

Balancing profitability and adaptability at the global and local levels: The future strategies for the European wine sector

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Abstract

The European Union dominates global wine exports and production. The Common Agricultural Policy (CAP) and Geographical Indications (GI) systems primarily support the EU's wine sector. From an international perspective, the sector is experiencing significant economic impacts due to US tariffs. To overcome the identified challenges, it is crucial for wineries to implement a tailored sales distribution strategy, particularly for small wineries. The distribution landscape for small wineries is characterized by limited resources, diverse channel options, and rapidly changing market conditions, making the selection of an optimal mix both complex and critical for profitability and resilience. This study formulates the choice of distribution strategy as a Multi-Criteria Decision-Making (MCDM) problem and introduces a hybrid framework that combines the Best–Worst Method (BWM) for deriving consistent criterion weights with the novel Axial Distance-based Aggregated Measurement (ADAM) technique for robust alternative ranking. Seven evaluation criteria, namely economic profitability, resource availability, implementation feasibility, strategic alignment, market opportunity, competitive advantage, and flexibility, are applied to five distribution strategies: direct sales; online and social media channels; local partnerships; distributor partnerships; and participation in festivals and events. Expert assessments generate the decision matrix and weight vectors, yielding a final ranking that places local partnerships at the highest level, followed by direct sales, online channels, distributor partnerships, and festivals. The results demonstrate the value of community-based collaborations and experiential marketing, while the hybrid MCDM approach offers a transparent, adaptable tool for strategic decision-making. Limitations associated with expert subjectivity and the scope of the criterion are discussed, and avenues for incorporating sustainability and dynamic updates are outlined.

Keywords: small wineries, sales strategy, economic policies, Multi-Criteria Decision-Making (MCDM), Best-Worst Method (BWM), Axial Distance based Aggregated Measurement (ADAM)

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1. Introduction

The European Union (EU) is a leader in the wine industry, accounting for a significant share of global wine exports and production. In recent decades, exports have ranged from 65% to 67%, while production has reached 60% (European Court of Auditors, 2023; OIV, 2025). Since 1962, the European wine sector has relied on the Common Agricultural Policy (CAP), a powerful tool that supports the EU's farming sector. The CAP is a set of policies designed to ensure affordable prices, high safety and environmental standards, and bright rural communities (European Commission, 2022).

The relevance of the wine sector within the European Union has led to its classification as one of the most extensively regulated industries. Indeed, one of the earliest Common Market Organizations (CMOs) to be established was the CMO for wine, which is one of the most complex within the CAP (European Commission, 2004). The European Union's policy framework for the wine sector also includes the system of Geographical Indications (GI). This system enables the promotion and safeguarding of high-quality EU food products originating from specific European subregions. This approach is designed to guarantee the authenticity of products, distinguish them in the market, and protect them from fraudulent activities (Matzer, 2025).

The wine sector is a paradigmatic example of monopolistic competition (Rebelo et al., 2018). It is characterized by several factors, including the considerable number of producers, sellers, and buyers in the same market, the coexistence of wineries of varying sizes, the technologies utilized, the differentiation of products both vertically and horizontally, and the free exit and entry of new industry members over time. In the wine sector, consumers perceive products from different producers as distinct, and wine producers exercise some control over pricing. The wine sector is confronting the 15% tariffs on European Union wines that the United States imposed in August 2025. These tariffs are expected to result in losses between €800 million and €1 billion in 2026 (Holland, 2025). Considering the previously mentioned points, an analysis of distribution strategies may be essential in addressing these challenges, particularly for small wineries, given their limited resources and product features.

Choosing an adequate strategy has a direct impact on profitability because it enables more efficient sales and logistics management. The analysis of distribution strategies facilitates innovation by enhancing firms' capacity to adapt to rapid changes in the industry. Adaptability, built through analysis of distribution strategies, allows small wineries to remain competitive and achieve long-term success.

Accordingly, the aim of this paper is to identify and rank relevant distribution strategies. Ranking these strategies helps wineries focus their efforts on those that most effectively support growth, profitability, and long-term sustainability, creating opportunities to build loyal customers and adapt to rapid changes in the industry.

The selection of an optimal distribution mix is formulated as a Multi-Criteria Decision-Making (MCDM) problem. Seven evaluation criteria spanning economic profitability, resource availability, implementation feasibility, strategic alignment,

market opportunity, competitive advantage, and flexibility are first defined and used for the evaluation of five distribution strategies, namely direct sales, online and social media channels, local partnerships, distributor partnerships, and participation in festivals and events. To solve this problem, a hybrid MCDM approach is employed that combines the Best–Worst Method (BWM) for deriving consistent and transparent criterion weights with the novel Axial Distance-based Aggregated Measurement (ADAM) technique for precise and reliable ranking of alternatives.

The remainder of the paper is organized as follows. Section 2 offers a comprehensive analysis of the legal framework applicable to wine sector firms within the European Union. Section 3 provides a review of the literature on small winery distribution, identifying current approaches and pinpointing gaps that motivate the present study. Section 4 describes the problem structure, i.e., the defined distribution strategies and criteria for their evaluation. Section 5 provides an explanation of the proposed hybrid BWM-ADAM methodology, including algorithmic steps and mathematical formulations. Section 6 describes the expert evaluation process, presents the resulting criterion weights and strategy rankings, and analyzes the comparative performance of each alternative. Section 7 discusses the results, explores possible synergies among top-ranked strategies, and outlines limitations. Finally, Section 8 concludes by summarizing key insights, offering policy and managerial recommendations, and suggesting directions for future research.

2. The wine sector's legal framework in the European Union

The Common Agriculture Policy (CAP) constitutes the primary framework within which the wine sector operates in the European Union. Throughout the years, the CAP has evolved to address numerous challenges. Initially, the CAP centered on price support mechanisms, emerging as a social policy intended to reduce the income inequality between farmers and other socioeconomic groups (Knudsen, 2011; Gartzou-Katsouyanni, 2024). Moreover, the focus was on ensuring self-sufficiency in basic food supplies through enhanced productivity. Over time, it has evolved into a broader agri-environmental policy that aims to mitigate the adverse effects of agriculture on natural resources and the climate (European Commission, 2022).

For the EU's multiannual financial framework (MFF) from 2021 to 2027, the CAP has a budget of €386.6 billion, including €8.1 billion from the Next Generation EU recovery instrument. This makes it the EU's most funded policy, accounting for 30.9% of the €1.21 trillion MFF for 2021–27 (European Commission, 2026a, 2026b). The CAP 2023–27 prioritizes the development of sustainable agricultural systems that contribute to climate change adaptation and mitigation and efficient natural resource management, as well as the preservation of ecosystem services and natural habitats (European Commission, 2022).

Particularly, the measures introduced by the CAP 2023–2027 are based on stricter environmental requirements, known as "conditionalities". For example, to receive subsidies, which are typically direct payments, natural or legal persons must

adhere to enhanced statutory management requirements (SMRs) and good agricultural and environmental conditions (GAECs) (Fellmann et al., 2025).

The CAP also allocates specific financial assistance for viticulture, formally referred to as the Sectorial Intervention in Viticulture (SIV). These subsidies modernize vineyard operations and wineries, enhancing their environmental sustainability, resilience against climate change, and market competitiveness (Homet et al., 2024). To comply with international agreements signed by the EU, such as the Paris Agreement on climate change and the Convention on Biological Diversity, the CAP 2023-2027 incentivizes practices that enhance carbon sequestration in soils and vegetation. These practices include agroforestry and conservation agriculture (Homet et al., 2024).

The most recent reform to the wine sector occurred in 2021 with Regulation (EU) 2021/2117. The regulation amended Regulation (EU) 2013/1308 and introduced modifications to the CMO for the sector. Specifically, the new legislation requires the mandatory disclosure of wine ingredients, nutritional values, energy content, and allergens via physical labels or digital means, such as QR codes (Regulation (EU) 2021/2117). Brussels aims to foster the above-mentioned objectives with a comprehensive policy approach, as provided by the European Green Deal. In this key policy, the Farm to Fork Strategy plays the role of ensuring that food systems are characterized by fairness, health, and environmental sustainability (European Commission, 2020).

As previously stated, the Geographic Indications (GI) system is another foundational instrument within the EU's food sector, which includes the wine sector. Present in Europe since the 1883 Paris Convention for the protection of industrial property, a more modern version of the GIs was established during the 1970s for wine products and in 1992 for food products (Josling, 2006; Adinolfi et al., 2024). Currently, GIs are ruled by Regulation (EU) 2024/1143, which amends Regulation (EU) 1308/2013. The goal of GIs is to protect product names and to underscore their distinctive characteristics associated with their geographical origin and traditional expertise (Raimondi et al., 2020). A summary of the EU wine legal framework is presented in Table 1.

3. Literature review

In the modern wine industry, particularly for small wineries, the strategic approach to distribution is crucial for balancing profitability and adaptability (Fuentes-García et al., 2024). Limited resources and the distinctive qualities of their products force small wineries to adopt innovative distribution strategies that enhance sales efficiency and allow for quick market compliance (Vergamini et al., 2019).

Recent findings indicate that income diversification strategies can be crucial for small and micro wineries, helping them become more resistant to contemporary market challenges. For instance, Godenau et al. (2024) suggest that traditional family-run wineries in the Canary Islands leverage diverse revenue streams, which help in safeguarding against volatility in grape supply and market demands. This

adaptive strategy aligns with the pursuit of maximizing profitability while ensuring operational resilience.

Table 1
EU wine legal framework (elaborated on European Commission data)

EU wine legislation	EU basic regulation	EU delegated regulation	EU implementing regulation
Protection of designations of origin, labelling		2019/33	2019/34
Support programs		2016/1149 2022/2532	2016/1149 2016/1150
Scheme of authorizations; Vineyard register, compulsory declarations, documents accompanying consignments	1308/2013 2016/1149	2018/273	2018/274
Oenological practices		2019/934	2019/935
Market monitoring		2018/273	2018/274 2017/1185
Financing, management and monitoring (of the common agricultural policy)	2021/2116		

Source: designed by the authors.

Moreover, adaptability within distribution channels is essential. The study by Miranda et al. (2021) illustrates how procurement strategies influenced by local contexts, such as climate and consumer preferences, enable small wineries to tailor their offerings effectively. These producers often experiment with a diverse range of grape varieties, adjusting their product portfolios to address specific local demand,

thereby fostering closer relationships with their customer base. This can enhance profitability by aligning production with market needs.

Distribution strategies can also integrate innovative technologies that promote revenue optimization. Innovation within small wineries can be closely linked to their ability to choose effective distribution channels (Casali et al., 2018). By utilizing technology for inventory control and customer insight analysis, small wineries can develop targeted pricing strategies, leading to improved product positioning and customer retention (Kulesza, 2021). Thus, adopting a culture of innovation enables wineries to adapt and increases their market competitiveness.

Additionally, the transition toward multi-channel distribution is emerging as the most promising strategy for small wineries. Strickland and Williams (2022) state that successful wineries leverage both digital and traditional channels to expand their market presence. This omnichannel approach leads to evolving consumer behaviors, especially emphasized during the recent global pandemic, when many wineries were forced to lean towards online sales (Strickland & Williams, 2022). Such diversification mitigates risks associated with reliance on a single distribution channel and enhances overall sales against market fluctuations.

Furthermore, social media and digital marketing are potentially useful tools for small wineries aiming to enhance customer loyalty and brand awareness. Haller et al. (2021) emphasize the importance of collective branding initiatives, where small wineries share marketing costs associated with social media campaigns. This method reduces financial burdens and amplifies their marketing reach (Haller et al., 2021). By collaborating with local grape-growing associations, these wineries can effectively enhance their visibility and attractiveness to consumers.

According to the reviewed literature, small winery distribution studies lack an integrated, context-specific evaluation framework that simultaneously captures the profitability and adaptability of multi-channel strategies under resource constraints. Moreover, existing studies rarely use the MCDM approaches for strategy evaluation and selection. These research gaps are addressed in the remainder of the paper.

4. Defining the problem

The central problem addressed in this paper is how to select and rank the most appropriate distribution strategies for small wineries in the EU, given their resource constraints and market challenges, by considering multiple, often competing criteria within a rigorous MCDM framework. Accordingly, the following addresses the selected strategies in more detail and the criteria selected for their evaluation and ranking.

In direct sales (S1) (Forbes et al., 2020), the winery focuses its strategy on the direct sales of wine through traditional channels, particularly focusing on the live experience in the winery. Creating an engaging tasting environment becomes essential, as it enables the provision of educational tastings and guided tours that enhance the overall visitor experience. Through these personal interactions, the winery encourages direct on-site sales, highlighting exclusive promotions, wine club

memberships, and events. This approach builds consumer loyalty and creates an unforgettable experience, which encourages referrals and consumer loyalty.

On the other hand, the winery can market its products through online sales, e-commerce, social media, and cooperation with influencers (S2) (Balogh & Mizik, 2022). Through a strong online presence, the winery makes it easy for consumers to research and directly purchase wine through its own website. In addition, it uses social media to interact with consumers, share stories, and promote exclusive offers. Cooperation with influencers from the world of wine or other relevant fields additionally increases the visibility of the brand. The combination of online sales and a social media strategy gives the winery a wide reach, allowing it to communicate directly with consumers, collect feedback, and adapt to rapid changes in consumer preferences.

A winery can also implement a strategy that involves establishing local partnerships (S3) through cooperation with restaurants, wineries, and specialized stores (Velikova et al., 2019). Through joint promotional events, the winery has the opportunity to present its wines to new consumers. Partnerships with local wine, cheese, and other delicatessen stores create synergy between products and enable joint promotions. This strategy not only increases the visibility of the winery in the local community but also contributes to a diverse and holistic consumer experience.

A winery can also adopt a strategy of distributor partnerships (S4) (Maumbe & Brown, 2013) to expand its reach and effectively distribute its wines. This strategy involves cooperation with local or regional distributors who share the vision and appreciate the unique characteristics of the winery's wines. Through these partnerships, the winery expands distribution through an existing network of distributors, facilitating access to different markets. By eliminating the need for direct logistics and retail efforts, the winery can focus on producing premium wines, while distributors take on the role of marketing the product. This strategy enables efficient distribution and facilitates the winery's access to markets, strengthening its position at the regional level.

A winery can also use the strategy of participating in festivals and organizing events (S5) (Yu, 2023) to popularize the brand, attract new markets, and deepen relationships with existing customers. Participating in local and regional wine festivals provides an opportunity for direct wine promotion, creating visibility and a community of wine lovers. This strategy helps build the brand through positive experiences and establishes a personal connection with consumers. Integrating social media to promote events further expands reach, attracting the attention of new consumers and creating word-of-mouth marketing. This strategy is vital to building community around the brand by diversifying revenue streams and strengthening the winery's position in the local and regional wine scene.

Although these strategies are mutually complementary, it is important to recognize that some may take precedence over others in certain situations. Evaluating and ranking strategies are key steps to optimally use resources and achieve the best results. For example, direct sales through online channels may be

prioritized if there is strong online demand, while local partnerships may be vital to strengthening local support.

To identify the strategies that will best suit the objectives of the winery, it is necessary to review, evaluate, and rank them in relation to several different factors (criteria), such as profitability, resources, possibility of implementation, contribution to strategic goals, compliance with market opportunities, and achieving a competitive advantage.

The criterion of economic profitability (C1) evaluates the potential profitability of each strategy and its contribution to the financial success of the winery. This criterion analyzes the costs of implementing each strategy compared to the expected revenues.

The resource and capacity (C2) assesses the available resources needed to implement each strategy, including financial, human, and time resources. This evaluation includes an analysis of the winery's ability to provide the necessary resources to successfully implement each strategy.

The implementation possibility (C3) analyzes the technical and organizational capabilities of the winery for the successful implementation of each strategy. This evaluation includes an assessment of the necessary knowledge, skills, and technological infrastructure to implement the strategies.

The goal-setting criterion (C4) assesses the extent to which each strategy contributes to the achievement of the winery's long-term goals. This evaluation includes the analysis of the strategy alignment with the set business goals and the identification of how the strategy supports the growth and sustainability of the business.

The market opportunity (C5) assesses the ability of each strategy to adapt to current market conditions and take advantage of relevant market trends. This criterion includes an analysis of how each strategy fits the needs and expectations of consumers, as well as the identification of relevant opportunities for market growth.

The competitive advantage (C6) assesses how each strategy contributes to differentiation of the winery from its competition and enables the creation of a sustainable market advantage. This evaluation includes an analysis of the unique elements of each strategy that make a winery recognizable and attractive to consumers.

The criterion of flexibility and adaptability (C7) assesses the extent to which each strategy enables adaptation to changes in the environment and quick adaptation to new market conditions. In this study, adaptability also explicitly encompasses wineries' capacity to adjust to evolving EU regulatory frameworks, including future requirements arising from the European Green Deal and the environmental objectives of the Common Agricultural Policy, as well as their ability to progressively integrate more sustainable practices.

5. Methodology

To solve the defined problem, this study uses a hybrid MCDM approach integrating the BWM to determine the weights of criteria and the ADAM method to rank

alternatives. The BWM is a technique based on pairwise comparisons, where decision-makers identify the best and worst alternatives for each criterion and assign weights accordingly. While it involves subjective judgments and binary comparisons, BWM is more efficient, consistent, and user-friendly than other methods like AHP or ANP, making it well-suited for evaluating numerous criteria with fewer comparisons (Krstić et al., 2025). It is chosen in this paper due to its accuracy, simplicity, and reduced resource demands. The ADAM method is a geometric MCDM approach that ranks alternatives by calculating the volumes of polyhedra formed from reference points and weighted reference points in a 3D coordinate system, incorporating both alternative values and criterion weights (Krstić et al., 2023a). The ADAM method stands out for its simplicity, user-friendliness, and intuitive approach, using basic geometric volume calculations to rank alternatives. It remains easy to apply regardless of the number of criteria, offers a clear visual interpretation of results, and has a very low risk of rank reversal, ensuring stable and reliable outcomes (Krstić et al., 2023b). The application steps of the proposed methodology are described below.

Step 1: Define the decision problem by identifying a set of alternatives and a set of criteria for their evaluation.

Step 2: Use a nine-point linguistic evaluation scale ranging from “None” (1) to “Extremely High” (9) to assess preferences (Table 2).

Table 2
Evaluation scale

Linguistic evaluation	Abbreviation	Numerical value
“None”	“N”	1
“Very Low”	“VL”	2
“Low”	“L”	3
“Fairly Low”	“FL”	4
“Medium”	“M”	5
“Fairly High”	“FH”	6
“High”	“H”	7
“Very High”	“VH”	8
“Extremely High”	“EH”	9

Source: designed by the authors.

Step 3: Obtain the criteria weights using the BWM method.

Step 3.1: Identify the best (*BC*) and the worst (*WC*) criteria.

Step 3.2: Obtain the preference values, i.e. best-to-others vector, $U_b = (u_{b1}, u_{b2}, \dots, u_{bm})$, and others-to-worst vector $U_w = (u_{1w}, u_{2w}, \dots, u_{mw})$, in which u_{bj} denotes the preference of the best criterion over criterion j ($j = 1, \dots, m$) and u_{jw} denotes the preference of criterion j ($j = 1, \dots, m$) over the worst.

Step 3.3: Calculate the criteria weights w_j as:

$$\min \xi, \quad (1)$$

subject to:

$$|w_b - u_{bj}w_j| \leq \xi, \forall j = 1, \dots, m, \quad (2)$$

$$|w_j - u_{jw}w_w| \leq \xi, \forall j = 1, \dots, m, \quad (3)$$

$$\sum_{j=1}^m w_j = 1, \quad (4)$$

$$w_j \geq 0, \forall j = 1, \dots, m \quad (5)$$

The value ξ indicates the consistency of the preferences. Lower values suggest higher consistency.

Step 4: Evaluate and rank the alternatives using the new ADAM method.

Step 4.1: Define the decision matrix E :

$$E = [e_{ij}]_{m \times n}, \quad (6)$$

where e_{ij} is the evaluation of alternative i with respect to criterion j .

Step 4.2: Sort the evaluations for each alternative in descending order based on the importance (weights) of the criteria, thus obtaining the matrix:

$$S = [s_{ij}]_{m \times n}. \quad (7)$$

Step 4.3: Normalize the sorted values using the following rule:

$$n_{ij} = \begin{cases} \frac{s_{ij}}{\max_i s_{ij}}, & \text{for } j \in B \\ \frac{\min_i s_{ij}}{s_{ij}}, & \text{for } j \in C \end{cases}, \quad (8)$$

where B is the set of benefit, and C is the set of cost criteria.

Step 4.4: Compute reference (R_{ij}) and weighted reference (P_{ij}) points, and determine their 2D coordinates using angular positioning

$$x_{ij} = n_{ij} \times \sin \alpha_j, \forall j = 1, \dots, n; \forall i = 1, \dots, m, \quad (9)$$

$$y_{ij} = n_{ij} \times \cos \alpha_j, \forall j = 1, \dots, n; \forall i = 1, \dots, m, \quad (10)$$

$$z_{ij} = \begin{cases} 0, & \text{for } R_{ij} \\ w_j, & \text{for } P_{ij} \end{cases}, \forall j = 1, \dots, n; \forall i = 1, \dots, m, \quad (11)$$

where α_j is obtained as:

$$\alpha_j = (j - 1) \frac{90^\circ}{n - 1}, \forall j = 1, \dots, n, \quad (12)$$

Step 4.5: Find the volumes of complex polyhedra V_i^C :

$$V_i^C = \sum_{k=1}^{n-1} V_k, \forall i = 1, \dots, m, \quad (13)$$

where V_k is obtained as:

$$V_k = \frac{1}{3} B_k \times h_k, \forall k = 1, \dots, n - 1, \quad (14)$$

where B_k is obtained as:

$$B_k = c_k \times a_k + \frac{a_k \times (b_k - c_k)}{2}, \quad (15)$$

where a_k is obtained as:

$$a_k = \sqrt{(x_{j+1} - x_j)^2 + (y_{j+1} - y_j)^2}, \quad (16)$$

b_k and c_k are obtained as:

$$b_k = z_j, \quad (17)$$

$$c_k = z_{j+1}, \quad (18)$$

and h is obtained as:

$$h_k = \frac{2\sqrt{s_k(s_k-a_k)(s_k-d_k)(s_k-e_k)}}{a_k}, \quad (19)$$

where s_k is obtained as:

$$s_k = \frac{a_k + d_k + e_k}{2}, \quad (20)$$

where d_k and e_k are obtained as:

$$d_k = \sqrt{x_j^2 + y_j^2}, \quad (21)$$

$$e_k = \sqrt{x_{j+1}^2 + y_{j+1}^2}, \quad (22)$$

Step 4.6: Rank the alternatives in descending order by their volume V_i^C ($i = 1, \dots, m$). The alternative with the highest volume is considered the most favorable.

6. Results

This section presents the empirical findings of the proposed decision-making framework, examining both the relative performance of distribution strategies and the robustness and reliability of the obtained results.

6.1. Ranking of strategies

The experts from the field were asked to identify the “best” (most important) and the “worst” (least important) criteria. The criteria with the most votes were adopted as the best and worst. The experts were then asked to evaluate all other criteria. Their answers were statistically processed, and the evaluations with the highest frequency were adopted as the evaluations. These evaluations were then transformed into numerical values, according to the relations presented in Table 2. After applying equations (1)-(5), the final criteria weights were obtained. Evaluations and criteria weights are presented in Table 3.

Table 3
Criteria evaluations and final weights

Criterion	Best/worst	Best over other	u_{bj}	Other over worst	u_{jw}	w_j
C1		"N"	1	"M"	5	0.258
C2		"FL"	3	"VL"	2	0.080
C3	BC	/	/	"FH"	6	0.288
C4	WC	"FH"	6	/	/	0.045
C5		"VL"	2	"FL"	4	0.159
C6		"L"	3	"L"	3	0.106
C7		"M"	5	"N"	1	0.064

Source: designed by the authors.

The experts were, afterwards, asked to evaluate the strategies according to the criteria. Again, the most statistically significant answers were adopted as the final evaluations. They were also transformed into numerical values (according to Table

2), thus forming the decision matrix E by (6). The values were sorted per (7) and normalized per (8), after which the reference and weighted reference points were determined using equations (9)-(12). By applying equations (10)-(22), the volumes of complex polyhedra (Figure 1), which reflect the resulting significance of the alternatives (strategies), were obtained (presented in Table 4).

Table 4
Alternatives evaluations and final ranking

Alternatives	S1	S2	S3	S4	S5
C1	"VH"	"FH"	"FL"	"M"	"H"
C2	"M"	"VH"	"H"	"FH"	"FL"
C3	"VH"	"FL"	"FH"	"M"	"H"
C4	"H"	"L"	"M"	"FH"	"FL"
C5	"FL"	"FH"	"H"	"VH"	"M"
C6	"L"	"VH"	"FH"	"H"	"FH"
C7	"M"	"VH"	"FH"	"H"	"M"
Volume	0.042	0.044	0.036	0.043	0.040
Rank	3	1	5	2	4

Source: designed by the authors.

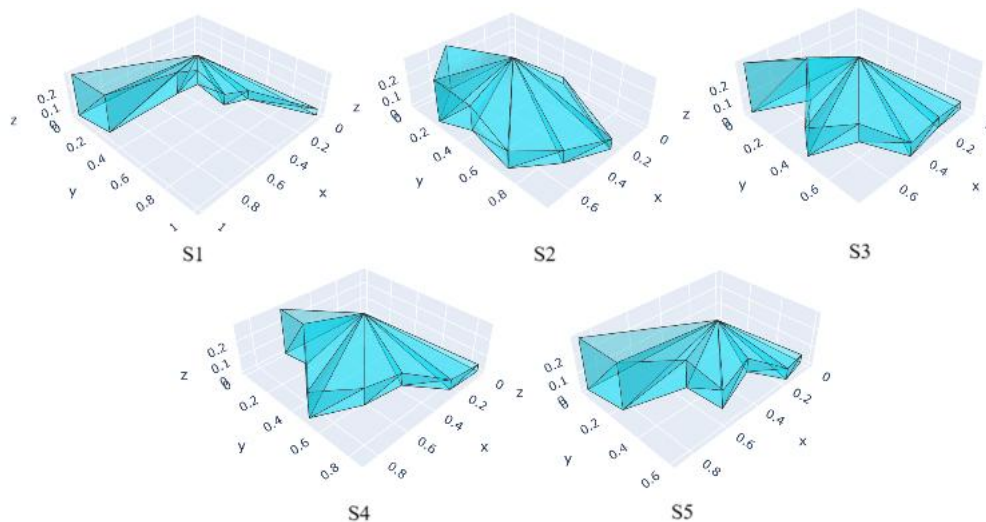


Fig. 1. Complex polyhedra that indicate the strategies ranking.

Source: designed by the authors.

After evaluation by experts in the field, the following strategy ranking was obtained: local partnerships, direct sales, online sales and social media, distributor partnerships, and festivals and events, respectively. These strategies are not independent but mutually complementary, offering the possibility of effective combination and complementation. For example, direct sales through online channels can be combined with local partner connections, where the online presence supports the promotion of joint events with partners. Distributor partnerships can

be integrated with a festival participation strategy, where distributors actively support events. This integration enables the creation of synergistic effects, increases efficiency, and enables the winery to maximize diverse strategies to achieve overall market success.

6.2. Sensitivity analysis

Since decision-making outcomes in multi-criteria frameworks may be influenced by changes in criterion importance, a sensitivity analysis was carried out to verify the robustness of the proposed model. A sensitivity analysis was conducted by systematically modifying the criterion weights derived from the BWM–ADAM methodology. A total of 13 alternative scenarios were generated in addition to the baseline case. In the first set of scenarios, the weight of the most important criterion was progressively reduced by 75%, 50%, 25%, and 100%, while the relative proportions of the remaining criteria were preserved. The same procedure was then applied to the second and third most important criteria, resulting in four additional scenarios for each criterion. This approach enabled the examination of how gradual and extreme reductions in individual criterion importance affect the stability of the ranking results. Finally, an equal-weights scenario was introduced, in which all criteria were assigned identical weights, serving as a benchmark to evaluate the dependence of the results on the original preference structure. The rankings obtained under these alternative scenarios were compared with the baseline results (Figure 2) to identify potential rank reversals and assess the overall robustness of the proposed decision-making framework.

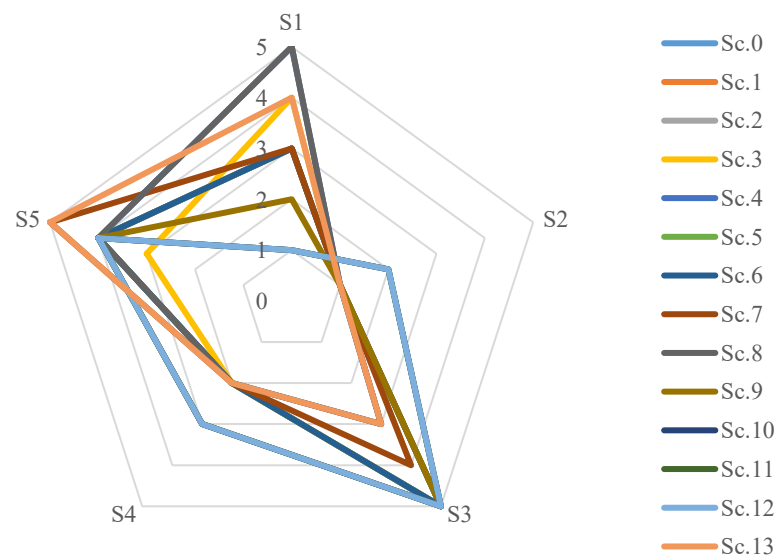


Fig. 2. Sensitivity analysis.
Source: designed by the authors.

The sensitivity analysis demonstrates a high level of ranking robustness. Across 13 alternative scenarios, including extreme reductions of the most influential criteria

and an equal-weight configuration, the relative positions of the leading alternatives remain largely unchanged. Rank variations are limited in magnitude and primarily affect middle-ranked options, indicating that the final decision is not driven by any single criterion. These findings confirm the structural stability of the BWM–ADAM framework and its suitability for supporting resilient distribution strategy selection under preference uncertainty.

6.3. Validation of results

To further verify the reliability of the obtained results, a validation analysis was performed by comparing the rankings generated by the proposed BWM–ADAM approach with those obtained using several widely applied MCDM methods, including TOPSIS, VIKOR, COBRA, SAW, COPRAS, and AHP. The comparison reveals a high degree of agreement, particularly for the best- and worst-ranked alternatives, confirming the robustness of the proposed framework (Figure 3).

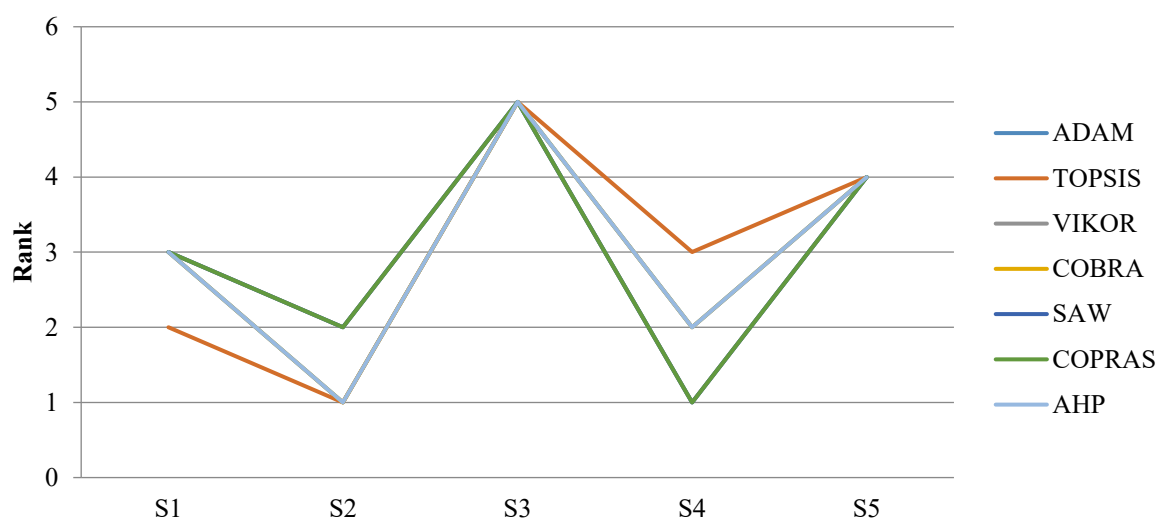


Fig. 3. Validation of results.

To quantitatively assess the agreement between the proposed BWM–ADAM approach and alternative MCDM techniques, Spearman's rank correlation coefficients were calculated. The results reveal very strong correlations ($\rho = 0.90$ – 1.00) between ADAM and all benchmark methods, with perfect agreement observed for COBRA and AHP, confirming the robustness and reliability of the obtained rankings (Table 5).

7. Discussion

The application of the hybrid BWM–ADAM model to the case of small winery distribution strategies in the EU resulted in a clear prioritization of the five alternatives based on seven comprehensive evaluation criteria. The final ranking identified local partnerships as the most favorable strategy, followed by direct sales,

online sales, and social media, distributor partnerships, and finally participation in festivals and events. This outcome reflects the growing importance of community-based networks and direct customer engagement in the wine industry, particularly for small producers seeking cost-effective, flexible, and impactful channels.

The top-ranked strategy, local partnerships, emphasizes collaboration with restaurants, specialty stores, and other regional actors. This indicates that small wineries benefit most from relationship-based approaches that leverage proximity and mutual branding opportunities. Direct sales, especially those performed at the winery, also rank highly due to the strong customer experience and loyalty they foster. These findings confirm the critical role of personal interaction and experiential marketing in enhancing profitability and long-term customer retention.

Table 5
Validation of results

	ADAM	TOPSIS	VIKOR	COBRA	SAW	COPRAS	AHP
S1	3	2	3	3	3	3	3
S2	1	1	2	1	2	2	1
S3	5	5	5	5	5	5	5
S4	2	3	1	2	1	1	2
S5	4	4	4	4	4	4	4
SCC	/	0.9	0.9	1	0.9	0.9	1

Although the strategies are analytically evaluated as distinct alternatives within the MCDM framework, their real-world implementation does not necessarily imply isolation. In particular, the strong performance of local partnerships may, in practice, be reinforced by the strategic use of digital tools and channels associated with online sales and social media. Digital platforms can act as a catalyst for local partnerships by enhancing visibility, supporting joint promotions with restaurants and retailers, facilitating event communication, and strengthening ongoing customer relationships. In this sense, the high ranking of local partnerships should not be interpreted as a purely standalone solution but rather as a core strategy whose effectiveness can be significantly amplified through selective integration with digital channels.

Online sales and social media, while ranking third, also scored well across the adaptability and market opportunity dimensions. This reflects the growing shift toward digital engagement, although challenges in implementation capacity and resource intensity may limit their full effectiveness for smaller producers. Distributor partnerships and festivals were evaluated as less favorable under the selected criteria, particularly due to their lower flexibility, higher costs, or reduced control over customer experience.

In addition to market-driven and technological responsiveness, flexibility also has a regulatory dimension that is increasingly relevant for small wineries operating in the EU. In this context, higher adaptability implies a stronger capacity to respond to evolving environmental and sustainability requirements under the European Green Deal and the Common Agricultural Policy, reinforcing the strategic value of flexible

distribution models. The importance of this study is reflected in the identification of key distribution strategies for small wineries, providing a clear framework for their evaluation. Defining a set of criteria, as well as developing a model for conducting evaluations, are the foundations for making informed decisions. The study provides winemakers with practical guidance on how to adapt distribution strategies to the specific characteristics of their businesses, thereby supporting long-term success in a dynamic wine industry.

Building on the interpretation of the ranking results, the following discussion highlights their practical relevance for winery managers and strategic decision-makers. From a practical perspective, the results can support winery managers in resource allocation and strategic planning, especially when balancing short-term profitability with long-term adaptability. The framework also enables a more integrated approach to combining strategies, as the complementarities between top-ranked options (e.g., local partnerships supported by direct and online sales) suggest opportunities for hybrid models that leverage multiple strengths. While these findings offer clear managerial insights, it is equally important to acknowledge the methodological and contextual limitations that frame their applicability.

Furthermore, the study has certain limitations. The expert-based evaluations, while grounded in industry experience, are inherently subjective and may vary across different regional or market contexts. Moreover, the set of criteria and alternatives, though comprehensive, is not exhaustive. Other relevant factors, such as environmental sustainability, regulatory conditions, or brand positioning, could be incorporated in future research. Additionally, while the hybrid BWM–ADAM method offers advanced analytical capabilities, its complexity may present a barrier for practitioners unfamiliar with MCDM tools.

8. Conclusions

Drawing on the empirical findings and their managerial interpretation, this section synthesizes the main conclusions of the study and outlines broader policy and research implications. The aim of this study was to identify and rank the most effective distribution strategies for small wineries in the EU under limited resources and rapidly changing market demands. Since this is an MCDM problem, the paper developed and applied a hybrid BWM–ADAM model to systematically evaluate five distinct distribution alternatives, namely direct sales, online and social media channels, local partnerships, distributor partnerships, and participation in festivals and events, against seven carefully selected criteria.

The empirical results, based on expert evaluations, consistently rank local partnerships as the most advantageous strategy, followed by direct sales, online sales and social media, distributor partnerships, and finally festivals and events. This ordering highlights the central role of proximity-based networks, trust, and experiential value in supporting both profitability and adaptability for small wineries. Relationship-driven strategies appear particularly effective in mitigating market

uncertainty, preserving margins, and enhancing responsiveness to demand fluctuations and external shocks, such as trade barriers and regulatory changes.

Beyond the ranking itself, the study offers three main contributions. From a strategic perspective, it demonstrates that community-based collaborations and direct consumer engagement outperform more capital-intensive or less controllable channels for small producers. Empirically, it provides winery managers with a structured and transparent decision-support tool that can guide resource allocation and channel integration. Methodologically, it advances the literature by introducing a robust hybrid MCDM framework that combines consistent weighting with stable and reliable ranking properties, as confirmed by sensitivity and validation analyses.

Despite these contributions, some limitations must be acknowledged. The reliance on expert judgment introduces an element of subjectivity, and the selected criteria and strategies, while comprehensive, do not exhaust all possible dimensions relevant to distribution decisions. In particular, environmental sustainability, regulatory compliance costs, and long-term brand positioning could be further integrated into future extensions of the model. Additionally, applying the framework across different EU regions and updating evaluations dynamically as market conditions evolve would further enhance its practical relevance. Beyond their relevance for individual wineries, the results also carry important implications for public policy aimed at strengthening the resilience and competitiveness of the European wine sector.

Concerning the policy implications of our results, this study provides clear and actionable guidance for policymakers at the European, national, and regional levels aiming to strengthen the resilience, competitiveness, and adaptability of the wine sector, particularly for small wineries operating under structural constraints and increasing external pressures. The prioritization of distribution strategies emerging from the BWM-ADAM framework underscores the need for a rebalancing of policy instruments, shifting attention from production-centric support toward market access, distribution capabilities, and territorial coordination.

As a first implication, the strong dominance of local partnerships as the top-ranked strategy highlights the strategic value of place-based policy approaches. EU and national authorities should more explicitly recognize collaborative local distribution networks as a public good that enhances rural cohesion, reduces market volatility, and preserves value added within wine-producing regions. CAP rural development measures, including cooperation schemes and producer organization incentives, could be more systematically designed to support inter-firm alliances among small wineries, hospitality actors, and specialized retailers. Targeted grants for joint promotion, shared logistics, and collective branding initiatives would directly support the most effective strategy identified by the empirical analysis.

Secondly, the high ranking of direct sales points to the importance of maintaining and expanding regulatory environments that facilitate direct-to-consumer (DTC) models, including wine tourism and on-site experiences. Policymakers should consider simplifying administrative procedures related to tasting room operations, small-scale shipping, and cross-border DTC sales within the internal market. In

addition, investment support for visitor infrastructure and experiential marketing, already partially covered by sectoral interventions in viticulture, could be more closely aligned with distribution and commercialization objectives rather than remaining predominantly production-oriented.

While online and social media channels rank below local and direct strategies, their strong performance and market opportunity dimensions indicate that digital distribution remains a critical complementary tool. The results suggest that policy interventions should focus less on generic digitalization and more on capacity-building for small wineries, addressing gaps in digital skills, data management, and platform governance. Public support for shared e-commerce infrastructures at the regional or GI level, and training programs tailored to micro-producers, could significantly enhance the effectiveness of digital channels without exacerbating resource asymmetries.

Finally, the relatively weaker performance of distributor partnerships and festival-based strategies suggests that policies relying exclusively on intermediated or episodic market access may be insufficient for long-term success. This finding has implications for trade and promotion policies, particularly in the context of external shocks such as tariffs and trade disputes. Rather than emphasizing export volumes alone, policy frameworks should encourage hybrid distribution models that combine selective intermediation with strong local anchoring and direct engagement, thereby reducing exposure to international market disruptions.

More broadly, the study indicates that current EU wine policy instruments could benefit from a more explicit integration of distribution strategy considerations into the CAP and GI governance frameworks. Supporting small wineries' ability to choose and combine distribution channels would enhance not only economic performance but also adaptive capacity in the face of climate, regulatory, and geopolitical uncertainty. In this sense, distribution strategy should be recognized as a core component of sectoral sustainability alongside environmental and social objectives.

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