

Augmented Reality for Wine Industry: Past, Present, and Future

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Abstract. In this paper, we study the concepts, materials, tools, and applications that constitute what we call augmented reality (AR) for the wine industry. A comprehensive review of what are the basic multimedia content for constructing successful AR applications for wine products is given. To this end, we provide a detailed analysis of how AR technology is used to create augmented “live” wine labels, and how digital storytelling has revolutionized wine products marketing. Also, we describe the use of AR technology to promote winemaking companies to influence consumer preferences. Finally, we report the characteristics of future research directions and some open issues and challenges on using AR for wine product promotion.

1 Introduction

Augmented reality (AR) technologies as well as virtual reality (VR) and mixed reality (MR) technologies are constantly gaining ground today in various fields of communication such as entertainment, education, information, marketing, and advertising but also in other fields such as industrial product design and medicine. The importance of these technologies can be seen from the investments made by technology giants today such as Google, Microsoft, and Facebook with the development of products such as Google Glasses, Microsoft HoloLens and Oculus, and software platforms such as ARToolKit [1] and ARcore [2] which allow the development of AR applications in mobile devices with Android and IOS operating systems.

People interact by different means and in different ways (e.g., reading a book, watching a movie, listening to music). The noticeable difference with AR is that the way to interact with it is to experience it. Augmented reality can “awaken” many of our senses, although so far it is primarily a visual medium. Interaction with AR has therefore been used to provide new experiences and affect communication outcomes. Augmented reality can be applied in industry, marketing, education, entertainment, medicine, and many more areas. Each of these application fields is a novel experience for the users. However, for the AR application to be widely accepted by end-users, usability and user-experience issues need to be improved to make their life better and convenient [3].

This paper aims to provide a review of AR technology in the labelling of wine products. Specifically, in this paper, we study AR applications that may consist of:

1. Videos that record the procedures followed by the winery company for the production of wine (e.g., harvesting, crushing and pressure, fermentation, maturation, and bottling, distribution).
2. Digital narratives such as stories about wine products in video or animation format.
3. Information in text form (such as wine ingredients, calories, storage temperature).
4. Short 2D/3D animation clips that provide the sense of a live character animation onto the bottle-labels and mainly aim to impress the consumer.

It is very important to note that AR technology has been used for creating live labels in a wide range of applications. For example, AR-based labels are enhanced with digital watermarks that try to detect counterfeit products and secure the production line through AR/QR code labels. Fighting product counterfeiting means reducing lost revenue from smuggling, improving product value, protecting the company's trademarks and copyrights, and improving customer confidence in the business.

1.1 Overview of augmented reality

In this section, we study the concepts, materials, tools, and applications that makeup what we call augmented reality. Augmented reality refers to computer applications that integrate into the real world, as perceived by the user through his/her senses, information, and material (mainly image and audio), created by a computer unit. Some core questions about AR technology that arise are: “what are the basic requirements in hardware and software used to implement AR applications?”, and “what kind of content material we can use?”.

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What would it be like if there was no dividing line between the imaginary and the real world? With augmented reality, this is not only possible, but it is already here. Augmented reality changes the way someone works, learns, plays, and communicates with people. It is the perfect way to visualize things that would be impossible or inapplicable to see differently. In recent years, the emergence of AR has been intense. Augmented reality is a technology used primarily in mobile devices. This technology allows the live projection of a natural environment, the reality of which is augmented by the projection of information but also of virtual persons or spaces designed inside a computer.

The combination of the camera with the GPS of a mobile phone allows the display of additional information for a geographical point, forming an augmented information final result. The provided information includes texts, sounds, and videos and specifically concerns the geographical location of the user and the target of his camera. Data projections are possible either from mobile screens or from special projection glasses. Augmented reality is based on immersing the user in an imaginary world, integrating the information produced by the computer into the user's real world. The three characteristics that define AR are:

1. Combines the real and the virtual.
2. It is interactive and real-time.
3. The information provided is three-dimensional.

In general, a successful AR application should determine the current state of the physical world as well as the virtual world and be able to display virtual information with a spatial and temporal correlation with the real world in a way that allows the user to perceive virtual elements as part of the physical world. For this purpose, an AR system is based on some basic building software blocks and appropriate hardware that allow the support of the aforementioned goals. It is, therefore, necessary to use: (i) one or more sensors to determine the state of the physical world, (ii) a processor to evaluate the sensor data and implement the virtual world application, and (iii) an appropriate user interface to create the feeling that the virtual and real-world coexist and to impress the user's senses through the combination of the physical and virtual world.

In recent decades, AR research and development has progressed rapidly, moving from research labs to widespread availability in mobile devices used in everyday life, such as mobile phones and tablets [4, 5]. Since the early 60s, more advanced and portable hardware has become available while recording accuracy, graphics quality and device size have been treated to a satisfactory level, which has led to rapid development in the adoption of AR technology.

Nowadays, computers have enabled the digital representation of information, where a large amount of data can be stored, processed, and retrieved at high speed, requiring minimal storage space. Thus, a more powerful way of modifying and enhancing our environment is created at the same time. Also, as power increases and the cost and size of computing devices decrease, the ability to compute simulations of physical and/or imaginary events makes the difference between "real" and "virtual" smaller.

The ability to produce and display 3D graphics in real-time now enabled us to create scenes that could not be created in a purely natural world. While in the past photographic and cinematic tricks simply gave us an idea or images of imaginary worlds, computer graphics allowed us to create and display imaginary worlds so accurately that it may deceive our senses. Nowadays, most people are exposed to 3D visualization experiences, such as movies and video games. In many cases, stereoscopic imaging or even physical interaction systems are used through devices such as the Nintendo Wii and Microsoft Kinect [6].

Augmented reality has been in the spotlight for several years. The huge impact of AR applications such as Pokémon GO has shown the world the power and attractiveness of this technology. In recent years, the computing capabilities of smart mobile devices have been continuously improved by hardware vendors, providing new opportunities for AR application development in mobile platforms. This technology shows that smart mobile applications running on iOS and Android is becoming more mature [7].

In general, we may divide AR applications into two broad categories: (a) markerless augmented reality and (b) marker-based augmented reality [8]. Markerless AR uses the location specified by a mobile device to serve as a basis for adding local information to the camera view. On the other hand, marker-based AR uses a two-dimensional barcode or an image to link the computing device to the available AR information, usually a website, video, or 2D/3D animation.

At this stage, AR and VR technology has reached a stage of maturity, especially in the field of graphics. The capabilities of today's PC graphics cards have rapidly increased in recent years. The pioneer of VR technology is considered to be Morton Heilig, who since the late 50s proposed the cinema of the future, where the viewers can use all their senses by participating in the film and feeling that they are part of it [9]. The original idea was to use a screen that covers the entire field of view, while the sounds may come from any direction. The system may also provide a sense of smell and changes in temperature giving thus, more immersive experiences to the users. This system is considered to be the precursor of today's VR 360 degrees videos.

2 Augmented reality applications in the production of wine products

More and more companies in the wine industry are using AR technology to target a larger portion of potential customers and make their labels more enticing [10, 11, 18-21]. When customers buy wine at retail stores, they have many brands to choose from. However, consumers want to learn more about the label they want to buy [41]. With the development of virtual wine-label technology, new horizons have opened up in the promotion of wine products as wineries are now able to add unlimited digital content and provide an enchanting experience for consumers. But what can a virtual wine-label contain? With the utilization of AR, we can enrich the label of the bottle with videos, 3D animations, photos, and text.

Wine companies now allow customers to point their smartphone at the wine bottle and then an AR application installed on their smartphone provides detailed information about the quality of the brand. Such information may vary from information about the wine product, vineyards, wineries, cellars, producers, grape varieties, tips on recipes and how to consume the wine, protected designations of origin or protected geographical indications, images of the recent grape harvest to contact details of the production company, and even links to the producer's social networks.

2.1 Wine product labelling using AR technology

How does AR technology work on wine labels? To answer this question let us describe the following scenario: a small sticker that may lie on the wine bottle lets us know that the label has been “enhanced” with AR technology providing additional information about the wine. This information is now immediately available to the consumer, who just needs to download the application and scan the attached label with a mobile device. Images, texts, videos, and 3D animations may be displayed immediately by enhancing the wine label according to the wishes of the consumer.

Augmented reality is pushing more than 500 wineries around the world into futuristic marketing that cleverly connects wine labels with the consumers. Winerytale [10] is an innovative platform that allows every winery and wine producer to create and manage an AR experience for their labels through a smartphone. The technology behind this application is designed to work on any wine label, using artificial intelligence to scan and recognize labels, and AR to display a fantastic world that pops out of the bottle. Thus, multimedia brand content is brought to life, including videos of wineries’ facilities, wine tasting notes, suggestions for accompanying the right food or nearby wine varieties. Winerytale offers interactive content to its users, explaining the story behind the wine label. Moreover, the application allows users to create their own stories and post them on social media.

The Australian wine brand 19 Crimes [11], has also used AR to bring wine labels to life. By developing an AR application (available to Apple Store and Google Play), the stories of each bottle are brought to life by animating the photos of the labels and push the characters depicted in each bottle to tell their unique stories behind the labels. The application is introducing the users to an AR experience about the history of Australia's founding as an English criminal colony. The wine brand was inspired by the true stories of British criminals, who were charged by one or more of the 19 crimes[†] and who were punished by relocation to Australia back in the late 1700s. Each bottle displays the image of a real person convicted of a crime by simply placing a mobile device on top of the bottles.

The work of Ahn et al. [12] describes a mobile AR application that provides information about various

products on a store shelf by creating a shopping cart enhanced by AR content. In the same spirit, the system developed by Zhu et al. [13] is developed for a mobile device and uses AR to place products in a virtual world and provide recommendations to the users. In [14], the integration of augmented information related to wine products is investigated. To this end, an AR tool has been developed that provides information about wine products using the technology of Microsoft's HoloLens [15] and the Vuforia SDK [16] to identify features associated with wine bottles. The proposed system detects wine bottles and provides additional data, improving the decision-making process by integrating wine filtering and providing recommendations according to users’ preferences. Using gestures[‡], the user can waive his/her hand and select one of the detected bottles, displaying additional information about the wine (e.g., customer reviews, price, awards, type of wine, characteristics of the wine region and the grape used to make it) around it as a hologram. An example of how this system works is depicted in Fig. 1.



Fig. 1. The left image depicts the detected wine-bottles. The right image shows the additional information the user has access to [14].

Barhorst et al. [17] built an online platform to study the AR wine bottle shopping experience of the users by creating two videos (a) one with the use of AR technology and (b) one without the use of AR. In the first case, the video shows from a first-person viewpoint the process that a person follows from picking a wine bottle in a store self to the use of a mobile application that launches an AR experience in which the wine label begins to interact with the person through narrative. In the second case, the same process is followed but the AR experience part is missing. Both videos are identical, except for the AR experience and the purpose is to examine the positive influence of AR experience among consumer outcomes.

A recent application of live wine label created by emBRAZEN winery brand [18] provides an AR experience to the customer by celebrating the women of the past. The AR application is activated when the user scans an icon on the bottle depicting a lighted torch, which appears to burn to reveal a new layer of artwork. Then, the AR application brings to life “wild” women such as Josephine Baker, Nellie Bly, and Celia Cruz, inspiring a new generation of women to continue their journey. By sliding the finger over the burning wine label, the customer interacts with the AR application revealing how each woman earned her place in history.

[†] <https://www.19crimes.com/en-us/the-19-crimes>

[‡] <https://dl.gi.de/handle/20.500.12116/3249>

However, a successful AR wine label should combine art and technology to make wine labels even more appealing to consumers. Thus, with a living wine label application [19] one can offer many new possibilities for the animation of labels using AR technologies.

In the context of creating animating art content for wine products, the Francis Ford Coppola Winery [20] has created two custom wines: (i) the Final Cut - 91st Edition Rutherford 2016 Cabernet Sauvignon and (ii) the Final Cut - 91st Edition Russian River Valley 2017 Chardonnay, where the wine bottles include an animated label. Moreover, the Australian Treasury Wine Estates [21] has used the AR technology to produce exciting cartoons associated with each of their wines, while their wine product named "The Walking Dead" contains zombie cartoons that are brought to "life".

The world-renowned spirits maker Jack Daniel Tennessee Whiskeys employs AR technology in its products as an effective marketing tool. The company has developed an AR application that runs on both Android[§] and iOS^{**} devices which turns the classic black and white front label of any whiskey bottle into a matching pop-up book. By these means, the company offers exciting AR information about the history of spirits and its creation while is educating consumers about its brands.

Wine brands know that one of the most important parts of their presence in the market is their label. Thus, more and more wineries around the globe are embracing AR technologies to find exciting ways to stand out in the crowd.

2.2 The impact of AR in the wine market

Faddoul and Jin [22] highlight the commercial impact of AR features found on some wine labels and conducted a qualitative study by interviewing both wine consumers and AR experts. This study aimed to understand the role and characteristics of AR associated with natural products. The results indicated the importance of quality and innovative AR experience to keep customers focused on specific products. Authors also studied the case where the original wine product is redefined as two separate by-products: (a) the wine and (b) the AR label, considering a combination of physical and digital elements to create an "enhanced" product.

Many studies have already investigated consumer responses to mobile AR and enhanced user experience [23]. The authors identified the perceived usefulness and the value of creating mobile AR applications as a tool for promoting the food and beverage industry. However, the study of how AR creates value for consumers and companies, enhancing the internationalization process is still in an infant stage. With the introduction of AR in the business sector, the line between e-commerce and traditional commerce is becoming thinner than ever [34]. By the use of AR technology in wine products, winemakers report increased profits and sales while consumers who are increasingly using their mobile

phones can get access to the information they need, in the way they want, influencing the choices they make and taking advantage of online wine shopping [42].

Of course, there are many reasons to invest in AR technology-based applications. First of all, the competition between wine companies whose brands today struggle to distinct among others in the markets, with the help of AR applications can dynamically enter the race of innovation and novelty. Also, with augmented reality wine label applications, a company can spread its product to all corners of the globe through advertising. Augmented reality technology allows customers to experience a taste of the brand and its services. This may be considered as an exciting marketing tool to develop a closer relationship with the potential customers of a wine business. Finally, customers are provided with additional product information that cannot be incorporated into a conventional printed wine label in the first place. In this competitive market, wine labels need to be able to attract potential customers. To this end, AR can help the wineries project "behind the scenes" content that gives customers a friendlier look at the business.

Finally, supply chain management depends on finding ways to increase speed, accuracy, and cost savings at every step of this complex process, from customer order to product delivery. Augmented reality tags reduce the problems that can occur when placing an order with the unique "fingerprint" for each product. By integrating AR into the supply chain, it is possible to increase on a large scale the efficiency and visibility of the wine company.

3 Discussion

Twenty years ago, AR applications related to the wine industry seemed like a fantasy. However, today the used of AR technology in the wine market is considered the way to go. Augmented reality applications provide a combination of the virtual and real-world, where physical objects, such as wine bottles, are complemented by additional computer-generated information to amplify the perception of the real-world.

3.1 Wine Experience Marketing

Intense competition in the global wine market has led companies to seek alternative strategies to increase sales and domestic consumption [32] to maintain or even increase their market share [33]. According to Menghini [34], wine companies need to diversify their products to respond to changes in consumer preferences by "discovering new wines" without interfering with the main product but by transforming the augmented product by enhancing its characteristics: "experience" and "credence" of the product.

Wine market professionals use several marketing actions to attract the consumer [35], which are analyzed below:

[§]<https://play.google.com/store/apps/details?id=com.BrownFoman.jackAR>

^{**} <https://apps.apple.com/us/app/jack-daniels-ar-experience/id1459187589>

Experiential marketing: Nowadays, consumers desire extraordinary experiences from the products/services they consume [36]. Wine marketers focus on the provision of exceptional wine consumption experiences to attract consumers by orchestrating the four experiential dimensions: entertainment, education, aesthetics, and escapism. According to Quadri-Felitti and Fiore [37] the entertainment, educational, and escapist dimensions could be induced through activities such as cellar concerts, music in vineyards, wine blending demonstrations, wine tasting seminars, culinary-wine pairing events, home wine making seminars, vineyard hiking, cycling tours, harvesting grapes, and riding grape-pickers. Moreover, the aesthetical experience of wine consumers could be enhanced by inducing specific sensory qualities of the product such as aroma, flavour, texture and body of the wine [38].

Focus on transparency: Today's consumers are very informed while also seek for quick information (e.g., product ingredients). Since wine labels have limited space and the need for information is great, the marketing executives of wine products use new technologies such as QR codes on the wine label so that they can provide all the information that the consumer wants to know.

Customization and Flexibility: Consumers today want personalized products and seem to invest in products that involve them on a personal level. It is therefore very important that wine marketing executives follow a customer-centric approach. That is why more and more companies are designing labels that outline the identity and profile of the end user-consumer.

Authenticity: Wine consumers are interested in learning the “hidden stories” behind the brand they are buying. These stories create a unique experience for the consumer as they evoke emotions that enhance the consumer's connection to the wine product. Storytelling and videos help in this direction. The wine businesses should project the stories behind the founding of the company, the stories of the people who create the wine, the wine production process as well as the vineyards.

Website Optimization: Marketing executives should also offer an experience through the product website, which should follow the basic principles of content optimization to enhance the visibility of the page and the content should be tailored for mobile devices. Also, the visual element should be strong. It is advisable for both the website and the posts on social media to create a visual experience for the users by incorporating aerial photographs and photos from high-quality drones where they will present landscapes from vineyards, and the business facilities.

Social Media: Wineries can use social media to focus on specific target audiences, segment consumers based on their preferences and personal information, speed up message dissemination, update with videos and images, strengthen relationships with consumers by responding to them, increase consumer engagement by asking them to create user-generated content (e.g., by asking to share images from the wine-drinking experience) and rewarding them.

Wine Clubs: Another important trend in wine marketing is the creation of wine communities known as wine clubs. Wine companies in their effort to cultivate relationships with consumers but also to strengthen their commitment to creating such communities. In these communities, consumers enjoy special and exclusive services such as access to themed events, “wine tasting rooms”, the possibility of buying special edition bottles, invitations to exclusive meals and events.

Virtual tastings: The evolution of technology creates new opportunities for wineries to get closer to consumers without the constraints of space and time. A recent trend is the creation of virtual tastings where either online or free wine tastings are provided, accompanied by the delivery of wine tasting kits or the purchase of specific wine products. At these meetings, various tips are provided, questions are answered, videos are shown and accompanied by the appropriate musical investment. These online events can also take place through various social media.

Use of Augmented, Virtual, and Mixed Realities: Wineries can also take advantage of AR, VR, and MR technologies to promote their products. As reported by Martins et al. [39] through these technologies, wineries can offer a multi-sensory virtual experience to consumers. In a specially designed environment, the consumer experiences a simulated tour of a winery. In this simulation, the consumer can experience with all his senses while at the same time he will receive information about the company and the product. For example, through videos, the consumer can virtually visit the company, the cellars, to know about its history, to experience the production (from picking the grapes to pressing them), and wine tasting. The consumer can see the vineyards environment and through special devices, can feel the smells (e.g., from the grapes, from the ground) while at the same time he/she can feel the environment in terms of temperature, air, and weather and at the same time try real wine samples.

3.2 The future of AR in the wine industry

Developments in the computing power of mobile devices have led to the rapid introduction of AR in daily life. More and more wine companies and winemakers are using this technology to expand their customer base and increase their profits. Winemakers have started using AR technology to meet the demands of a competitive market and creatively sell their products by providing users with engaging and interactive content that includes storytelling, cultural ties to the wine region, and stories from real-life.

Nevertheless, it is interesting to note that wine products are more than just alcoholic beverages. People enjoy gathering together not only to taste a glass of wine but mainly to enjoy the stories (e.g., historical perspective, and the tradition related to the wine varieties) that accompany it. Augmented reality technology has allowed winemakers to digitally recite these stories engagingly and interactively to consumers, making them a valuable tool for the wine industry.

Augmented reality may be considered to be the future not only for winemakers but also for other

producers and companies in this field. The next move for wine brands could potentially be the integration of interactive games (gamification) supported by augmented reality as it can boost the sales of wine products [40]. To this end, artificial intelligence may be utilized as a sophisticated tool combined with AR to create intelligent algorithms to respond to various user movements.

Another possibility for the future is the use of integrated GPS sensors on mobile devices to take advantage of the location-based data of the user to create and show synthetic AR content based on the local coordinates of the user, the culture, and the environment of these locations.

3.3 Challenges in the use of AR

The challenges facing the winemakers in the use of AR in their products are usually technological challenges that are inherently present in AR platforms [43]. For example, when scanning an input image using a mobile device to activate the AR application the main problems that occur are: (i) the camera viewpoint and (ii) the different lighting and illumination conditions. These parameters may not be known in advance during the development phase. The incorporated image processing and computer vision algorithms, therefore, must be robust to cover all types of variations on images.

Speed is another issue when rendering an image and projecting AR content to the user. Typically, cell phone cameras transmit 30 images per second, which means that the corresponding AR software has only a few milliseconds to execute. Otherwise, significant delays may occur during the display of the rendered images, which may lead to an unpleasant experience for the end-user.

In addition to technological difficulties, wine industry brands face the challenge of creating different and unique content to survive the competition. The AR content must be attractive and convincing enough for the customer to buy the brand's products. This process may be proved to be quite a difficult task for the wine industries to come up with new content to offer consumers an exciting experience.

3.3.1 *Storytelling in the marketing of wine products*

Storytelling is an important technique that can be used successfully in the marketing of wine products in conjunction with AR technologies and this is evident in some of the examples used in section 2.1 (e.g., 19 crimes and emBRAZEN). Storytelling is perhaps as old as human existence. From murals found in caves inhabited by our ancestors to oral myths and legends and from written narratives to digital multimedia, stories have always been part of the communication of human societies and cultures. According to Gabriel [24], stories can entertain, stimulate the imagination, provide training, and explain. As Malita and Martin [25] point out, stories are a mean of exchanging information that aids understanding and a mean that has been used

throughout human history to spread knowledge and values. Stories are a universal way of organizing and expressing emotional experiences and we find them in almost every form of communication and art such as cinema, literature, advertising and marketing, education, and journalism.

It is commonplace that stories adapt to the modern era. Thus, from the murals in the caves, we progressed to the stories that were transmitted by word of mouth, and later on another medium for conveying stories was introduced, the print media. Today besides word of mouth and print media we also have a significant number of digital media that can be used in storytelling. Animation using vector graphics or other methods such as stop motion, digital video, virtual and augmented reality, podcasts are some of the ways in which a digital story can be told [26]. It can also be transmitted through various media such as television, video sharing sites (e.g., YouTube, or Vimeo), and social media.

Stories are a tool that companies can use to inform their customers about their profile, history, goals, and products. Therefore, an important area that digital storytelling finds application is the marketing of products and services. Storytelling marketing is a strategy that uses real facts and fiction to convey advertising information. Stories may or may be fictional or non-fictional, but it is important that they convey a message effectively, as well a message that sounds genuine, creative, and inspiring. Digital storytelling in the field of marketing aims to stimulate the customer's emotions, to imprint the product in his memory, as well as to make the product brand familiar.

But what makes a story exciting and suitable for storytelling in wine marketing? According to Freytag [27] there are seven key steps in successful storytelling: exposition, inciting incident, rising action, climax, falling action, resolution, and denouement. Similar observations were made later on in early twentieth century by Vladimir Propp, a soviet scholar who analyzed many of his country's folktales in order to identify the main "building blocks" of stories [28].

Every company in the wine industry has a story to tell about itself, its wines, and how it chooses to conduct its daily activities. Storytelling marketing can prove to be an effective strategy in promoting the brand of wines. For wineries, building the creation of a unique and attractive story and its transmission through the available digital channels (e.g., social networks, video sharing sites, mobile phone applications) can be an effective strategy. The purpose of using a story to promote a wine brand is to connect emotionally with the consumer.

There is a lot of information about a wine product that can be incorporated into a story. Indicatively this information can relate to:

- The location and the place of production of the wine product.
- Myths and traditions associated with the area of production.
- The producer himself and his family tradition.
- The production process: grape collection, distillation, storage, production techniques,

production facilities, aging, quality assurance, and certification procedures.

- Consumer testimonials.

A study by Mora and Livat [29] analyzed an advertising guide and texts from 132 Union des Grands Crus winemakers in the Bordeaux region of France and found that the most common issues around which stories are created are family tradition, geography of the area, the aging process of the wine and the name of the product. A small number of stories are also related to topics such as consumer testimonials, certification procedures, business associates-investors.

Herskovitz and Crystal [30] emphasized that each story requires a central character that people can recognize and with which they can form an emotional bond. In the case of the wine industry, this person may be the winemaker himself. Bonarou et al. [31] showed that the websites of the producers involved in the cooperative company “Roads of Wine of Northern Greece” use samples of stories in their corporate promotion. According to the authors, to create a memorable story, a series of questions must be answered such as:

- What stories are behind the brand name, labels, logos, and varieties of wine?
- What values and characteristics make the brand stand out from the competition and what do they have in common?
- What makes the wine region unique? What are the stories of the area?
- What do others say about the brand name?

Finally, we can conclude that there is a great potential given through the techniques of storytelling that can arouse customer’s emotions and make a story about a product memorable. These techniques however are not fully utilized today by most wine making companies.

4 Conclusion

It becomes apparent that AR wine labels offer a new level of opportunity for the wineries to showcase creativity in marketing strategies. The largest wine companies in the world consider the AR-enriched wine-label as a game of change. Augmented reality technology may deliver the success of a wine product while is targeting the public.

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