Design Factors of Mobile App in Wine Tourism: Creating Customer Value Through the Whole Wine Tourism Journey

Marianna Sigala, Darko Dimitrovski, and Veronika Joukes

Abstract Smartphones and mobile apps have penetrated all aspects of our lives, and wine tourism is not an exception. As we still know little about the effective design of mobile wine apps, this chapter reviews the previous literature in order to identify critical success design factors. The chapter proposes a framework that identifies two major dimensions of wine tourism mobile apps namely, content and functionality. The chapter explain the features of each dimension and it provides several examples showing how the former need to be designed so that they can provide customer value during the whole wine tourism journey, i.e. before, during and after the wine trip/experience. As the customer value is conceptualised to have various dimensions (including functional/utilitarian, hedonic/emotional, and social value), it is proposed that future research can look at how mobile app design can be customised to satisfy the needs and preferences of various wine tourism segments seeking different types of customer value at different consumption contexts.

Keywords Mobile apps · Content · Functionality · Features · Customer value · Wine tourism · Users · Wine tourism journey

Introduction

Smartphones have become a survival necessity as they have penetrated our daily professional and personal life. Mobile applications (apps) have also changed the way we live, communicate, work, socialise and have fun, since mobile apps enable

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us to do many of our daily activities more quickly, conveniently and more flexibly (Rashid et al., 2020). In fact, consumers spend more time on mobile apps (88%) than on the mobile web (12%) (ComScore, 2017). The tourism industry and activity are not an exception. Travel apps have been for long been amongst the most fast-growing segments of mobile apps (Statista, 2021): in terms of popularity, mobile apps within the travel category rank fifth in Play Store (95.7%) and seventh in Apple Store (3.8%). The recent COVID-19 crisis has accelerated and intensified the usage of travel mobile apps by both tourism industry and demand (Sigala, 2020), as health risks made everyone to prefer touchless tourism services.

Mobile apps have been developed by all tourism related sectors and stakeholders including hotels, airlines, destinations, event organisers, cruiselines, rent-a-car, cultural tourism operators and more recently wine tourism operators (e.g. Wang et al., 2012; Kennedy-Eden & Gretzel, 2012; Boiano et al., 2012; Alonso et al., 2013). The use of smartphones and mobile apps in the context of travel has transformed the way tourism is produced and managed as a business practice as well as how tourism is understood and experienced as a social practice. In this vein, mobile apps play a major role as they do not only change all aspects of tourist behaviour (e.g. where tourists travel, what and when they consume and how they book and pay), but they also influence tourism experiences, tourist satisfaction and post-purchase behavior.

However, despite the continuous high rates of mobile app downloads within travel and hospitality for the last 10 years (Castañeda et al., 2009), tourists' usage and engagement with mobile apps are still at low levels. Users tend to download and use mobile apps once, but then they may even forget what mobile apps exist in their phones. Moreover, although research about the use of modern technologies in the wine tourism has started to boom (Sigala & Robertson, 2019), studies related to the design, the use and impact of mobile apps in wine tourism and tourists are still scarce (Dimitrovski et al., 2019). For example, the number of wine tourism mobile apps continues to expand steadily enabling wine tourists to perform many tasks: search, discover and learn about new wine destinations and wines; plan, book and pay for wine tourism trips and experiences; buy wines directly from producers; join and develop relations with wine clubs and wine communities. But we still know little about: how to effectively design a mobile app that can add value for the wine tourists; and how to make a mobile app appealing and engaging so it attracts the wine tourists and lovers' interest and passion to engage with it even after their wine trip and experience.

In this vein, this chapter aims to review the related literature in order to identify the design factors of wine tourism mobile apps that can provide customer value and so, influence the wine tourists to adopt, use and engage with them. To that end, the chapter first discusses how mobile apps can provide customer value in general and within the wine tourism context. The creation of customer value through mobile apps is discussed by adopting the concept of the wine tourism journey. Then, a literature review is presented summarising the design factors of mobile apps that are found to affect user adoption and usage. These design factors are then contextualised within wine tourism by providing various examples showing their applicability and affordance to provide customer value to wine tourists. The chapter concludes by identifying ideas for future research.

Mobile Apps and Customer Value in (Wine) Tourism

Most mobile apps are branded apps, which are defined as (Bellman et al., 2011: 191): *software downloadable to a mobile device which prominently displays a brand identity, often via the name of the app and the appearance of a brand logo or icon, throughout the user experience*". Branded apps include tools, games, and social, m-commerce, and design-centric apps (Xu et al., 2016; Zhao & Balagué, 2015). Mobile apps offer new ways for firms to create customer value during and after the product/service purchase. Indeed, mobile apps can be used to create and maintain connections between brands, consumers and brand communities so, they are very useful for supporting and enriching customer relationship marketing practices and building brand equity.

In tourism, mobile apps are an integral part of the tourism experience, as tourists use them for various reasons including: as online travel agents; as mobile guides for interpretation; as mobile wallet for payments; as translators; as destination guides; for searching, booking all tourism products such as transport, accommodation, restaurants, attractions and leisure activities; for maps and geolocation; for planning and following an itinerary/trip; for recording and sharing tourism experiences. By carrying smartphones always with them, tourists have access to 24 h 365 days real-time tourism services enabling them to constantly adjust, re-arrange and co-ordinate their tourism activities and plans (Lamsfus et al., 2015). In other words, the tourism apps enhance the value of travel as they enable tourists to plan, change, and share activities with others before and during the trip. The latter is particular useful and valuable as tourism is continuously affected by various (minor and/or major) 'crises' such as pandemics, physical phenomena and weather conditions, traffic and delays, strikes, and personal health issues and injuries. Hence, apart from convenience and flexibility, mobile apps are also extremely useful to tourists (specifically in cases of emergency and crises) by providing them security and safety values by making them feel safer (e.g. access to mobile apps eliminate our fears of getting lost) and/or being safer and secure that they have the tools to manage the 'crisis'.

In sum, smartphones and mobile apps can assist tourists and enrich their tourism experiences before, during and after their trip (i.e. during the whole tourist journey). Overall, tourism apps can make travel more extensive, simpler and easier and the tourism activities more flexible and personalized. Travel apps also provide tourists' value by reducing their stress involved in planning, (re)-adjusting and consuming tourism as well as by increasing the tourists' feelings of safety and confidence in exploring places and/or traveling alone.

In a similar vein, mobile apps in wine tourism should be designed so that they provide tourists' value by enabling them to plan, (re)adjust and enrich their wine trip and experiences before, during and after their visit to the wine destination and/or winery. In addition, wine tourism apps should also aim to address needs, expectations and preferences of contemporary wine tourists, for example the desire to experience authentic situations, surprises and memorable moments. In this vein, wine tourism apps should be designed so that they enable users to learn, appreciate and

connect with the wine region and its people, immerse themselves into the local culture, interact with local people, explore wine destination by going off track and distance themselves from typical clichés and hotspots. Overall, mobile apps should generate multi-dimensional value to wine tourists such as, functional, convenience, economical, socio-cultural, hedonic and safety value.

Design Factors of Mobile Apps

Research investigating the factors influencing the users to adopt, use and engage with mobile apps provide useful insights into the factors and dimensions that one should consider when designing a mobile app. Most of the studies examining the factors influencing the users' adoption of mobile apps mainly adopt the technology acceptance model (TAM) (Davis, 1989) (van Noort & van Reijmersdal, 2019). In particular, research has found that perceived usefulness, ease of use, and enjoyment of engaging with mobile services (Huang & Ren, 2020; Ko et al., 2009) as well as design solutions, and information quality can critically influence behavioral intentions to use mobile apps (Newman et al., 2017; Tarute et al., 2017). Indeed, the concept of value significantly predict intentions to use mobile services (Kleijnen et al., 2007; Pihlström & Brush, 2008), such as monetary, convenience, emotional, and social value (prestige, social-self), hedonism (entertaining, fun). Because of this, research has also used motivation theories to predict adoption and use of mobile apps (Cyr et al., 2009; Fang et al., 2017). Results show that users adopt and use mobile apps in order to obtain utilitarian and/or hedonic value (Kim et al., 2013): users driven by utilitarian motivation seek to gain rational, goal oriented, functional, practical or extrinsic benefits by using mobile apps; while users driven by hedonic motivation seek to obtain emotional aspects of the individual, such as happiness, sensuality, escapism, and enjoyment. Similar factors are also found to influence the users' intentions to continue using mobile apps.

Hence, to ensure the adoption and use of mobile apps, their design should provide: (1) utilitarian value (i.e. informative and task oriented value such as efficiency of exchanges, provision of information, customer service and support); and (2) hedonic value (i.e. aesthetics including visual attractiveness, entertainment, playfulness, gamification, enjoyment and social status/recognition). Research also shows that there is an interplay between utilitarian and hedonic value provided by mobile apps, which in turn reinforces user adoption and engagement with the mobile apps. For example, Li et al. (2012) found that mobile app utilitarian factors (such as richness information, timely feedbacks, and active communications) are positively related to mobile app users' emotions and affections (hedonic value). By adopting a visual aesthetic perspective, Kumar et al. (2018) found that aesthetics factors, namely complexity, coherence, and legibility which are associated with the TAM variables (i.e., perceived ease of use, usefulness, and enjoyment) significantly affect the adoption of retail mobile apps.

Tourism research further confirms the applicability and importance of the above-mentioned factors in influencing the tourists' adoption of mobile apps as well as it provides industry specific information on how to design the application service environment (i.e. the so called "application servicescape" or "appscape") in order to influence the tourists' behaviors (Chang et al., 2016; Gupta et al., 2018). Research into the design of the appscape is mainly focused on identifying the mobile app functions and attribute quality perceived by travelers, due to their close relation with travel satisfaction and behavioral reaction (Kumar & Shah, 2021). However, past studies classify and aggregate appscape dimensions into broad perspectives, which also differ between studies and tourism sectors. Table 1 summarises the results of a number of such studies.

A Framework for Designing a Mobile Wine Tourism App

It is evident from the above analysis that there is not a commonly agreed framework for identifying and categorizing functionality and features of mobile apps in tourism. In addition, past studies provide divergent results depending on the specific tourism sector whereby mobile app functionality is being examined, e.g. hotel, transport, food and cultural tourism. Despite the increasing growth of wine tourism at a global scale as well as the increasing development and accelerated use due to the COVID-19 pandemic of mobile app applications by both wine destination and wine tourism operators, there is no research investigating and providing a unified and holistic framework on how to design effective mobile apps in the wine tourism context. The following discussion consolidates the past literature to develop such a framework and contextualise it in the wine tourism context.

Although past tourism research in this field is fragmented and inconclusive, it does identify critical success factors to be considered when designing mobile apps. Specifically, based on the previous analysis, it appears that there are two major dimensions of mobile app attributes that need to be considered namely, content/information and functionality. From a customer value perspective, the design of these two dimensions also needs to consider two issues: (1) the provision of hedonic and utilitarian value; and (2) the provision of customer value during the whole wine tourism journey (i.e. before, during and after the wine tourism experience/trip).

Content

Content refers to information presented in the form of text, pictures, audio, or video (Lizzi et al., 2013). The type of information and its features as well as the way it is provided and is accessible should be designed in order to provide both utilitarian and hedonic value. For example, information about the attractions of a wine destination should: (1) help tourists in identifying, booking and paying for wine

Table 1 Functionality and attributes of tourism mobile apps identified by past studies

Study	Tourism sector of mobile app	Functionality and attributes
Lee (2018)	Hotel mobile appscape	Aesthetics, functionality, and symbolism
Kumar and Shah (2021)	Food service apps	Two underlying dimensions, namely aesthetic appeal and aesthetic formality, which in turn significantly influence the hedonic values obtained by users i.e. enjoyment and arousal
Fang et al. (2017)	Travel apps	Dimensionalities of mobile app design and performance driving user engagement with travel apps: Compatibility, relative advantage, portability, privacy, and attractiveness
Wang and Xiang (2012)	Travel-related iPhone apps	Eleven categories, noting that consumers have preferred information services and design features: Single city destination guide, online travel agency, language assistant, flight manager, theme park and resort guide, facilitators, multiple city destination guide, food finder, entertainment, live camera, and currency converter
Wang et al. (2011, 2012)	Travel apps found in the app store for iPhone, iPad, and iPod	a taxonomy of smartphone apps based on the type of information service, dividing travel apps into the following twelve categories: Flights information manager, destination guides, online travel agency, facilitator, attractions guides, entertainment, food finder, language assistant, local transportation, augmented reality, currency converter and tips calculator
Kennedy-Eden and Gretzel (2012)	Tourism mobile apps in iTunes and android	Functionality and attributes were categorised under the following two broad perspectives, and a taxonomy of mobile tourism apps was created based on this classification: value chain/service provided perspective. Seven categories of mobile apps based on the following functionality and attributes: Navigation, social, mobile marketing, security/emergency, transactional, entertainment, and information Level of user interactivity perspective measured by seven functionality and attribute features: Personal preferences, location, security, through the web, content addition, aesthetic changes, and those mobile apps that remain the same for everyone (as they offer no interaction).
Verma et al. (2012)	Hotel mobile apps	Functionality and attribute features are clustered under three categories: Location-based functions provide hotel-related information, destination directions, and information about local restaurants and local attraction reservations. Communication-based functions offer text-messages or any notice from hotels, voice-mail, email and wake-up calls Service-based functions include mobile check in/out, ordering or scheduling housekeeping, room service, valet or other hotel related services through hotel apps

experiences (i.e. provision of utilitarian benefits in trip planning and economic exchanges); and (2) it should also create arousal, interest, nostalgia and enjoyment (i.e. hedonic value) by using aesthetic and appealing information design that can stimulate interest, curiosity and fun/entertainment. Overall, the following attributes of content should be considered when designing mobile apps:

- Multimedia content. Multimedia information can include: photo gallery/slide show; 3D photos; audio material in the forms of wine tourism guides of wine regions, wine experiences, wines and viticulture; video content; real time web cameras; virtual tours; augmented reality. Multimedia information can: better help wine tourists in their decision-making process and trip planning (e.g. by making an intangible experience more tangible); increase the appeal and attractiveness of wine tourism offerings and destinations; and make the usage of a wine tourism app a fun and entertaining experience.
- Quality content. Wine tourism information should also possess good quality features including accurate, reliable, timely and unbiased content (Kennedy-Eden & Gretzel, 2012; Tan et al., 2017).
- Accessibility, searchability and visualisation of content. The visualisation of the content must be engaging, valuable and suitable for mobile use. It is also important that information is easily accessible and searchable by all users (even by users with disabilities) and so, visualisation, navigation, user interface and search tools play a major importance in the provision and accessibility of information in mobile apps.
- Content Personalisation. Tourists are frequently lost by the huge amount of available information, they might have limited time to decide and plan a trip, while sometimes they might also need to decide at a last minute. Content personalisation enable users to better filter and read relevant content, to better satisfy their needs and preferences as well as derive hedonic value by feeling important and receiving personal care. Content personalisation is possible by the tools such as user profiles and recommendation systems.
- Content inclusivity to embrace the holistic nature of wine tourism. Content should also cover the totality and variety of the services required by tourists including transportation, accommodations, and food (Goh et al., 2010). In wine tourism, content should cover the following major categories of services: wine destination (general and tourism specific information); wineries; wine related attractions and other wine related experiences; wine festivals and events; accommodation; transportation; food/gastronomy; wine tours; wine routes and itineraries; wine labels, wine varieties and viticulture.
- User-generated-content (UGC). Research shows that UGC content (such as tourists' reviews, ratings and feedback, photos and videos) can provide both utilitarian and hedonic customer value in terms of: better assisting tourists to select tourism offerings (as UGC is considered as more reliable and timely information than provider generated information); and providing tourists fun, entertainment and prestige/social status by sharing wine tourism experiences with others. The mobile app should be able to allow users to access, search, share and engage (e.g. share, comment, like) with UGC.

Functionality

Functionality refers to an action that can be performed by the mobile app user (e.g. searching or sharing information) and it significantly relates with user engagement (Lizzi et al., 2013). In a mobile app context, the following types of functionalities are found to generate user engagement (Kim et al., 2013): vividness, novelty, motivation, control, customization, feedback, and multi-platforming. Functionality also significantly influence tourists' trust and usage of the mobile app. For example, Zimmerman (2013) found that 35% of travellers are unlikely to complete a mobile booking if the functionality of the mobile app seems questionable. For a wine tourism app, the following functionality is suggested as appropriate for providing customer value:

- Social media interfunctionality: e.g. ability of users to link the mobile app with their social media profiles and networks for searching, sharing and commenting information related to the wine destination and/or wineries
- Entertainment tools: e.g. gamification applications (e.g. treasure hunt in a wine destination, wine and food pairing game, a customer loyalty game whereby users gain points by checking in in wine experiences); music player; virtual tours; live web cams
- User interface and navigation tools: e.g. "Home", Back", "Next" or "Cancel" buttons; pinch-and-zoom feature; keyword search feature; search on a map; push notification (message that pops up)
- Personalisation tools: e.g. user accounts; possibility to create a 'wish list', a 'visited list', keep a personal diary, add wine tasting notes; recommendation tools
- Trip planning tools: e.g. create and share a wine trip by using an interactive multi-layer map visualising different types of attractions, experiences and other wine tourism offerings of the wine destination; a wine itinerary creation tool based on various criteria, e.g. number of days/times, interest in types of wine and other experiences, age and accompanying persons of the tourists; location identification and navigation/directional tool;
- Booking and payment tool: tools enabling users to check and book availability of wine experiences and tours; payment tools with various digital payment options;
- Community tools: a wine club tool enabling networking and subscription to wine and wine experiences sales programs; a wine tourism community tool e.g. forum,
- Communication and interaction tools: e.g. online chat, messaging, online forums
- Additional features and functions: e.g. QR code scanner of wines, wine attractions; World clock; wine and tourism related literature (e.g. newspapers, magazines etc.); currency converter tool; wine search tool; a calendar of wine tourism events/festivals and other experiences; weather forecasting tool; multilingual or translation tools

Finally, from a wine tourism journey perspective, mobile app content and functionality should be designed so that it provides customer value before, during and after the wine trip/experience. Table 2 provides some examples showing how content and functionality can be designed to achieve the latter.

Table 2 Mobile app content and functionality providing customer value during the whole wine tourism journey

	Before the wine trip/ experience	During the wine trip/ experience	After the wine trip/ experience
	Dream, plan, book, pay	*Experience*	*Share*
Trip planning tool	Identification and search of wine tourism experiences and suppliers Multimedia and UGC content presenting wine tourism experiences Calculation of distances and travel times between wine experiences	Real time information of traffic Tool for readjusting bookings Real time crowding information Virtual Reality and augmented reality tools as mobile guides for interpreting wine experiences Rate and share feedback on wine experiences	Create a personal record and/or personal diary of the wine experiences Share personal wine experiences and feedback internally (within the wine community at the mobile app) and/or externally through links to social media
Booking tool	Search and multimedia information of wine experiences Check of real time availability Comparison tool benchmarking wine experiences based on various criteria such as price, duration, types of wines, type of experience	Possibility to cancel and/or change booking A tool informing and pushing alerts of last minute cancelations and availability Last minute special offers	Customer loyalty program for collecting and exchanging points with wine offerings

Conclusions and Ideas for Future Research

Smartphones have penetrated all aspects of our daily life and (wine) tourism is not an exception. As we still know little about how to effectively design wine tourism apps, this chapter aimed to review past related literature in order to provide a holistic framework for designing mobile wine apps. The framework identifies two major dimensions namely content and functionality and it debates how their features need to be developed in order to provide customer value during the whole wine tourism journey. The provision of customer value should be multi-dimensional including functional/utilitarian, hedonic/emotional, and social value.

As the number of wine tourism apps increase, future research could investigate the role and impact of mobile apps on: creating and maintaining connections and communication with wine tourists and lovers; boosting brand equity; and competitive advantage. It seems that mobile wine apps might soon become a standard

expected operational standard, which might not be able to help wine tourism operators and destinations to outperform but simply to survive. Future research should also further investigate the usage of mobile wine apps by various types of wine tourists (depending on their culture, wine involvement, experience context etc.) in order to be able to design mobile apps that better address the preferences and needs of different type of wine tourism segments.

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