

WINE PACKAGING BETWEEN TRADITION, SUSTAINABILITY, AND INNOVATION. ROMANIAN CONSUMERS' PERCEPTIONS

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Abstract: *Wine packaging has evolved from a functional necessity into a strategic factor shaping consumer perceptions and purchase decisions. In addition to protection and logistics, packaging now conveys information, differentiates products, supports sustainability, and incorporates digital innovations. This study investigates Romanian consumers' attitudes towards sustainable and innovative wine packaging, addressing a gap in national research. A quantitative online survey of 235 respondents was conducted, with descriptive analysis applied to assess perceptions and behaviours. Findings indicate that label information is the most important packaging attribute, followed by bottle and label design. Eco-friendly packaging is widely valued: 41.7% of consumers are willing to pay more, and nearly half would accept a 4–6% price increase. By contrast, technological innovations generated mixed reactions, with only 24.8% considering them very useful. Overall, the results reveal a dual orientation: consumers prioritize traditional packaging elements but show increasing openness to sustainability, while maintaining caution towards digital features. The study provides insights for producers and contributes to the academic understanding of consumer behaviour in the Romanian wine market.*

Key words: *wine packaging, consumer perception, sustainable packaging, innovative packaging, Romania, purchasing behaviour.*

1. Introduction

In recent decades, the global wine industry has experienced profound transformations, driven by market diversification, technological advancements, and changing consumer expectations. Once regarded primarily as a functional necessity, packaging has become a strategic component of product identity, influencing purchasing decisions and shaping perceptions of quality and value. The accelerated pace of consumer decision-making means that packaging – through its visual appeal, materials, functionality, and innovative features such as interactive labels or QR codes – can affect consumer choices long before the tasting stage (Neacşu, 2015).

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Packaging performs multiple functions that extend beyond its protective role. It safeguards the product against external factors, provides essential information, supports marketing differentiation, and facilitates logistics and distribution (Wilson, 2008). These functions are increasingly intertwined with consumer perceptions and brand positioning, making packaging a powerful marketing tool. At the same time, creative and innovative solutions in packaging design are sought to balance functional requirements such as product protection, cost reduction, and distribution efficiency with aesthetic dimensions aimed at attracting attention and stimulating sales (Neacşu, 2015).

The growing emphasis on sustainability adds further complexity to the role of packaging. Studies employing Life Cycle Assessment (LCA) indicate that the packaging stage alone accounts for up to 41.1% of wine's total carbon footprint (Ferrara & De Feo, 2018). As a result, producers and distributors are exploring alternative formats such as Tetra Pak, PET bottles, or bag-in-box solutions that significantly reduce emissions and resource consumption (Barber, 2010; Csiba-Herczeg et al., 2023). At the same time, the emergence of interactive and digital innovations, such as augmented reality (AR) labels, transforms packaging into a communication platform, offering consumers immersive experiences and reinforcing brand differentiation (Nesselhauf et al., 2017; Vrigkas et al., 2021; Triantafillidou et al., 2023).

The necessity of this study arises from the observation that, while international literature provides substantial evidence on consumer attitudes towards sustainable and innovative packaging, empirical research addressing Romanian consumers remains scarce. Understanding their perceptions is essential for aligning local marketing strategies with global trends, as well as for assessing the willingness to adopt environmentally friendly and technologically advanced solutions.

The aim of this research is to investigate Romanian consumers' perceptions, attitudes, and purchasing behaviours regarding wine packaging, with a particular focus on sustainability and innovation. Specifically, the study seeks to assess the relative importance of packaging attributes in purchasing decisions, to measure consumer interest in innovative solutions such as interactive designs and digital technologies, and to identify the types of packaging for which consumers are willing to pay a premium. Furthermore, the research aims to quantify the proportion of wine's value that consumers are prepared to allocate to sustainable and innovative packaging, thereby providing insights into both environmental responsibility and market receptiveness to technological advancements in the wine industry.

The structure of this paper is as follows. The first section presents the theoretical framework and a synthesis of specialized literature. The second section details the methodology of the quantitative research. The third section reports and interprets the main findings, while the final section draws general conclusions, highlighting both practical implications for the wine industry and avenues for future academic research.

2. Literature Review

Wine packaging fulfils multiple, complementary functions. Its primary role is protection, shielding the wine from factors that could compromise quality, such as light

exposure, temperature fluctuations, and contamination. Dark-coloured bottles, for example, are commonly used to reduce oxidation and UV-related degradation. Packaging also serves an informational role, providing details such as grape variety, vintage, region of origin, and serving recommendations, which help consumers make informed decisions and build trust in the product.

From a commercial perspective, packaging has a crucial marketing function. Elements such as label design, closure type, and bottle shape serve as differentiation tools that shape perceptions of quality and prestige. Furthermore, packaging must address logistical and distribution requirements, being designed to facilitate handling, transport, and storage. Lighter and more durable packaging options contribute to reducing distribution costs (Wilson, 2008).

The wine industry is increasingly oriented towards eco-friendly packaging solutions, prompted by both regulatory frameworks and consumer awareness of environmental issues. According to LCA studies, packaging may account for more than 40% of wine's environmental impact (Ferrara & De Feo, 2018). Consequently, producers are experimenting with alternative solutions such as PET bottles, Tetra Pak cartons, and bag-in-box containers, which are lighter, more resource-efficient, and often recyclable (Barber, 2010; Csiba-Herczeg et al., 2023).

Consumer preferences regarding ecological packaging are not uniform. Studies show that low-involvement consumers tend to react positively to sustainability-related claims, while wine enthusiasts are more resistant, associating authenticity and quality with traditional glass bottles (Mierczynska-Vasilev, 2024). Recent innovations, such as containers made from recycled fibres, illustrate that sustainability does not exclude creativity, but rather opens new opportunities for repositioning wine on the market (Orlowski et al., 2022). Advantages such as portability, convenient portioning, and waste reduction contribute to more responsible consumption patterns.

Technological innovations are redefining packaging as an interactive experience. Augmented reality (AR) has been increasingly integrated into wine labels, enabling consumers to access additional content by scanning QR codes with mobile devices (Nesselhauf et al., 2017; Vrigkas et al., 2022). Platforms such as Winerytale allow wineries to create AR-based storytelling, providing videos, tasting notes, or food pairing suggestions (Vrigkas et al., 2021). Similarly, devices like Microsoft HoloLens have been used to project holographic information such as reviews, awards, and grape variety details (Taylor, 2016).

Such applications demonstrate the potential of packaging to serve as an interactive communication platform, helping brands differentiate themselves by offering consumers unique and engaging experiences (Triantafillidou et al., 2023).

The evolution of wine packaging reflects a transition from traditional materials (clay, wood, glass) to modern alternatives adapted to contemporary market demands. Emerging directions include recyclable plastics, bag-in-box systems, and aluminium cans, particularly in single-serve formats (350 ml), which are gaining popularity among younger consumers due to their portability, durability, and convenience (Wilkes et al., 2023). Moreover, aluminium's complete recyclability supports environmental goals (Held, 2020).

Future developments are expected to integrate sustainability, functionality, and digitalization more closely. Innovations will not be limited to materials but will also include smart labels and digital technologies, offering consumers detailed product information, interactive experiences, and direct engagement with brands (Curlewis et al., 2015).

3. Methodology

To investigate Romanian consumers' perceptions of wine packaging, a quantitative survey-based study was conducted. The survey was carried out between December 2024 and January 2025. The target group consisted of Romanian adults aged over 18, both male and female, who had consumed wine at least once. A non-probability sampling method was applied, combining voluntary participation and the snowball technique. Participants received the questionnaire through social media platforms (Facebook, Messenger, WhatsApp, Instagram, Discord) and were encouraged to redistribute it after completion.

A total of 235 valid responses were collected. Although sufficient for exploratory analysis, the sample size and sampling method do not allow generalization to the entire population of Romanian wine consumers.

The questionnaire was developed and distributed via Google Forms. It included both factual questions (related to wine consumption habits) and attitudinal questions, employing Likert scales (1 = least important, 5 = most important), multiple-choice formats, and filtering questions.

Key items focused on the importance of packaging components (label information, bottle design, label design, materials, technological innovations); willingness to pay extra for sustainable and innovative packaging; acceptable percentage of wine's value for such packaging; general perceptions of ecological packaging and interactive technologies.

Responses were aggregated and analysed using descriptive statistics provided by Google Forms. The analysis included frequency distributions and percentages; mean scores for evaluative items; graphical illustrations of consumer preferences.

The study is subject to several limitations. First, the use of a non-random sample restricts the possibility of statistical generalization of the results. Second, the relatively small sample size of 235 respondents may limit the robustness and stability of the findings. Third, the exclusive reliance on online distribution excluded individuals without internet access or those not active on social media platforms, thereby narrowing the diversity of the respondent pool. Nevertheless, despite these constraints, the study offers valuable exploratory insights into Romanian consumers' attitudes and behaviours towards wine packaging.

4. Results and Discussions

The analysis revealed that label information is the most important packaging component for consumers (mean score 4.2), followed by bottle design (3.56) and label design (3.54). Material choice (3.36) and technological innovations (2.5) ranked lower in

importance (Figure 1).

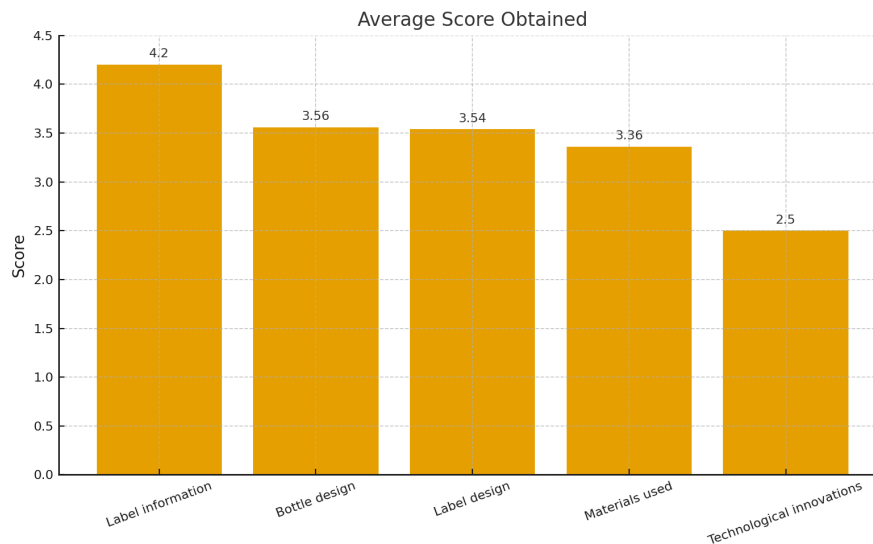


Fig. 1. *Average scores obtained for the components of wine packaging*

Source: prepared by the authors based on data from Google Forms

These findings support existing literature emphasizing the primary role of informational and visual elements (Wilson, 2008).

When asked about the willingness to pay extra, 41.7% of respondents preferred sustainable packaging, while 33.2% favoured innovative packaging, and 25.1% were unwilling to pay more (Figure 2).

Q10. For which type of packaging would you be willing to pay more?
235 responses

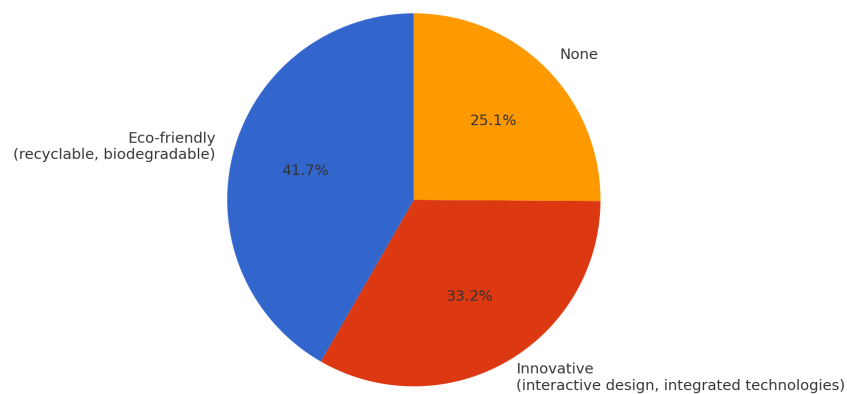


Fig.2. *Distribution of preferences regarding the willingness to pay extra for different types of packaging*

Source: prepared by the authors based on data from Google Forms

Responses regarding the importance of sustainable packaging revealed an average score of 3.59, with a concentration of ratings around high values (4 and 5). The results are presented in Figure 3.

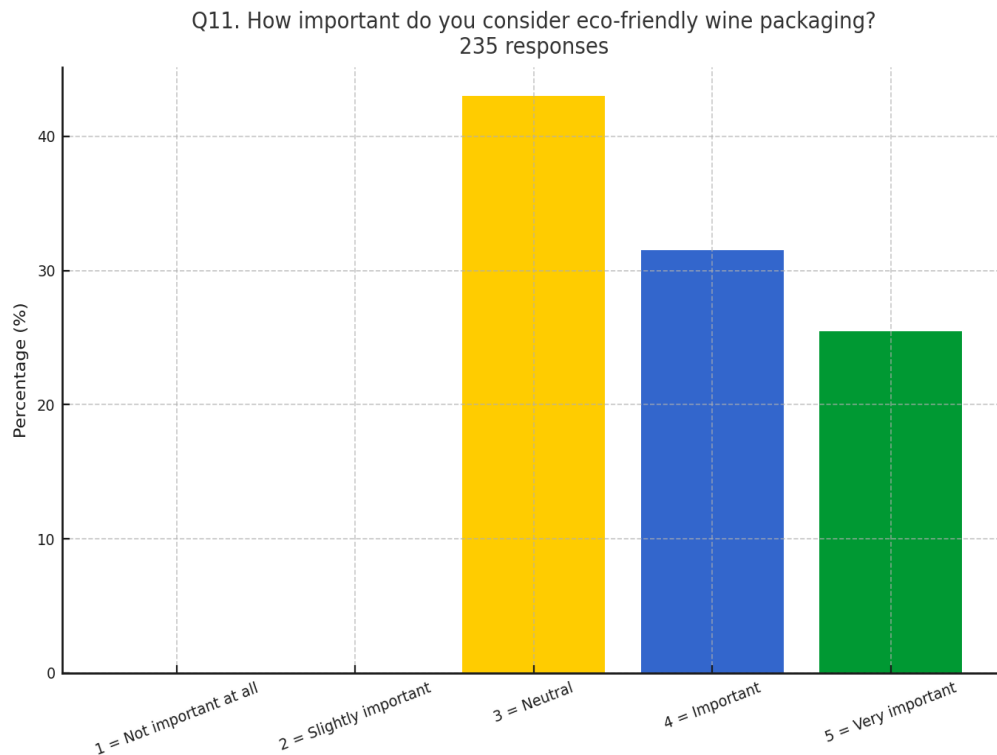


Fig. 3. *Distribution of responses regarding the importance of eco-friendly wine packaging*

Source: prepared by the authors based on data from Google Forms

This confirms that most respondents perceive sustainability as an important criterion, consistent with global findings (Ferrara and De Feo, 2018; Orlowski et al., 2022).

Opinions on technological innovations were more divided: nearly half of respondents (47.4%) adopted a neutral position, 24.8% considered them “very interesting and useful,” while 27.8% deemed them unimportant (Figure4).

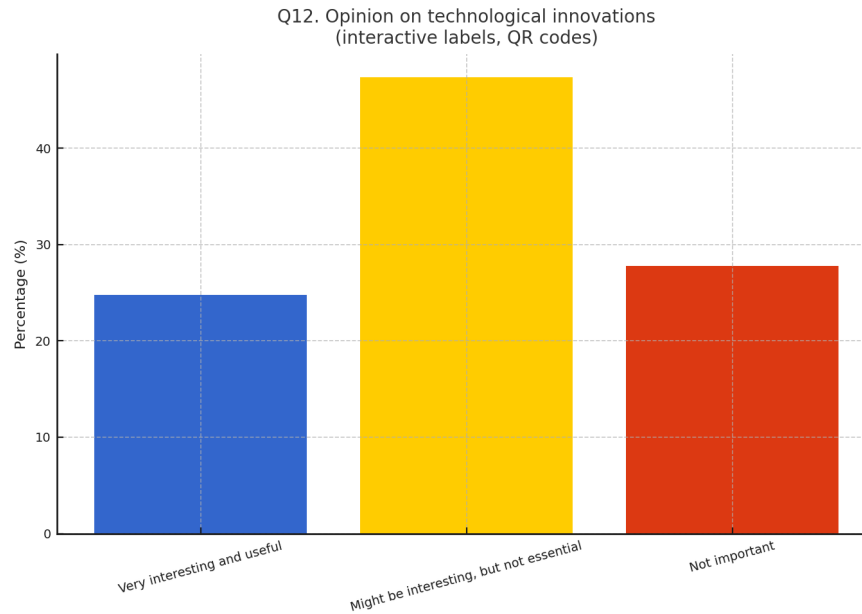


Fig. 4. *Distribution of responses regarding the perception of technological innovations in wine packaging*

Source: prepared by the authors based on data from Google Forms

For sustainable packaging, 49% of respondents considered it acceptable to allocate 4–6% of wine’s total value, while 26.5% would accept 1–3%. Only 9.2% would pay more than 10% (Fig.5).

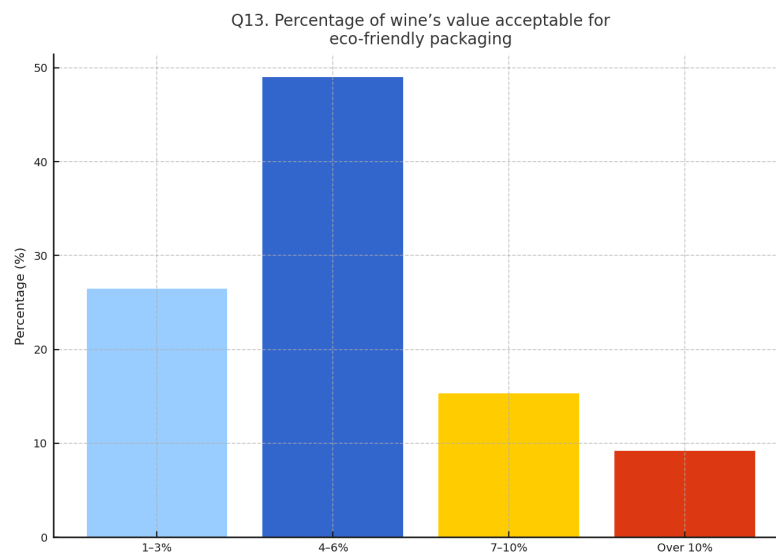


Fig. 5. *Distribution of responses regarding the percentage of wine’s value considered acceptable for eco-friendly packaging*

Source: prepared by the authors based on data from Google Forms

For innovative packaging, 42.3% chose 4–6%, while 28.2% would allocate 7–10%, and only 2.6% would accept more than 10% (Fig.6). These results demonstrate greater financial openness towards sustainability than towards innovation.

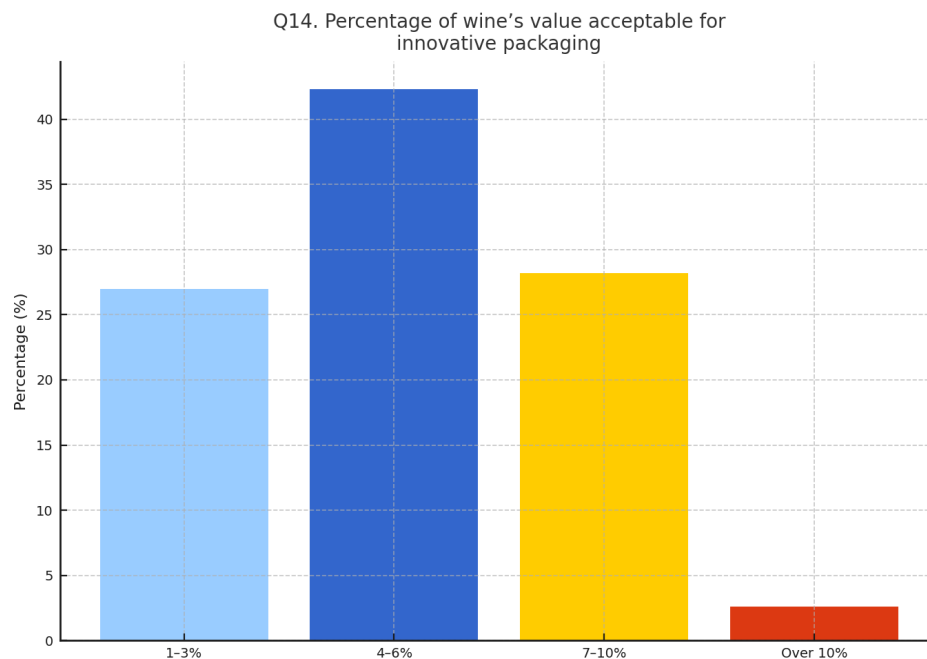


Fig. 6. *Distribution of responses regarding the percentage of wine's value considered acceptable for innovative packaging*

Source: prepared by the authors based on data from Google Forms

The findings highlight a paradox: while innovative features capture consumer attention, Romanian consumers continue to prioritize traditional packaging elements (labels, bottle design) and show stronger commitment to sustainability. This indicates a duality between tradition and modernity: consumers value authenticity and familiarity but are also increasingly responsive to environmental concerns.

Compared with international markets, where interactive technologies are gaining rapid adoption (Vrigkas et al., 2022; Triantafillidou et al., 2023), Romanian consumers display greater caution. This suggests that educational and communication strategies are necessary to emphasize the practical benefits of packaging innovations and reduce scepticism.

5. Conclusion

This study demonstrates that wine packaging is a multidimensional factor influencing perceptions and purchasing decisions through its informational, aesthetic, ecological, and innovative aspects. Romanian consumers place the highest importance on label information and traditional design features, while sustainable packaging is valued as a

legitimate reason for paying more. In contrast, technological innovations are regarded as interesting but secondary.

The research objectives were achieved: the relative importance of packaging components was established, consumer willingness to pay extra was assessed, and the acceptable percentage of wine's value for sustainable and innovative packaging was determined. The results indicate that producers should prioritize sustainability, maintain clarity and appeal in label design, and introduce innovations gradually, supported by communication and consumer education.

From an academic perspective, the study provides a first empirical basis for analysing Romanian consumers' perceptions of wine packaging and opens avenues for future research. Larger, representative samples and longitudinal studies could explore how communication campaigns affect consumer acceptance of innovations, and how sustainability can become a long-term competitive advantage.

In conclusion, wine packaging stands at the intersection of tradition and innovation, integrating functionality, aesthetics, and environmental responsibility. For Romanian producers, this duality represents both a challenge and an opportunity: to preserve the symbolic and cultural value of wine while aligning with global demands for sustainability and technological modernization.

References

- Barber, N. 2010. "Green" wine packaging: targeting environmental consumers. *International Journal of Wine Business Research*, 22(4), pp.423-444.
- Csiba-Herczeg, A., Csiba, P., Koteczki, R., and Balassa, B. E. 2023. Consumer acceptance and rejection regarding sustainable wine packaging. *Chemical Engineering Transactions*, 107, pp. 559-564.
- Curlewis, R., de Leo, D., Carslake, S., and Hamilton, D. 2015. Labelling: Wine labelling-future considerations and trends. *Wine and Viticulture Journal*, 30(2).
- Ferrara, C. and De Feo, G. 2018. Life Cycle Assessment Application to the Wine Sector: A Critical review. *Sustainability*, 10(2), p. 395.
- Held, S. A. 2020. *How to Solve the Future of the Wine Industry: An Analysis of the Wine Industries Packaging Options when Targeting the Millennial and Gen-z Demographics* (Master's thesis, California Polytechnic State University).
- Mierczynska-Vasilev, A. 2024. The future of wine packaging-A perspective. *Sustainable Agriculture and Environment*. 2024; 1 (1): 3506. *Environment*.
- Neacsu, N. A. 2015. Design element analysis on juice market Case study: Prigat. *Bulletin of the Transylvania University of Brasov, Series V*, 8(1), pp. 59-64.
- Nesselhauf, L., Deker, J. S., and Fleuchaus, R. 2017) Information and involvement: the influence on the acceptance of innovative wine packaging. *International Journal of Wine Business Research*, 29(3), pp. 285-298.
- Nesselhauf, L., Deker, J. S., and Fleuchaus, R. 2017. Information and involvement: the influence on the acceptance of innovative wine packaging. *International Journal of Wine Business Research*, 29(3), pp. 285-298.

- Orlowski, M., Lefebvre, S., and Back, R. M. 2022. Thinking outside the bottle: Effects of alternative wine packaging. *Journal of Retailing and Consumer Services*, 69, 103117.
- Taylor, A. G. 2016. *Develop Microsoft HoloLens Apps now*. In Apress eBooks.
- Triantafillidou, A., Vrigkas, M., Kleftodimos, A., Yannacopoulou, A., Matsiola, M., Gkoutzios, S., and Lappas, G. 2023. Consumer experience and augmented reality wine label application. In *Lecture notes in business information processing* (pp. 263-273).
- Vrigkas, M., Lappas, G., and Kleftodimos, A. 2022. An augmented reality workflow for creating “live” wine labels. *International Journal of Entertainment Technology and Management*, 1(4), p. 311.
- Vrigkas, M., Lappas, G., Kleftodimos, A., and Triantafillidou, A. (2021). Augmented reality for wine industry: past, present, and future. In *SHS Web of Conferences* (Vol. 102, p. 04006). EDP Sciences.
- Wilkes, E., Hirlam, K., and Scrimgeour, N. 2023. Alternative packaging and wine Should we move beyond the green bottle?. *Wine and Viticulture Journal*, 38(4).
- Wilson, D. 2008. Identifying successful marketing practices for wine packaging innovations. *Bulletin de l'OIV-Organisation Internationale de la Vigne et du Vin*, 81(923-925), p.113.