Wine Live Label: A Consumer-Oriented Augmented Reality Design for Wine Labeling

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Abstract— **Augmented Reality (AR) technologies are emerging technologies that may develop new consumer-oriented devices and services to provide new types of economic activities and business models. In this work, AR technology is used in the marketing sector of the wine industry by creating innovative consumer-oriented experience with augmented "live" wine labels. Starting from the idea of creating an AR experience for wine products, an AR expert designs the AR experience, develops the AR application and the application is distributed to the users with the use of various platforms where the user can interact with the wine label on a whole new level by creating new digital products of wine "live" labels. The purpose of the present study is to examine the impact of AR smartphone applications embedded in wine labels on consumers' experience and their subsequent perceptions and intentions A consumer-oriented approach is used to evaluate the wine-label AR mobile application by examining its impact on consumer experience dimensions, satisfaction, and re-usage intentions towards the application, as well as attitude and purchase intentions towards the wine product. Results found the increase of respondents' satisfaction with the application and in turn help them form positive attitudes and purchase intentions for the wine. This indicates that AR technologies may provide new business models in the marketing sector of food and beverages to enhance user experience, develop positive attitude of costumers to the products and increase purchase intentions towards the products.**

Keywords: Augmented Reality; Wine labels; Digital Marketing; Consumer experience.

I. 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. These technologies could not leave the food and drink industry unaffected, where a system of augmented reality can be used to enable the combination or enhancement of the real world with digital objects or digital information for extending print information with interactive digital objects. Wine companies nowadays are increasingly utilizing AR technologies to promote their products. With the help of augmented-reality technology, wineries are able to provide rich digital content to their customers through videos, 2D/3D animations, photos, and text to enhance their experience [1].

AR technologies can support marketing and promotional activities of companies and in turn foster the relationships of consumers with the brands [2]. Marketers are utilizing these technologies to provide augmented and immersive content for a product/service using a physical background [3]. AR technologies can offer exceptional experiences to consumers since they aim at enhancing consumers' interactions with the product/service [4]. Herein, consumer experience is a multidimensional construct [5] that encapsulates various dimensions such as hedonism-entertainment, flow, escapism, learning, challenge, socialization, and communitas [6].

In this work, we present an AR technology used to create augmented "live" wine labels (section II) and to evaluate its impact on consumer experience dimensions, satisfaction, and re-usage intentions towards the application, as well as attitude and purchase intentions towards the wine product (section III). Section IV provides the conclusion of the study.

II. AUGMENTED REALITY DESIGN FOR LIVE WINE LABEL

An AR wine label application was developed using Unity 2018.4.31f1 and Vuforia Engine 10.2. The underlying application was implemented for Android mobile devices.

The wine "live" label application is launched to the user mobile device, as follows: users are prompt to target their mobile camera to the front bottle label; once the camera recognizes the target image, the AR application generates the augmented multimedia content which is then shown on the

users' smartphone (Figure 1). Specifically, the AR content of the application includes:

• Videos of the winery's production procedures such as harvesting and crushing grapes, fermenting, maturing, and bottling.

• Interactive and 360o videos of the infrastructure of the winery.

• Videos and animation narratives about wine products.

• Information about the wine ingredients and calories in text format and short animated clips.

Figure1. Wine Live Label.

The user can interact with the AR content by selecting the proper action from the application menu and the corresponding information pops up. Furthermore, once the user presses the info button that is located on the bottom right side of the application, a 2D animation character appears on the screen providing additional information in both text and audio form such as wine ingredients, calories, and storage temperature. designations.

III. USER EXPERIENCE AND EVALUATION OF THE AR APPLICATION

To evaluate the AR application and test the study's objectives, a survey was conducted with a self-administered questionnaire through a convenience sam-pling approach. More specifically, the questionnaires were delivered during the Hotelia exhibition in Thessaloniki, Greece (November 18-20, 2022) that was directed to professionals in the field of hotel equipment, as well as catering and coffee services. Seven university students approached attendees of the exhibition and asked them to participate in the survey. Participants that agreed to take part in the survey, were first shown the application by scanning the label of the wine bottle. Then, they completed the questionnaire. In total, 325 questionnaires were completed, whereas 306 were used in subsequent analysis due to incomplete data. Scales developed regarding user experience and user attitude for the wine. All scales exhibited satisfactory internal reliability (Cronbach's alpha exhibited the 0.70 threshold). Mean Scores (M) of factors that affect respondents experience with

the AR wine label application revealed that respondents rated the AR experience as highly educational (M=3.82) and entertaining experience (M=3.68). Flow was experienced in a moderate level by participants (M=3.37) while escapism was experienced to a lesser extent (M=2.80). The AR experience was also able to increase respondents' satisfaction with the application and in turn enable them to form positive attitudes (M=4.06) and purchase intentions (M=3.97) for the wine.

IV. CONCLUSION

AR wine live label application induced the entertainment and educational dimensions of consumer experience, while feelings of flow and escapism were triggered by the AR application to a lesser extent to respondents. Thus, positive feelings and new knowledge can be generated through wine AR label applications. Results also found the increase of respondents' satisfaction with the application and in turn help them form positive attitudes and purchase intentions for the wine. This indicates that AR may provide new business models in the marketing sector of food and beverages to enhance user experience, develop positive attitude of costumers to the products and increase purchase intentions towards the products. Future work will explore further analysis of AR usage in the food and beverages sector.

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REFERENCES

[1] M. Vrigkas, G. Lappas, A. Kleftodimos and A. Triantafillidou, "Augmented reality for wine industry: Past, Present, and Future", in SHS Web of Conferences, Vol. 102, https://doi.org/10.1051/shsconf/202110204006, 2021.

[2] A. Rejeb, K. Rejeb, and H. Treiblmaier, "How augmented reality impacts retail marketing: A state-of-the-art review from a consumer perspective", Journal of Strategic Marketing DOI: 10.1080/0965254X.2021.1972439, 2021.

[3] S. H. Y. Hsu, H. T., Tsou and J. S. Chen, "Yes, we do. Why not use augmented reality? customer responses to experiential presentations of AR-based applications". Journal of Retailing and Consumer Services, vol. 62, 2021

[4] N. Vaidyanathan and S. Henningsson, "Designing augmented reality services for enhanced customer experiences in retail", Journal of Service Management, Vol. 34, o. 1, pp. 78-99, 2022.

[5] C. Gentile, N. Spiller and G. Noci, "How to sustain the customer experience: An overview of experience components that co-create value with the customer", European Management Journal, vol. 25, no. 5, pp. 395-410, 2007.

[6] A. Triantafillidou and G. Siomkos, "Consumption experience outcomes: satisfaction, nostalgia intensity, word-of-mouth communication and behavioural intentions", Journal of Consumer Marketing, vol. 31, no. 6/7, pp. 526-540, 2014.