and tast[ed] some terrific Ports, including the 2013, 40 year old [*sic*] and 30 year old [*sic*]' (male).

The view theme is linked with the sense of sight, and this theme includes the concepts of view (219, 35%), beautiful (view) (122, 19%), place (61, 10%) and valley (44, 7%). The concepts mentioned describe the visitors' experiences in wineries of the Douro region. In these visits, the views are quite important, shaping guests' experiences so that they feel 'blown away' by views of the valley. More specifically, the Douro Valley is a point of interest, adding more charm to the wine tourists' visits.

One guest shared:

We were blown away by the beautiful views from Pacheca in the Douro valley. I could have starved … [because of looking] so long at the beautiful meandering river, the typical Portuguese houses and especially the gorgeous vineyard covered mountains – they look like mazes that span from the valley to the tips of the mountains! The views [from] inside are also great as the main dining hall has glass walls so you can continue to admire the view. (Quinta da Pacheca, male, 35–49, Canadian, 5)

Another guest wrote, '[The scenery is i]nteresting. [This is a] beautiful wine farm with a view over [the] Douro Valley. Peso da Régua is really nice' (Quinta Nova de Nossa Senhora do Carmo, male, Portuguese, 4).

The staff theme includes the concepts of staff (219, 35%), vineyards (85, 13%), friendly (staff) (83, 13%), winery (69, 11%) and wonderful (staff) (50, 8%). This theme can be connected with the sense of hearing, including references to friendly conversations with staff. Visitors also shared their opinions about how well the staff speaks English and how well informed they are.

The reviewers included many impressions of the staff, as in the following excerpt: '[a]ll [of the] staff speaks [*sic*] English, even the people that clean the room. This doesn't always occur' (Quinta da
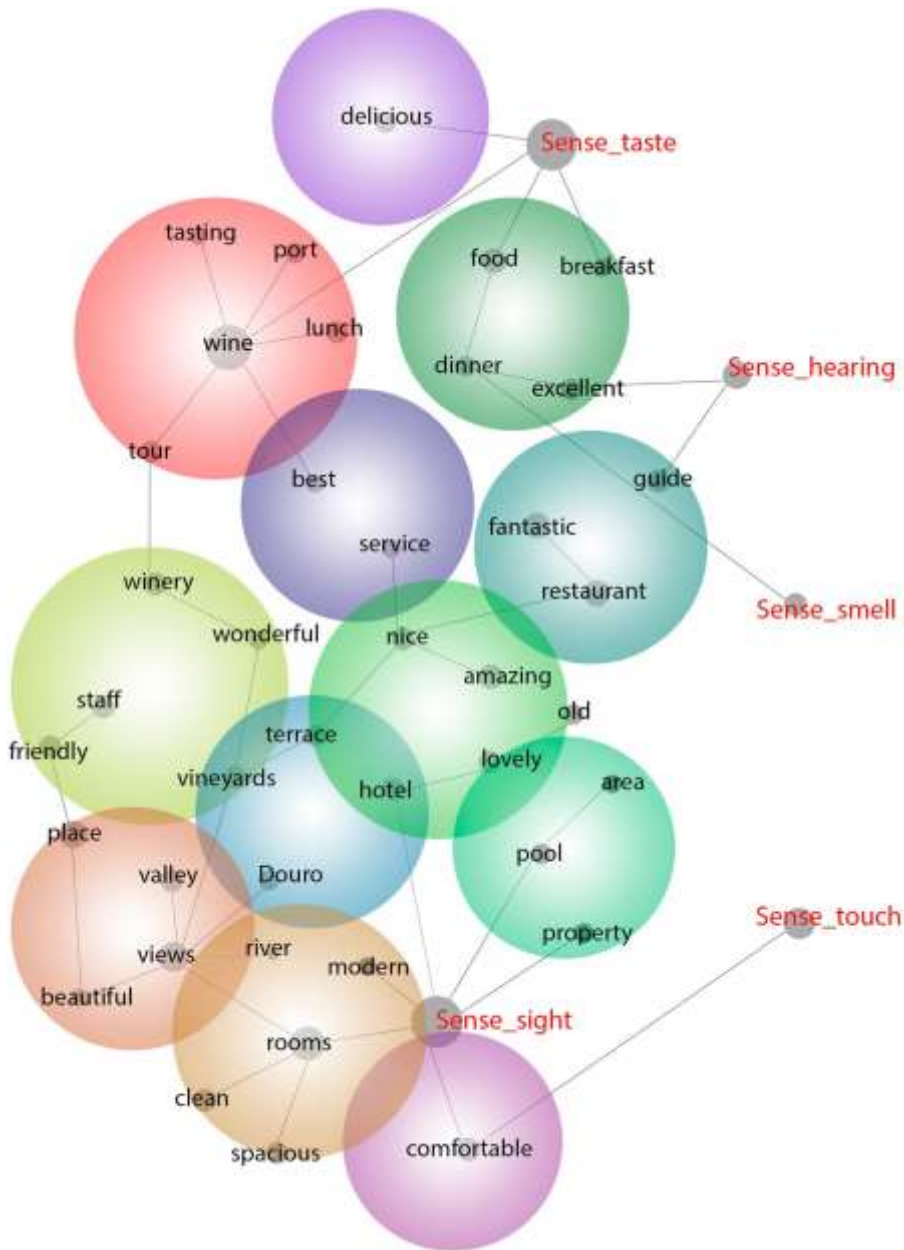
Figure 1. Concept map.

Pacheca, female, 25–34, 3). Another guest wrote, '[the s]taff [were] all very friendly and knowledge-able' (Quinta Nova de Nossa Senhora do Carmo, male). A further visitor reported, '[t]he tour of the winery was the most informative of any winery tour we have ever been on and we both learned so much. [I c]annot rate this hotel highly enough' (Quinta do Vallado, female, Irish, 5). Narratives about the staff are more likely to be linked with the sense of hearing.

The room theme includes the concepts of room (233, 35%) and river (71, 11%), as well as clean (41, 6%), modern (39, 6%) and spacious (rooms) (28, 6%). This theme is connected with the sense of sight through the concepts of river (view), clean, modern and spacious lodgings. The visitors frequently

expressed their contentment with the rooms and their river views. The sense of hearing is highlighted by mentions of the sounds of birds. One guest declared:

> The rooms are modern, clean and well appointed. Being able to hike through the vineyards was a great way to spend some time and get close to the land. Especially fascinating is how they use slate as posts throughout the vineyard. (Quinta de la Rosa, male, 50–64, Canadian, 5)

Another reviewer was even more enthusiastic:

> [The hotel was] BEAUTIFUL [*sic*]! The room was absolutely lovely, with a mini bar, modern bathroom, attractive furnishings and a wonderful view of the river. Though there is a road across the river, you hear mostly birds (we visited in springtime), morning to night. There are gracious spaces to sit outside, including a view [from the] terrace and swimming pool area. (Quinta de la Rosa, female, American, 5)

The hotel theme includes the concepts of hotel (87, 14%) and nice (85, 13%), amazing (73, 12%), lovely (72, 11%) and old (hotel) (28, 4%). A happy guest wrote:

> The hotel is small but offers spacious rooms that are tastefully decorated and equipped with all the necessary things (maybe [not] a table if you want to work – luckily I did not need to). A charming mix of modern and old, … the grounds of the estate are huge and there are really lovely spots … where you can relax and enjoy some time in the shadow [*sic*] or under the sun. (Quinta da Pacheca, male, Swiss, 5)

Another reviewer said, '[i]t is not a sterile hotel – it is an authentic experience. We were charmed. Our rooms were spacious, nicely furnished, clean, comfortable, and air conditioned, which was most welcome in the 40[°]C heat' (Quinta de la Rosa, female, 35–49, American, 5). Narratives about hotels are more likely to be linked with the sense of touch.

The food theme includes the concepts of food (126, 20%), dinner (91, 14%), excellent (food) (69, 11%) and breakfast (53, 8%). The visitors appreciated the food served for breakfast and dinner. The food and drink also had a great impact on the visitors' taste experiences. Some statements along these lines were that '[t]he breakfast buffet in the restaurant was amazing – even including sparkling wine! The best was dinner – we were made to feel special [with] the food and drink' (Quinta da Pacheca, female, British, 5). Another guest shared, '[w]e sat and tasted and had a really fun time. Breakfast was included and delicious' (Quinta da Pacheca, female, 5).

The restaurant theme includes the concepts of restaurant (76, 12%), fantastic (restaurant) (37, 6%) and guide (36, 6%). This theme reveals the importance of food and beverages to visitors' experiences of the Douro vineyards. In addition, the hotel restaurants were portrayed as good regarding the con- ditions they offered. The online reviews included one that stated, '[t]he restaurant is very attractive, [and it] has great views and excellent food' (Quinta da Pacheca, female, 50–64, American, 5). One visitor wrote, '[w]e stopped off for lunch[. This was a] fantastic restaurant and looked to be a superb hotel. We will return for the food and hotel stay' (Quinta da Pacheca, male, 50–64, English, 5). The reviews about restaurants are more likely to be associated with the sense of taste.

The pool theme includes the concepts of pool (62, 10%), area (46, 7%) and property (43, 7%). This theme is connected with the sense of touch as visitors were delighted with their physical experiences of the pool area, in addition to the views, which gave them great satisfaction. The time spent around the swimming pool was an opportunity for the guests to enjoy the views from the property and relax on the terrace.

One visitor's opinion regarding the pool area was that '[t]he swimming pool area is lovely, [and] peaceful with stunning views (Quinta do Vallado, male, 5). Another guest wrote, '[t]he pool area in an orange grove overlooking the hills literally looks like the [G]arden of Eden and you will never want to leave' (Quinta do Vallado, female, 25–34, American, 5). A further guest wrote, '[t]he pool was very relaxing' (Quinta de la Rosa, male, 5).

The service theme includes the concepts of service (42, 7%) and best (quality) (41, 6%). This theme emphasizes the staff's professionalism, which ensures the service is of the best quality. A guest stated, '[this is h]ospitality at its best: excellent, restful, [and] wonderful friendly service … [in a] gorgeous location!' (Quinta de la Rosa, male, Japanese, 5). Another reviewer wrote, 'English is spoken and

[the] service [given] by [the] staff is respectful and personable' (Quinta do Valado, male, 50–54, Canadian, 5). This theme shows a strong link with the sense of hearing.

The Douro theme includes the concepts of Douro (43, 7%), vineyard (43, 7%) and terrace (42, 7%). This theme focuses on the properties' beautiful environment and the Douro valley as a region with some of Portugal's oldest vineyards. Terraces are again mentioned by the visitors, as these are among the most appreciated views from the wineries.

The reviews include statements such as this one mentioning how '[t]he setting is very beautiful, the property is well kept, and the views of the vineyards and the Douro River are stunning' (Quinta Nova de Nossa Senhora do Carmo, male, 35–49, American, 4). Another guest said, '[there are] lovely landscaped vineyards, which you're allowed to hike around, with amazing flowers … [and g]reat views. [This is a g]orgeous lodge with a massive outdoor terrace, lounging area, bar and wineshop' (Quinta Nova de Nossa Senhora do Carmo, female, Canadian, 4).

The delicious theme and concept (64, 10%) are connected with the sense of taste. The visitors expressed their enjoyment of the food served and the wine tastings – both being described as delicious. A relevant review reads:

> The daily breakfast was delicious[. T]ry the cheeses[. T]he staff will make you eggs if you ask. I believe you receive all the benefits … if you … stay … at the main hotel – daily breakfast, a full dinner on one night, [and] wine tasting. (Quinta do Vallado, male, Canadian, 4)

Another guest reported, '[they serve a] pretty good buffet breakfast. You are greeted with a glass of delicious white port wine on arrival. [We enjoyed the] perfect wine pairings' (Quinta do Vallado, male, Canadian, 50–64, 5).

The comfort theme and concept (55, 9%) are linked with the sense of touch. The visitors describe their rooms in detail, always saying the bed is comfortable. The good condition of the accommodations give guests an extremely good impression of the hotels. A reviewer wrote, '[w]e had a duplex room which was extremely spacious and comfortable with wonderful views of the Douro river from the upstairs bedroom' (Quinta de la Rosa, male, British, 5). A further guest shared, '[our room had a h]uge … comfortable bed and well-appointed bathroom' (Quinta da Pacheca, female, British, 5).

Analysis by senses

In order to investigate further the most important concepts for each sense, an insight dashboard quadrant report was generated, as shown in Figure 2. This kind of dashboard offers more quantitative information than the concept map does and provides a quick, easy-to-understand overview of the analytical results. The insight dashboard is a Leximancer graphical output designed to determine the attributes or independent variables (i.e. concepts) associated with specific categories or dependent variables (i.e. the five senses).

The relative frequency axis on the quadrant graphic represents a conditional probability, and the axis is defined as a logarithmic scale. Since each text extract refers to a particular sense, the concepts in the text extracts can be coded accordingly. The strength axis on the quadrant graphic is the reciprocal conditional probability. Given the concepts present in each text extract, the texts are likely to be about the sense or senses related to those concepts. Strong concepts help distinguish one sense from the other (i.e. whether or not the concepts are men- tioned frequently).

The most prominent concepts in terms of frequency and strength are linked with the senses of sight (i.e. the concepts of beautiful [strength 97%, 2.3 prominence] views [94%, 2.3] and river [89%, 2.1]) and taste (i.e. the concepts of delicious [95%, 2.6] tasting [86%, 2.3] and breakfast [86%, 2.3]). These senses are followed in importance by hearing (i.e. the concepts of guide [77%, 6.4], tour [23%, 2.0] and winery [17%, 1.5]). Smell is linked with the food and meals (3%, 5.4) and touch with comfort (29%, 3.5) and vineyards (8%, 1.0).
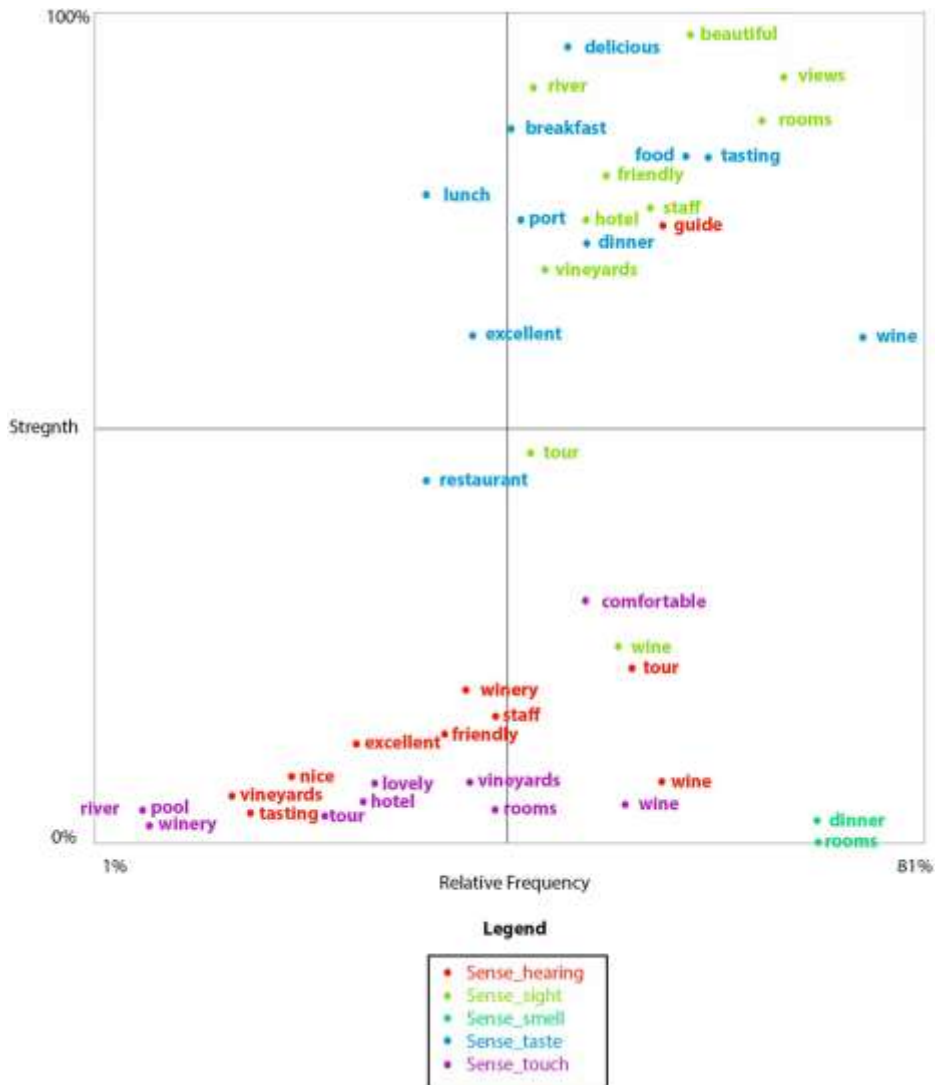
Figure 2. Insight dashboard.

The strength and frequency scores were combined using Bayesian statistics to derive the prominence score. The prominence scores are absolute measures of correlations between concepts and senses. Table 4 below ranks the most prominent concepts for each sensory category.

Conclusion

Discussion and conclusions

The sensory dimensions of tourists' experiences have become an important topic in tourism research as these dimensions are considered essential to successful destination management and the construction of memorable experiences for visitors (Agapito et al., 2013; Kim & Fesenmaier, 2017). The first objective of this study was to identify the main themes associated with wine tourism experiences posted online by visitors to five main wineries in the Douro region in Portugal, as well as defining the

Table 4. Insight dashboard.

Sense	Concept	Relative Frequency (%)	Strength (%)	Prominence[a]
Hearing	Guide	24	77	6.4
	Tour	25	23	2.0
	Winery	10	17	1.5
	Staff	12	13	1.1
	Friendly	8	12	1.0
Sight	Beautiful	28	97	2.3
	Views	47	94	2.3
	River	14	89	2.1
	Rooms	42	87	2.1
	Friendly	17	85	2.0
	Staff	21	80	1.9
	Hotel	16	78	1.9
	Vineyards	15	74	1.8
	Tour	14	47	1.1
Smell	Dinner	50	3	5.4
	Rooms	50	3	2.5
Taste	Delicious	16	95	2.6
	Tasting	32	86	2.3
	Breakfast	13	86	2.3
	Food	30	86	2.3
	Lunch	9	80	2.2
	Port	13	78	2.1
	Dinner	19	76	2.1
	Excellent	12	62	1.7
	Wine	65	60	1.6
	Restaurant	9	43	1.2
Touch	Comfortable	19	29	3.5
	Vineyards	8	8	1.0

[a]Prominence >1.

role of the senses in the creation of these visitors' experiences. The content analysis of 470 online reviews included classifying them according to the sensory experiences they mention. The results highlight 12 main recurrent themes: wine, view, staff, room, hotel, food, restaurant, pool, service, Douro, delicious (food and wine) and comfort.

Previous research has shown that wine tourism experiences are quite complex, including many more elements than wine tasting such as 'ambience, atmosphere, surrounding environment, regional culture and cuisine, [and] local wine styles and varieties' (Williams, 2001, p. 9). The twelve themes identified in this study's content analyses overlap with the main components of wine tourism experiences highlighted by previous studies (Bruwer & Alant, 2009; Carmichael, 2005; Cohen & Ben-Nun, 2009; Dowling, 1998; Thanh & Kirova, 2018; Williams, 2001). These components included a wine theme, the views and Douro themes – corresponding to natural environments – the delicious food and restaurants themes – consistent with a food component – and the staff element represented by the staff and service themes, as well as the best or friendly guide concepts.

The staff and service themes emphasize the visitors' interest in the quality of the services employees provide, as these are extremely important components of guests' experiences (Charters & O'Neill, 2001; Dodd & Gustafson, 1997; O'Neil, Palmer, & Charters, 2002; Patterson & Spreng, 1997). However, unlike previous studies of wine tourism experiences (Charters, 2006; Dodd, 1995; Dowling, 1998; Macionis & Cambourne, 1998), the present research showed that cultural, recreational and retail attractions are underrepresented in Douro visitors' narratives.

Instead, the reviews analysed reveal a strong focus and appreciation for updated tourist facilities such as rooms and pools. Visitors mention multisensory aspects when evaluating and appreciating these facilities, writing about beautiful locations and views (i.e. the valley, terraces and wonderful vineyards), lovely hotels and clean, freshly-decorated rooms, among other aspects. Frequent references are also made to touch-related, physical comfort (e.g. spacious, comfortable rooms) and sounds (e.g. birdsong).

The results further underline the importance of the food (i.e. taste) dimension of wine tourism experiences. Several interconnected themes and concepts are linked to this sensory dimension, such as delicious wine, restaurants or food. Wine tasting is a central part of guests' overall experiences. Reviewers also talk often about the good quality of food, which is frequently described as delicious or excellent, or about the restaurants' service and atmosphere, which enable multisensory experiences. In addition, visitors to Douro wineries appear to retain quite strong, distinctive impressions of each meal of the day, with a greater emphasis put on breakfast.

An underrepresented component of wine tourists' experiences is socialization, which appears only in references to interactions with staff (i.e. the concept of friendly staff). More opportunities for socialization and interactions with local people could thus improve and diversify visitors' experiences in Douro wineries.

The escapist dimension associated with wine tourism experiences (Beames, 2003; Cohen & Ben-Nun, 2009; Quadri-Felitti & Fiore, 2012; Sparks, 2007) is also infrequently mentioned in the present study's results, which is in line with Bosangit's (2011) work on travel blogs and Thanh and Kirova's (2018) analysis of accounts of visits to the Cognac region. The current findings could be the result of Douro winery managers' weaker focus on these aspects. Other dimensions less often highlighted in the concept map are education – mainly linked to the concept of guide – and entertainment – usually linked to cultural attractions and events (Carmichael, 2005; Quadri-Felitti & Fiore, 2013).

In previous research, these dimensions were found to be major components of wine tourism (Carmichael, 2005; Mitchell & Hall, 2004; Quadri-Felitti & Fiore, 2012). For example, Thanh and Kirova's (2018) study showed these components are present in 90% of visitors' descriptions. Education has often appeared among the main motivations to visit of wine tourists (Bruwer, 2003; Bruwer & Alant, 2009; Getz & Carlsen, 2008; Mitchell & Hall, 2006; Pikkemaat et al., 2009), thus influencing visitors' satisfaction (Quadri-Felitti & Fiore, 2013).

Regarding the present study's second objective (i.e. to identify the most frequent senses shared online), an important finding is that most reviews of Douro wineries mention multisensory experiences involving two or more senses. This is in line with other studies (e.g. Dann & Jacobsen, 2003; Franklin & Crang, 2001; Quadri-Felitti & Fiore, 2012, 2013; Urry, 1995). Sight and taste are the most frequently mentioned senses, each one associated with at least four themes and several concepts. The inclusion of taste experiences was expected, given that tasting wine is the central motivation and activity in wine tourism (Hall et al., 2000). The current finding is also in line with other research that has highlighted the strong connection between the consumption of wine and the enjoyment of aesthetic products (Charters & Pettigrew, 2005; Lin & Mao, 2015).

However, the present study found that sight is preeminent across all visitors' reviews, which reinforces the idea that the visual (i.e. aesthetic) dimension of destinations is dominant in tourists' overall experiences (Pan & Ryan, 2009; Urry, 1995) and thus for wine tourism (Thanh & Kirova, 2018). Sight is mostly associated with descriptions of local environments, which is in line with previous findings regarding the role of regional and local environments (i.e. landscapes) as a motivation factor for wine tourism (Carmichael, 2005; Pikkemaat et al., 2009; Quadri-Felitti & Fiore, 2012, 2013). This has been associated in prior studies with the visual consumption of winescapes' beauty, local setting, vineyards or architecture (Bruwer & Alant, 2009; Getz & Brown, 2006; Urry, 2002), as well as the enjoyment of local accommodations, restaurants, cafes and art fairs (Quadri-Felitti & Fiore, 2012). Even the concepts usually associated with taste (e.g. restaurants) are often visually evaluated as 'attractive', which has also been confirmed by other studies of visitors' memories of their experiences (Lin & Mao, 2015).

The present results contradict Thanh and Kirova's (2018) findings on French wine destinations, which include that aesthetic experiences are scarcely mentioned in visitors' reviews (i.e. 10%). Furthermore, apart from taste and sight, the senses are underrepresented in the visitors' narratives analysed for the present study, which indicates a weak or insufficient focus on creating sensory experiences among destination or winery managers.

The third research objective focused on the main concepts linked with each sense in visitors' reviews. A further analysis based on the insight dashboard of the senses mentioned by tourists in their reviews revealed a significant link between the senses and the most prominent concepts in the visitors' narratives. The sense of sight is associated with the concepts of view, room, staff and hotel, as well as beautiful river, vineyards and tours. Taste is associated with the delicious wine, food and restaurant themes, in addition to the concepts of tasting, breakfast, lunch, Port and dinner. Hearing is linked to the staff theme and the concepts of tour, winery and friendly staff. Smell is linked to the concept of dinner. Finally, touch is associated with the comfort theme and the concept of vineyards.

Theoretical contributions

The present study's results are expected to contribute significantly to the body of research on the sensory aspects of wine tourists' experiences. First, the findings add to the wine tourism literature, which has focused mainly on single senses (e.g. taste and hearing) and visitors' experiences of wineries, wine routes or wine events. By studying wine tourists' sensorial experiences in the post-purchase phase, the current study was able to include products and services from all three economic sectors in the wine tourism (i.e. primary, secondary and tertiary).

Second, this research applied an innovative mixed content analysis approach rarely used in the field of sensorial studies. Researchers have previously focused mainly on data collected with surveys, interviews, participant observation and content analysis of photos. In contrast, the present study was able to identify the main themes and concepts linked with all senses based on narratives shared online by wine tourists.

Managerial implications

These findings emphasize the need to improve wine destination management by diversifying tourists' experience through new activities that facilitate escapism from daily life, which is in line with other similar research's results (Carmichael, 2005; Garibaldi, Stone, Wolf, & Pozzi, 2017; Quadri-Felitti & Fiore, 2012; Thanh & Kirova, 2018; Tsang & Wang, 2016). The current study's findings also highlight the need to improve Douro valley tourism's education and entertainment dimensions, as they currently do not have a significant impact on visitors' memories.

Given the growing interest in the sensory aspects of wine tourists' experiences, this research sought to demonstrate the strong link between the senses, which need stimulation to produce memorable experiences, and specific components of wine tourism products. The results highlight the strong influence of the visual aesthetics dimension connected to the wineries' physical environments. This aspect has already been found to be a significant factor in building positive memories and destination loyalty (Oh et al., 2007; Pikkemaat et al., 2009; Quadri-Felitti & Fiore, 2013). However, the remaining senses (i.e. hearing, smell and touch) need to be more actively stimulated to maximize visi- tors' total immersion and deliver memorable experiences (Martins et al., 2017).

The current research showed that, besides wineries and restaurants, all tourist facilities are extremely important to creating exceptional customer experiences from a functional and aesthetic perspective. With regard to accommodations, visitors appreciate their updated look, cleanliness, spaciousness and views, as well as the availability of pools. Some guests even express their intention to return based on their appreciation of the food and accommodations.

If managers take more care to enhance sensory dimensions associated with all the facilities used by wine tourists, these sensory aspects could enhance guests' satisfaction, intentions to return and recommendations. Notably, this study's results do not support the conclusion that any one sense can be linked with more positive consumer marketing outcomes in the post-purchase phase of wine tourists' experiences. Although some senses are more often recalled in Web reviews, all senses appear to contribute to more positive experiences.

Every meal of the day – breakfast and dinner in particular – needs to be prepared carefully to meet and surpass visitors' expectations. More attention should also be paid to developing experiences that involve the senses of touch, hearing and smell, as, for example, tourists appreciated the sounds of nature (e.g. birds). This could be capitalized on better through the choice of natural surroundings for wine tastings, accommodations and other activities (e.g. taking tours, riding, hiking and cycling in the vineyards). Managers can also offer a selection of activities that involve touch and manipulation (e.g. harvesting grapes) and improve the comfort and quality of tourist facilities. Music could further enhance the wineries' overall atmosphere and facilitate a deeper immersion into local culture.

Finally, much attention should also be paid to service quality and staff selection and training. Good English skills, a friendly attitude and professional knowledge are the most appreciated and frequently mentioned qualities of employees, which are linked with the sense of hearing. In summary, wine tourism is a multisensory experience, so managers can get better results by designing products and communication strategies around the main themes linked with each sense.

Limitations and avenues for future research

This study's main limitations are related to the results' low generalisability and the limited content in terms of length of the online reviews analysed. In addition, the data gathered did not clarify for some wine hotels whether the guests that shared reviews online are daily visitors or overnight tourists. Nonetheless, the reviews proved useful as concise expressions of visitors' most significant impressions and memories.

Future research could verify and compare these findings to those for other wine destinations in different countries, for major wine-tasting events or for day visitors to cellar doors versus overnight guests. Further studies may want to try collecting data from other regions (i.e. from the Old and New World) and different wine hotel properties in order to ensure a representative variability in visitors' ratings. Researchers can also examine bad sensory experiences linked with low ratings. Finally, future studies could collect a more heterogeneous dataset to test whether specific senses are associated with better overall ratings, stronger recommendations and firmer intentions to return.

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