

DOI: 10.55643/fcaptop.4.57.2024.4416

Uliana Marchuk

PhD in Economics, Associate Professor of the Department of Accounting and Consulting, Kyiv National Economic University named after Vadym Hetman, Kyiv, Ukraine;
e-mail: mar4ukuliana@gmail.com
ORCID: [0000-0003-0971-1303](https://orcid.org/0000-0003-0971-1303)
(Corresponding author)

Liubov Gutsalenko

D.Sc. in Economics, Professor of the Department of Accounting and Taxation, National University of Life and Environmental Sciences of Ukraine, Kyiv, Ukraine;
ORCID: [0000-0001-5181-8652](https://orcid.org/0000-0001-5181-8652)

Mykola Bondar

D.Sc. in Economics, Professor, Dean of the Faculty of Accounting and Tax Management, Kyiv National Economic University named after Vadym Hetman, Kyiv, Ukraine;
ORCID: [0000-0002-1904-1211](https://orcid.org/0000-0002-1904-1211)

Nataliya Tsaruk

PhD in Economics, Associate Professor of the Department of Accounting and Taxation, Separated Subdivision of the National University of Life and Environmental Sciences of Ukraine «Nizhyn Agrotechnical Institute», Kyiv, Ukraine;
ORCID: [0000-0001-5426-1378](https://orcid.org/0000-0001-5426-1378)

Jurij Renkas

PhD in Economics, Associate Professor of the Department of Accounting, The University of Economics in Krakow, Krakow, Poland;
ORCID: [0000-0001-7139-5458](https://orcid.org/0000-0001-7139-5458)

Received: 16/04/2024

Accepted: 09/08/2024

Published: 31/08/2024

© Copyright
2024 by the author(s)



This is an Open Access article distributed under the terms of the [Creative Commons CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/)

ACCOUNTING AND CONTROLLING THE FORMATION OF THE PRICE OF WINE PRODUCTS ON THE WORLD MARKET

ABSTRACT

The purpose of the article is to disclose the peculiarities of accounting and controlling the formation of the price of wine products in the world market, taking into account their qualification categories.

The quality of wine products is ensured by a set of regulatory documents aimed at protecting both vineyards and production technology. The research is based on the compliance of the producing countries with the status of "wines of controlled designations and origins" (wines of CDO). The study of exports and imports of wine on the world market has proven that the dominant role in consumers' choice of wine is played by the quality characteristics defined by the standards. Using the grouping method, a categorical classification of wine in the leading countries was formed: France, Italy, Spain, Portugal, and Germany. The wine classifications of the producing countries are characterized. The instruments of quality of Ukrainian wine products are allocated.

The originality of the study lies in controlling the formation of the price of wine products in the world market, taking into account their categorical classification. The categorical classification of wines will allow consumers to identify the wine's compliance with established standards, geographical origin and other categories and confirm the quality-price statement.

Keywords: accounting, control, quality, wine, price, products, classification categories, cost, viticulture

JEL Classification: D40, D29, L11, M40

INTRODUCTION

In a market economy, proper management of the business entity is possible through the system of its functions, in particular, accounting, analysis, and control over the state of economic assets and their sources of formation, the results of economic activity and the preservation of property.

However, in conditions of uncertainty and challenges of the global pandemic and war crimes of the Russian Federation in Ukraine, there is a need to find various rational and effective levers that affect economic activity results. Therefore, our research is based on the qualitative characteristics of wines, strengthened by control functions of accounting and management, which ensure their price policy on the market.

LITERATURE REVIEW

The wine industry has benefited greatly from the development of advanced and progressive accounting methods, techniques, and practices by scientists and practitioners.

Wine production for the economy of Ukraine is not just about taxes, but also about the development of domestic tourism, consumer culture, added value of products, own brand and new jobs. The quality of Ukrainian wine is increasing, as is the culture of its consumption in general. Evidence of this is numerous tastings, wine festivals and winery tours. The number of craft winemakers who have received an official production license is increasing. New wine brands are emerging. And no matter how strange it may sound,

wines from Ukrainian grape varieties are becoming popular in Ukraine: Suholymansky white, Odesa black, and Telti-Kuruk. According to the "Ukrvinprom" association, the products of Ukrainian winemakers have won about 600 awards at competitions and exhibition events (Pirozhok, 2020). However, as the general director of Ukrvinprom Volodymyr Kucherenko notes: "It is hard to believe that in the 60s of the last century, the area of vineyards in our country was 400.000 hectares. Later, in the years of independence and before the occupation of Crimea — 67.6 thousand hectares. Now this figure is almost twice as small — about 37.000 hectares. The long-term reduction in the area of vineyards has a negative effect on the volume of grape production. As a result: the average sale price of grapes for wine materials increased, wine production decreased, but the import of wine products increased sharply" (agravery.com, 2022).

The main stages of the wine production process are alcoholic and malolactic fermentation. Quality control is particularly important for these steps, as wine can easily spoil during this process (Kirchert et al., 2018). The second process to improve wine quality is temperature-controlled fermentation, which is possible only for wines with primary settling. These are the points reflected in the work of Kirchert et al. (2018), who also described the number of grape variety imprints, grape infections, and control of grape *Botrytis cinerea* infection (glacial acid method). Wittwer & Anderson (2021) and Agnoli & Charters (2022), Dubois et al. (2021) investigated the impact of the COVID-19 pandemic on global beverage markets, wine and other spirits consumption, in particular, on the wine sector and the reduction in trade due to the closure of restaurants, bars, clubs, international travel and reduced tourism.

Gutsalenko et al. (2020) in their works reveal the approach to the methods and bases of distribution of management costs and their impact on the cost of wine production.

In their work, Salvatore Tudisca, Filippo Sgroi and Riccardo Testa (2011) analyzed the impact of technological innovation on farm competitiveness and the preservation of the unique viticultural heritage in the world.

Moachir Couto de Andrade Jr. and Jerusa Souza Andrade in their research revised the concepts applicable to the nutritional components and caloric content of Amazonian fruits (Belitz et al., 2009).

In their research, Blake et al. (1998) focused on and considered wine producers in such countries as the USA, Australia, Canada, New Zealand and Spain, identifying the various ways in which a more sophisticated approach to accounting has been adopted as a result of the drive for quality.

An analysis of previous studies on viticulture and wine production has revealed the features that influence the formation of their prices. Based on this, the hypothesis of the study was defined as follows: price formation in the leading wine-producing countries is generalized through accounting support and strengthening of its control function depending on the categorical classifications of wine.

Based on the hypothesis put forward, in order to avoid falsification of wine products, it is necessary to strengthen the control function of accounting for wine quality, taking into account the signs of categorical affiliation.

AIMS AND OBJECTIVES

The article aims to disclose the peculiarities of accounting and controlling the formation of wine product prices in the world market, taking into account their qualification categories. In order to achieve this goal, it is advisable to distinguish the research objectives:

- to study the evolution of the development of "wines of controlled designations and origins" in wine-producing countries and to analyse world wine production with the selection of leading countries;
- to assess the market for wine sales by the leading countries and the possibilities of Ukraine;
- to carry out a categorical description of the wines of the leading countries according to the specified wine classification;
- to highlight the quality characteristics and standards of wines and to reveal the experience of the leading countries in wine production in terms of quality control;
- to identify the tools for determining the quality of wine products in Ukraine;
- to determine the place and influence of accounting and control in the formation of the price of wine products, taking into account their qualification categories.

METHODS

The study was conducted using general scientific methods (transition from quantity to quality; unity of historical and logical) and special methods (analysis and synthesis; methods of comparison, grouping, forecasting and visualization). The analytical study used statistical information from the leading wine-producing countries (France, Spain, Italy, Portugal, Germany, Georgia, Canada, the United States of America and Ukraine) for the period from 2000 to 2023. The forecasting method was used using a model that takes into account historical market trends for the relevant product, as well as historical and forecast trends in various macroeconomic indicators (imports and exports of goods, GDP, unemployment, population or inflation and the analyst's knowledge of the market situation).

When examining wine classification, in most cases, people are familiar with white and red, dry and fortified, dessert and sparkling wines. However, in professional winemaking, everything is much more complicated, starting with the composition of sugar and alcohol, grape varieties, quality and shelf life, methods of production, and ending with the region of production. In addition to wine classification of wines by their types, some categories should not be confused, because any wine (red, white dry, sweet, table, etc.) can be assigned one of the categories. The category is a quality indicator that depends on the region of production.

Therefore, wine classification by category solves two problems:

- guides the consumer and helps to choose the best value for money;
- sets clear standards according to which the manufacturer can move from one group to another.

In fact, to ensure high-quality wine, the firm relies on more expensive manual labour in most cases, as opposed to mechanised labour, which could reduce costs but reduce the quality of the wine (Tudisca et al., 2011), because such processes harm quality.

The study was conducted using various scientific methods, including the transition from quantity to quality and the combination of historical and logical approaches, as well as special methods such as analysis, synthesis, comparison, grouping, forecasting and visualization. For the analytical study, we used statistical information on wine production in leading countries such as France, Spain, Italy, Portugal, Germany, Georgia, Canada, the United States of America and Ukraine, for the period from 2000 to 2023. Using a forecasting method that takes into account historical market trends and macroeconomic indicators such as imports, exports, GDP, unemployment, population, and inflation, the study forecasted wine production in Ukraine by type for the period from 2018 to 2026. A wine quality control system was also developed, taking into account the category classification.

RESULTS

According to Council Regulation (EC) No 823/87 dated 16 March 1987, each established region engaged in the production of wine with an origin-related name is subject to strict restrictions. This approach considers the factors that contribute to ensuring the quality characteristics of wines produced in the region, particularly soil properties, climate, and location of vineyards (E.A. Egorov, 2001).

Quality control is particularly important, as wine can easily spoil during this process (H.D. Belitz, W. Grosch and P. Schieberle, 2009). Two commonly used procedures in winemaking are strong primary sedimentation of the must and temperature control during the fermentation process. Primary sedimentation leads to clean and pure wines and also prevents the formation of solids and colloidal particles, enabling high-wine quality (S. Kirchert, R.E. Kaiser, G.E. Morlock, 2018).

Most wine-producing countries have a labelling system that makes it easier for consumers to understand what to expect from a particular bottle.

Historically, France was the first country to establish the status of "wines of controlled names and origins" (CNO wines). This status is provided by a set of normative legal acts aimed at protecting vineyards and production technology. Later, this idea was supported by other countries of the European Union, in particular, Portugal, Italy, Spain, and other states.

As grapes are one of the 20 most significant agricultural products and wine is the most expensive and creatively processed grape product, it would be appropriate to consider the world's largest wine exporters and classify their wines according to beverage quality and highlight key aspects that Ukraine should take into consideration.

World wine production, excluding juices and musts, is estimated to range from 241.7 million dal to 246.6 million dal in 2023. This represents a 7% decline versus a below-average 2022 volume. In 2021, it amounted to 247.1-253.5 million hectolitres (one hectolitre is equivalent to 100 litres or 133 standard bottles), in 2020 it was 258 million hectolitres and 260 million hectolitres in 2019. However, it significantly decreased compared to the historically high production in 2018 (Figure 1). In addition, it is worth paying attention to reducing the level of wine consumption by 15-20%.

After a slight decrease in world wine consumption registered in 2018, world wine consumption in 2019 was estimated at 244 ml, which was + 0.1% compared to the previous year (The International Organisation of Vine and Wine, 2020). In 2021, it is estimated at 236 million hl, which is 0.7% more than in 2020.

France is the world's largest producer in 2023, with volume slightly above the five-year average. At the same time, Italy and Spain recorded a significant decrease compared to 2022 due to unfavourable weather conditions that led to downy mildew and drought.

Returning to Figure 1, we observe that world wine production has fallen to the lowest level since 1961, due to extreme weather events.

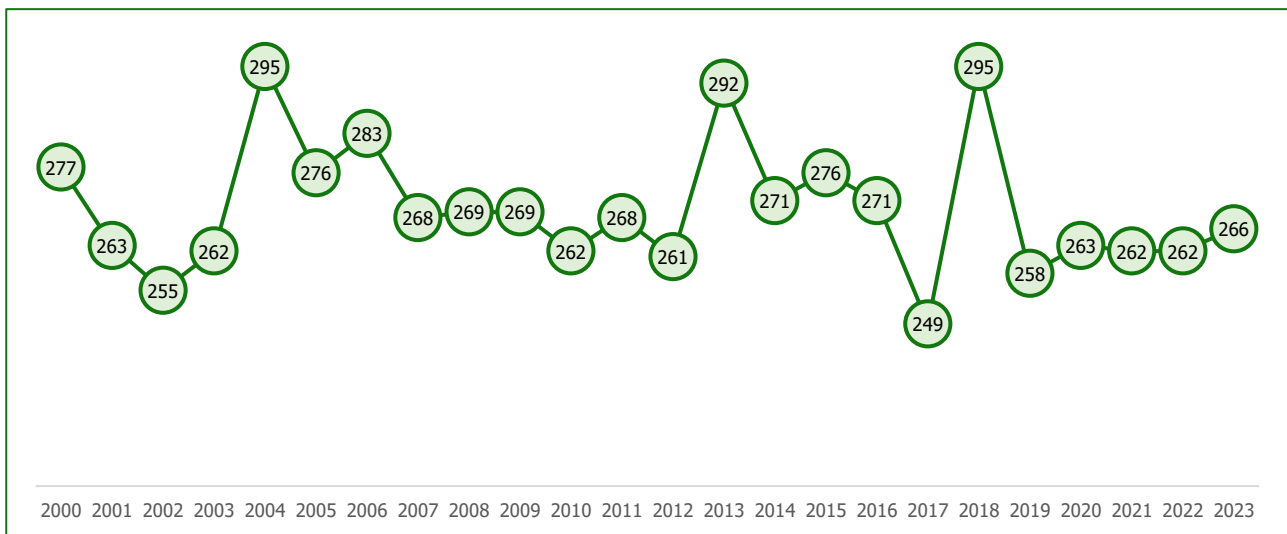


Figure 1. Forecasted volume of wine production (2000-2023). (Source: The International Organisation of Vine and Wine, 2020)

Wine production in the EU in 2020 was 159 ml, and in 2019 it was estimated at 156 ml, which had a significant decrease of 14.4% compared to the volume registered in 2018 (-26.7 ml) (The International Organization of Vine and Wine, 2020). In 2022-2023, Australia, Argentina, Chile, South Africa and Brazil saw production decline by 10-30%. Spain retained its position as the world's third-largest wine producer, although production fell by 14% and 19% compared to the five-year average. Italy lost its title as the world's largest producer as its output fell by 12%, allowing France to regain the top spot.

Throughout 2019 and 2020, favourable weather forecasts predicted a good harvest, but the COVID-19 pandemic forced winemakers in key wine-producing countries (France and Spain) to cut back on harvests to avoid overproduction (G. Wittwer & K. Anderson, 2021). In addition, the pandemic also affected the decline in trade (Lara Agnoli, Steve Charters, 2022; M. Dubois, L. Agnoli, J. Cardebat, R. Compés, B. Faye, B. Frick, K. Simon-Elorz, 2021), led to losses in the tourism and travel industry, which is one of the most important factors affecting the development and sales of products (L. Gutsalenko, U. Marchuk, O. Hutsalenko & N. Tsaruk, 2020). In the United States, wine production remained unchanged in 2020, but forest fires in California significantly influenced the quality of wine due to the smell of smoke in the wine. Although the category's recovery will be fragmented, globally, still wine volume is forecast to remain below pre-COVID-19 levels through 2024 (Global wine trends to watch in 2021, 2021).

In Ukraine, over the past five years, the area of vineyards has decreased by 11%, and the cost of wine production has increased by 48% compared to last year 2021 (Agravery, 2022).

World sales of wine exported from all countries in 2020 amounted to USD 34.1 billion, which was on average by 5% more for all exporting countries since 2016 when wine supplies were estimated at USD 32.5 billion.

In 2019, the world export market of wine, which is considered the sum of exports of all countries, expanded compared to 2018 at an estimated volume of 105.8 ml (+ 1.7%) (The International Organization of Vine and Wine, 2020). Therefore, from 2019 to 2020, wine exports decreased by 4.8%.

Only 1.2 hl of wine was produced in Ukraine in 2020. Instead, a historical record for imports was set. According to the AgroPolit resource, in 2020 Ukraine imported about 74,000 tons of alcoholic beverages with an alcohol concentration of less than 80% (mainly cognac, whiskey, vodka, liqueurs, and sweet liqueurs) worth USD 227 million. Almost 91,000 tons worth of grapes and other wines were imported USD 224 million, and malt beer - 70,000 tons worth 67 million (K. Larenova, 2022).

In 2022, sales of alcoholic beverages in Ukraine fell by at least a third, and in some categories by 67%. The industry began to recover in the summer, but there were many obstacles on the way. The military operations in Ukraine have significantly changed the market for a number of reasons, including the massive outflow of people abroad, restrictions on the operation of catering establishments and disruption of logistics flows. Alcohol sales were suspended from late February to early April. The economic behavior of Ukrainians has also changed. According to Pro-Consulting, in January-June 2022, compared to the same period in 2021, sales of wine in Ukraine fell by 58%, and cognac by 66% (Kolesnichenko O., 2022).

According to the State Customs Service of Ukraine (2021), in 2023, Ukraine exported 9.66 thousand tons of wine for the amount of USD 6.59 million, in 2022, 6.90 thousand tons of wine worth USD 8.66 million, in 2021 - 12.87 thousand tons worth USD 16.45 million, in 2020 – 16.62 thousand tons worth USD 13.08 million, in 2019 – 8.81 thousand tons worth USD 11.93 million.

The largest foreign market for Ukrainian winemakers was Romania - USD 2.28 million (34.58%) and Moldova - USD 0.58 million (7.98%). Export and import of grape wine and grapes for 2020-2021 are presented in Figures 2 and 3.

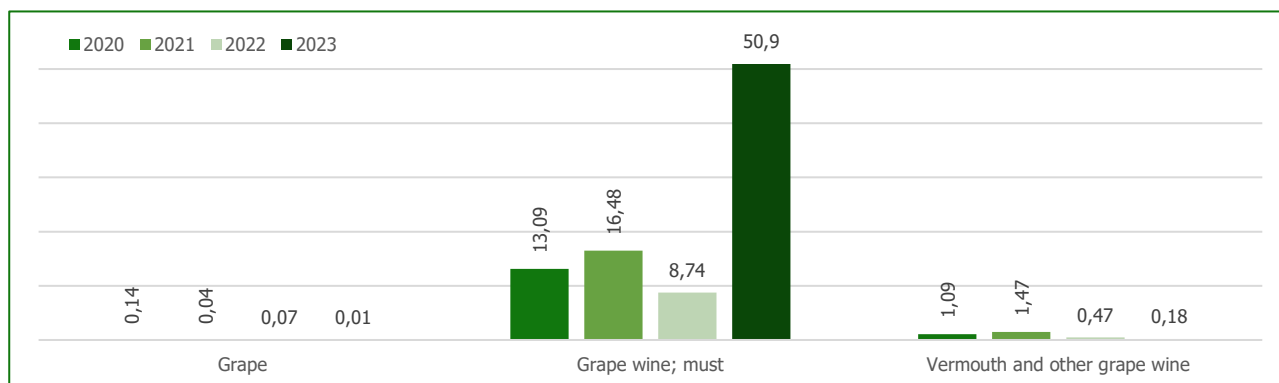


Figure 2. Export of grapes and wine in Ukraine in 2020-2023 (USD million). (Source: formed by the authors according to the State Customs Service of Ukraine, 2023)

The volume of grape wine exports totalled over 11.77 thousand tonnes. This is 70.7% more than in 2022, but 8.6% less than in 2021. For comparison: in 2022, about 6.9 thousand tons of grape wines and must were exported, and in 2021 – more than 12.87 thousand tonnes.

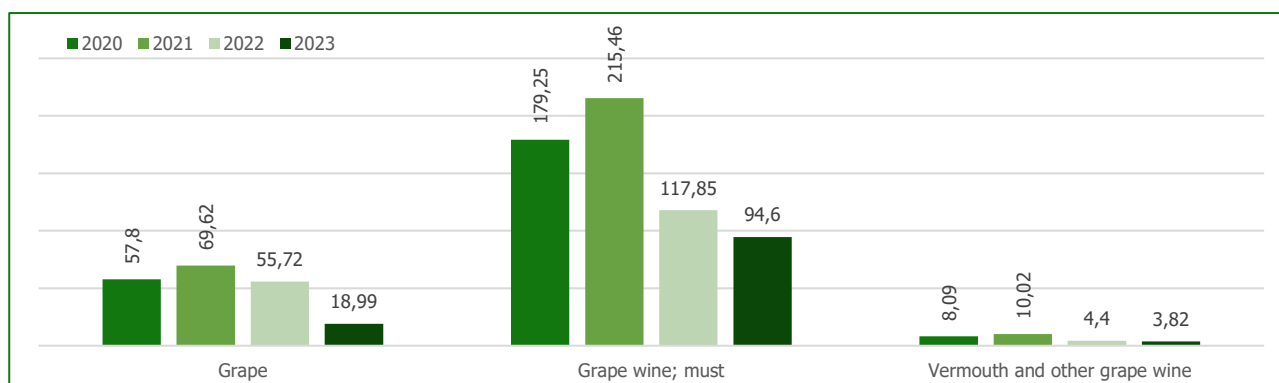


Figure 3. Import of grapes and wine in Ukraine in 2020-2023 (USD million). (Source: formed by the authors according to the State Customs Service of Ukraine, 2023)

In 2023, imports of grape wine and grape must amount to more than USD 180.14 million, which is 52,9% more than in 2022 but 16,4% less than in 2021. In comparison: in 2022, imports of grape wine and must amounted to USD 117.85 million, and in 2021 – about USD 215.46 million.

The three largest importing countries – Britain, Germany and the United States – together imported 41 billion of wine, which is 39% of total wine imports in the world.

In 2019, these countries imported 40.4 billion of wine together, which is 38% of the world's amount. These three countries also accounted for 38% of the world's wine imports, reaching EUR 11.5 billion.

Against the background of the spread of coronavirus (COVID-19), in 2020, Ukraine increased imports of grape wine by 22% compared to 2019. In 2020, the top three export leaders included countries such as Italy, which exported almost 21 million hl of this drink, Spain (20.2 million hl) and France with a Figure 2 of 13.6 million hl.

Only 1.2 hl of wine was produced in Ukraine in 2020. Instead, a historical record for imports was set. A total of USD 179.3 million worth of wine was imported, which also happened due to the increase in wine production. According to the forecast study of wine production in Ukraine by species in the period 2018 - 2026 (in USD), an increase in the share can be observed (Figure 4).

Forecast market figures are based on a model which takes into account historical market trends for the product in question as well as historical and forecast trends in different macro-economic indicators like import and export of goods, GDP, unemployment rate, population or inflation rate and analyst's knowledge of the market situation.

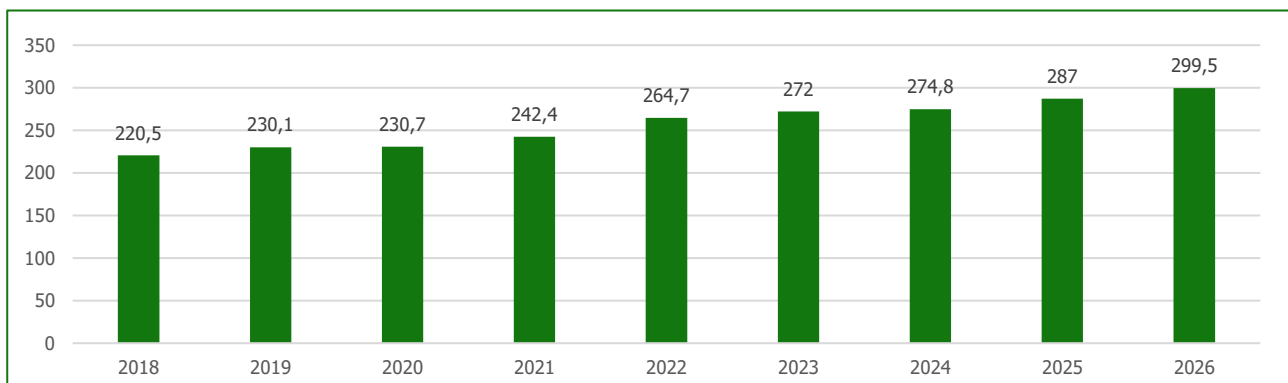


Figure 4. Study of forecast wine production in Ukraine for the period until 2026, USD million. (Source: formed by the authors according to the Global Research & Data Services from International Monetary Fund)

In the context of statistics on wine exports and imports on the world market and wine production in Ukraine, it is advisable to reconsider its quality characteristics and defined standards. This feature, in our opinion, plays a dominant role in consumers' choice and purchase of wine.

There are different approaches to implementing the accounting procedures required to monitor the costs and control the quality concerning its violations. The calculation of profits and costs, especially at the macro level, is far from accurate, as it involves a large number of estimates, assumptions and unaccounted-for factors. The authors hardly take into account the cost of production, which includes costs and benefits arising from the impact of business entities' activities on the ecological and agro-food system and on society as a whole (Ishchenko et al., 2021).

So, there is a need to improve the quality in the process of production or provision of services that may lead to new changes in accounting (Blake et al., 1998).

In order to control the quality and authenticity of regional wines, it is first necessary to determine the criteria for their identification. It is natural to assume that such criteria may involve characteristics of the drink, which are qualitatively and quantitatively determined by the factors of grape growth, soil and climatic conditions, and processes occurring at different stages of vinification.

The most characteristic parameters will be those having constant variability under the sustainability of external factors of the environment. Based on this, when establishing the criteria for regional ownership of wines, it is necessary to consider the impact of each wine region's ecological and geographical features (International Trade Centre, 2009).

In France, which was the founder of the standardization of wine quality and the status of "wines of controlled names and origins" (CNO wines), the products of French winemakers are controlled by INAO (Institut National des Appellations

d'Origine) (2021), which is responsible for overseeing all French agricultural products having protected geographical status, is subordinate to the Government and is a structural unit of the Ministry of Agriculture of France.

In other parts of the world, there are also bodies that control the quality of the wine. For example, in Georgia, the quality of wine is regulated by the Department of Vine and Wine "Samtrest", and state control over the activities of winemakers is carried out by the Ministry of Agriculture and Food of Georgia.

In Ukraine, it is necessary to strengthen proper control over the quality of wine products, similar to the European one, which is based on the methods of reference isotope analysis and is an analytical method of control and combating fraud in the wine sector, which requires a high level of special scientific knowledge and equipment.

France, Spain, Italy, Portugal and Germany are the main players in the wine market with a significant history and knowledge of wine quality. Therefore, it is worth considering the classification of wine categories in these countries from the highest to the lowest (Figure 5).

The information given in Figure 4 lets us argue that there is a wide choice and many types of wine, which complicates the choice of consumers because the available information on labelling given on the bottle does not provide a complete idea of the quality and origin of the wine.

France	<ul style="list-style-type: none"> ▪ AOC (Appellation d'Origine Controlee); ▪ VDQS (Vin Delimite de Qualite Superieure); ▪ VdP (Vin de Pays); ▪ VdT (Vin de Table).
Italy	<ul style="list-style-type: none"> ▪ DOCG (Denominazione di Origine Controllata e Garantita); ▪ DOC (Denominazione di Origine Controllata); ▪ IGT (Indicazione Geografica Tipica); ▪ VDT (Vino da Tavola).
Spain	<ul style="list-style-type: none"> ▪ DOCa (Denominación de Origen Calificada); ▪ DO (Denominacion de Origen); ▪ VDT (Vino de la tierra); ▪ VDM (Vino de Mesa).
Portugal	<ul style="list-style-type: none"> ▪ DOC (Denominacao de Origem Controlada); ▪ IPR (Indicacao de Proveniencia Regulamentada); ▪ VQPRD (de Vinhos Qualidade Produzidos em Regioes Determinades); ▪ Vinho Reginal; ▪ Vinho Reginal; ▪ Vinho de Mesa.
Germany	<ul style="list-style-type: none"> ▪ QmP (Qualitatswein mit Pradikat); ▪ QBA (Qualitatswein Bestimmer Anbauggebiete); ▪ Deutscher Tafelwein; ▪ Deutscher Landwein.

Figure 5. Categorical classification of wine in leading countries.

The categorical classification of wine determines its degree and compliance with standards. However, in addition to European wines, there are also wine-growing countries outside Europe (New World Wine Classifications) that can use their own classification systems, such as VQA (Vintners Quality Alliance) in Canada and AVA (American Viticultural Area) in the USA.

Therefore, the next criterion is the specification of these categories by characteristics in the combination of their common features between countries (Figure 6).

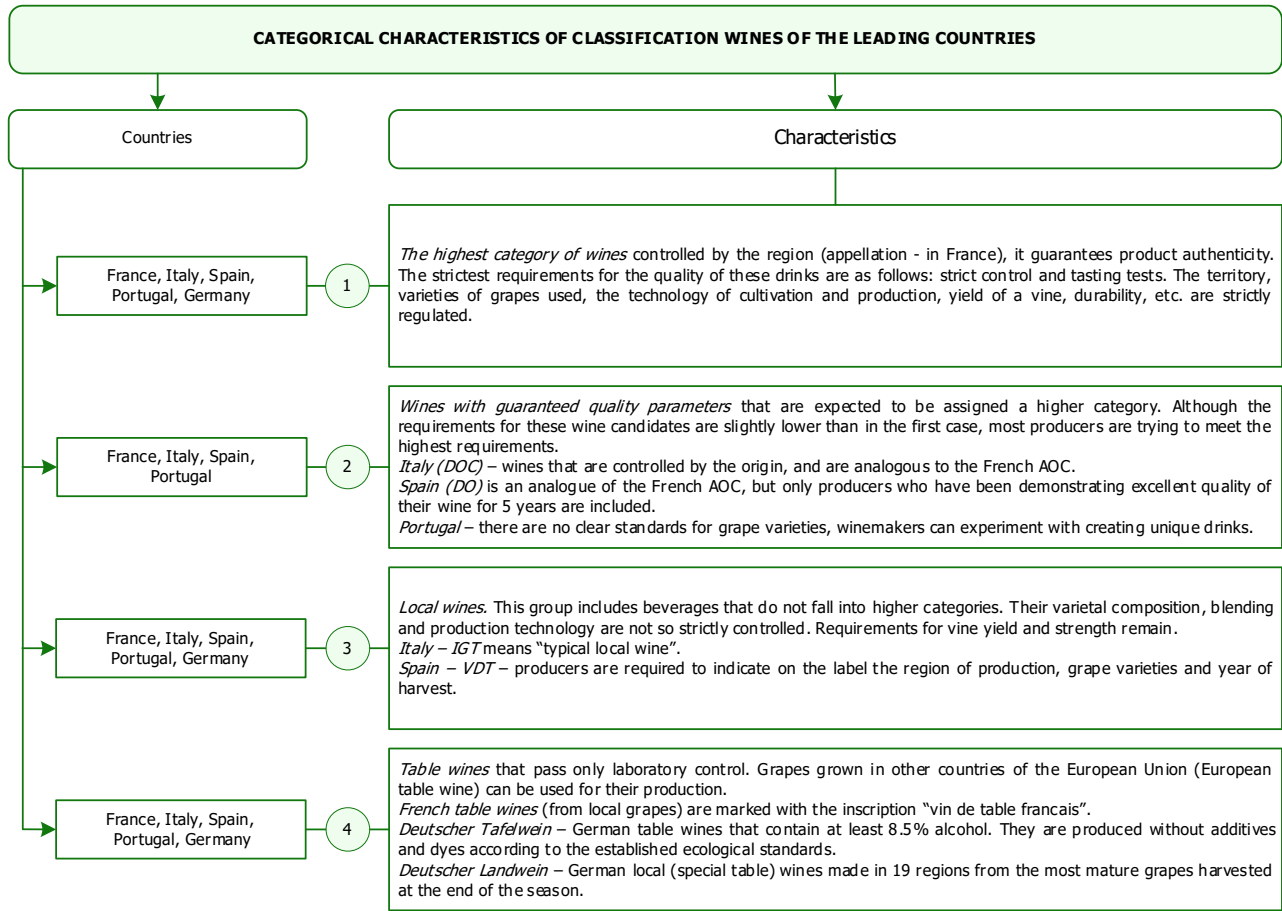


Figure 6. Categorical characteristics of classifications of wines of the leading countries.

In order to increase the competitiveness of Ukrainian wine products, it is advisable to carry out control at all stages of its production – from the harvest formation to the sale of finished products, taking into account factors of influence: soil, climate, meteorological conditions, variety, farming practices of growing grapes and technology of production of finished wine products.

Material and production stocks of winemaking enterprises are a significant part of the property value. In the general structure of current assets, they occupy the maximum share (over 85%), so their rational use is important, which significantly affects the profitability of wineries and their financial position.

In 2009, the Ministry of Agrarian Policy of Ukraine adopted Order No 444/74 of July 21, 2008 "On Approval of the Sectoral Program of Viticulture and Enology of Ukraine 2025" (2008). The goal of the Program of Development of Viticulture and Winemaking by 2025 is to implement the state policy of Ukraine on the regulation of the development of this sector of the economy, the concentration of financial, logistical, and other resources, production, and scientific and technical potential to solve major problems of the industry.

However, this program does not work in its entirety, since the most important concepts are not legislated, and the laws do not meet the modern requirements of the world wine production market.

The main points related to the normative and legal framework established for quality, its assessment, technical requirements and others are grouped in Figure 7.

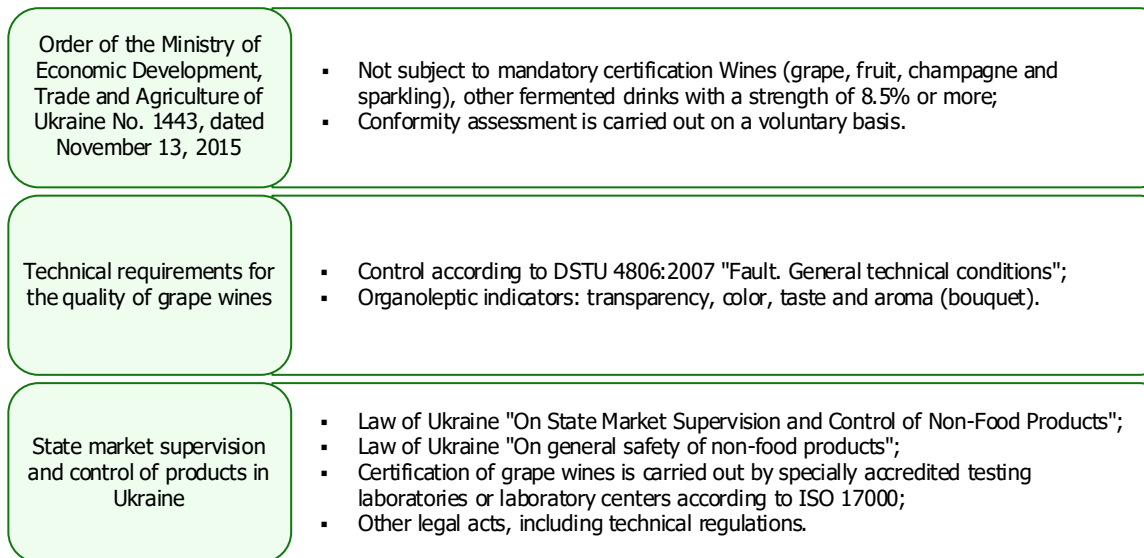


Figure 7. Toolkit for determining the quality of wine production in Ukraine. (Source: formed by the authors used: Law of Ukraine (2021); National Standard of Ukraine. DSTU 4806:2007 (2008); National Standard of Ukraine. DSTU 2163-93 (1994))

We are convinced that an integral part of the business is the efficiency and effectiveness of the accounting control function, which ensures the timely and reliable provision of information to managers at all levels of the business management system. (Gutsalenko et al., 2020).

Since wine materials and wine are obtained not as a result of harvesting, but as a result of processing other agricultural products (grapes), for accounting purposes, NSAU 30 "Biological Assets" is used instead of NSAU 9 "Inventories" (Figure 8).

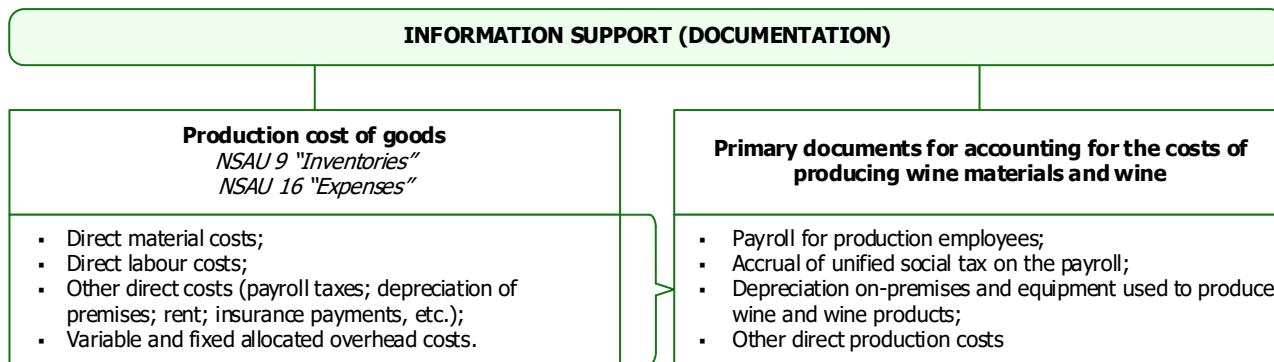


Figure 8. Information support (documentation) of wine production costs by elements.

The method of wine production costing is chosen by the enterprise taking into account certain features (location and size of the enterprise, production technology, logistics capabilities, etc.) (Figure 9). The list and composition of production cost items are determined based on the structure of production and approved in the order of accounting policy (O. Ivanenko, 2024).

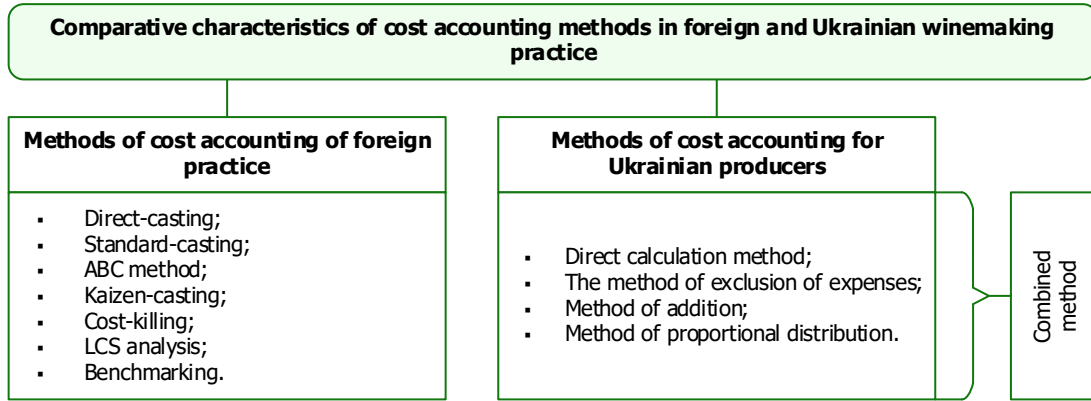


Figure 9. Comparative characteristics of cost accounting methods in foreign and Ukrainian winemaking practice. (Source: formed by the authors with partial use (Tsaruk V., 2017))

Specialist laboratories, regulatory bodies and wine sommeliers may use different methods and standards to ensure high-quality wines. However, it is necessary to determine a systematic approach to the display of costs in accounting, which forms the cost price of wine production and control of components that ensure the quality of drinks and affect the sales price. Cost accounting in viticulture (for raw materials and materials; for machinery and equipment; for labor; for energy; for management and administration) helps to optimize production, and quality control (organoleptic; physico-chemical; microbiological; geographical) helps to ensure high product quality.

For Ukrainian wine producers, the form and procedure for documenting the wine production process is determined by the document flow schedule and is set out in the accounting policy. The use of inventories in production is confirmed by a write-off document (Act on Write-off of Production and Business Inventory), and the write-off of food additives is recorded in an independently developed form of the act, which contains the mandatory details of the primary document (O. Ivanenko, 2024).

The current system of accounting and quality control of beverages, which regulates the identification of wine products, does not fully involve modern advances in analytical chemistry, which ultimately does not let distinguish a high-quality product from its high-precision imitation (Figure 10). Relationships between operational accounting and operational control, are manifested in data flows, information analysis, and practical use of evaluation in managerial decision-making. The major criteria of this relationship is the ability of operational accounting to provide management with information according to their individual requests, and that of operational control to notify managers at all levels of detected deviations in due time (Marchuk, 2016).

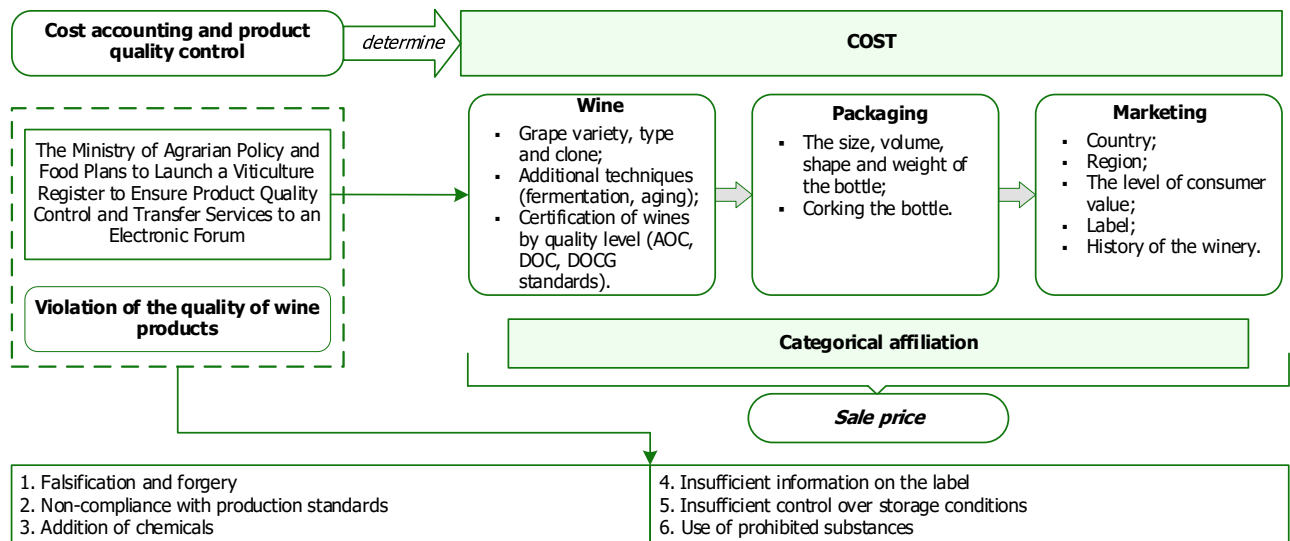


Figure 10. Accounting and control the quality of wine, taking into account the signs of categorical belonging.

All this ultimately contributes to the penetration of counterfeit alcohol into the consumer market. It is the categorical classification that determines how the wine meets established standards, geographical origin and other categories, and therefore affects its market price and popularity among consumers.

Classification of wine quality can significantly affect the cost of production and sales price. Therefore, it is very important to balance them in such a way that the winery is competitive and the wine remains accessible to the target audience.

Violations of the quality of wine products can occur for various reasons (Figure 10). So, in Italy, there was a case where wines were labelled as high-class wines or DOCG (Denominazione di Origine Controllata e Garantita), but in reality, the wines were adulterated and diluted with other ingredients. Non-compliance with production standards or the addition of chemicals is also a problem, as there have been cases (in the United States) where manufacturers did not comply with technical standards (e.g., sulfate levels), or added chemicals to improve taste, colour or aroma, but did not take into account their effects on the health of consumers.

Other violations are cases when the label does not indicate the correct information about the producer, his place of origin or the use of the grape variety. Also, insufficient control over the conditions of storage and transportation of wine can lead to its spoilage and loss of quality.

Another factor is changes in market conditions caused by the war's impact on winemaking, as changes in the economy also affect wine prices and consumer behaviour. Economic stagnation could reduce investment in the wine sector, which can affect the use of modern technologies and the quality of production.

It is worth considering that winemaking is an industry that requires a long time and patience, and the impact of events can have long-term consequences.

To obtain the CNO status, it is necessary to pass technological instructions for the production of CNO wines, approved by the Ministry of Economy, and in case of a positive statement to obtain a decision within 21 days and draw up the necessary documents:

1. Application (letter, appeal) for approval of technological instructions for the production of wines of controlled names.
2. Draft technological instructions for the production of CNO wines.
3. Materials confirming that the business entity has a raw material base for the production of CNO wines.
4. Materials confirming the release of high-quality wines by the business entity within 5 years, which are provided for approval as CNO wines.
5. Materials confirming the location in a strictly regulated geographical location of grape growing and all stages of production of CNO wines.
6. Conclusion of the Central Branch Tasting Commission of the wine industry on the production of CNO wines (Ministry of Agrarian Policy and Food of Ukraine, 2021).

Among the main refusals in the provision of CNO are the lack of the entity's raw material base for the production of CNO wines; no confirmation of the production of high-quality wines for 5 years; lack of proof of the location in a strictly regulated geographical location of grape growing and all stages of production of CNO wines, etc.

As we can see, the main requirement, which can be found both in the European countries and Ukraine, refers to a strictly regulated geographical location of grape growing. However, it should be noted that on February 15, 2021, the Department of Agrarian Policy of the Ministry of Economy (2021) developed the Draft Law of Ukraine "On Amendments to the Law of Ukraine "On Grapes and Grape Wine", which identified the main components aimed to improve qualitative characteristics that should be implemented, in particular (Figure11).

The purpose of the Draft Law of Ukraine is to harmonize sectoral legislation with the requirements of international rules of wine production and implement the provisions of EU Regulations and Decisions (EU) on the oenological practices, labelling, and protection of geographical indications of wine products and control in viticulture and winemaking, as well as simplification of business activity and deregulation in the wine industry, creation of favourable conditions for the development of business entities of all forms of ownership and production of high-quality products with unique properties due to environmental conditions of the territory of origin, the mentioned law will be finalized and adopted in the nearest future (Ministry of Economy of Ukraine, 2021).

In accordance with the Committee Opinion on the issues of the integration of Ukraine in the European Union dated November 9, 2021, the Draft Law of Ukraine "On Amendments to the Law of Ukraine "On Grapes and Grape Wine" (No 6010 dated September 8, 2021, people' deputy Saliichuk O.V. and others) does not contradict the law of the European Union.

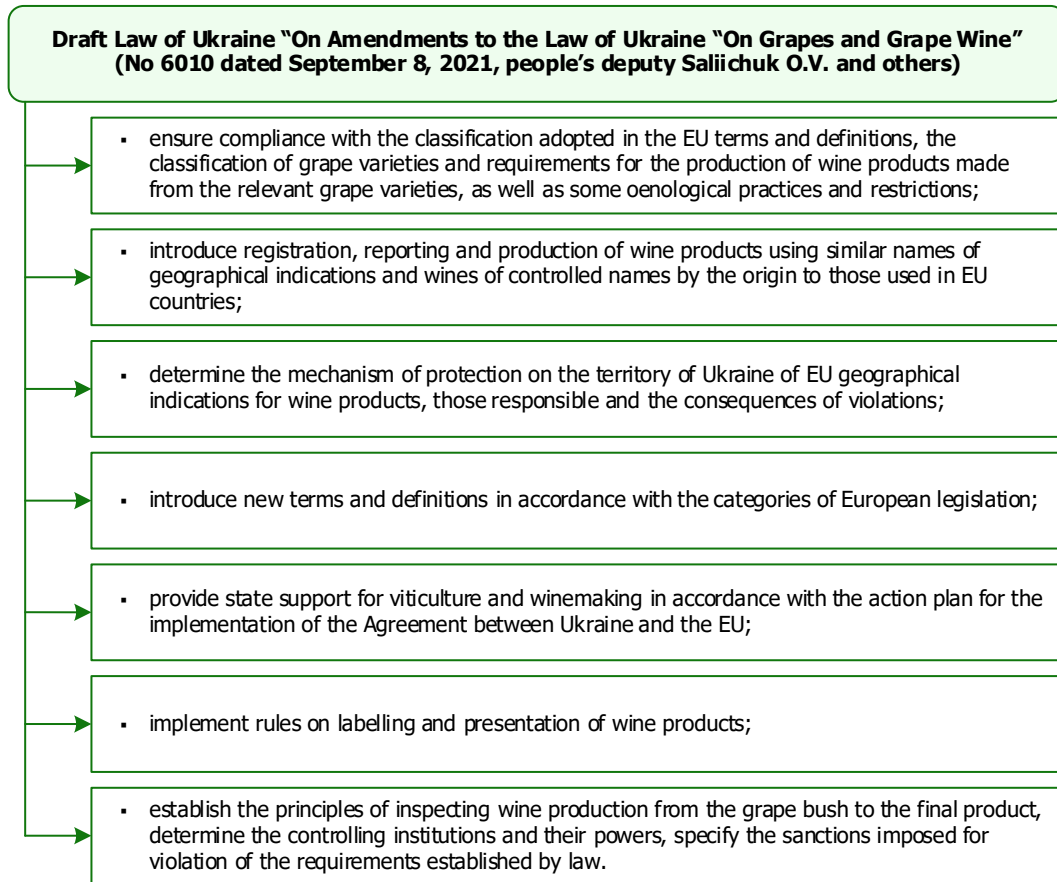


Figure 11. Draft Law of Ukraine "On Amendments to the Law of Ukraine "On Grapes and Grape Wine". (Source: Ministry of Economy of Ukraine, 2021)

It has been established that the main conditions for the formation and development of competition in the wine market within one country, namely Ukraine, are as follows:

- availability of a significant number of manufacturers of similar services;
- availability of essential criteria that can be compared with reference countries.

These conditions do not mean that competition is sufficient for the development of the wine industry in Ukraine. Still, it can be one of the impetuses for competition, changes in the market situation, changes in regulations, position and roles of market players.

Thus, the wine sector attracts significant material and financial resources, which are accounted for in the accounting system that determines the specifics of the production process of viticulture and winemaking, and as a result, the company bears production costs and receives the appropriate income.

DISCUSSION

In the global market, more and more attention is paid to the quality characteristics of wine products, which attracts the attention of many scientists, lawmakers, and practitioners. Our attention is focused on the pricing of wine in terms of its categorical classifications, and the study is aimed at strengthening its control function through accounting support.

We support and substantiate some of the ideas in the literature, for example, Pirozhok O. (2020) that winemaking in Ukraine should be developed as a domestic tourism destination and a culture of consumption, which will influence the

development of the industry, form its brand and create new jobs, which is important for the development of the country's eco-economy.

At the same time, insufficient attention has been paid to the categorical characteristics of the classifications of wines produced in Ukraine and competitive on the world market. The absence of such studies prompted us to search for them. Our analysis of the categorical characteristics of the wine classifications of the leading countries allowed us to identify the need for a control function at all stages of production - from growing the crop to selling the finished product, taking into account the factors of influence.

We agree with the scientists in particular Blake, John and Amat, Oriol and Moya Gutiérrez, Soledad (1998) who pointed out, emphasized, and reviewed wine producers in such countries as the USA, Australia, Canada, New Zealand, and Spain, identifying the various ways in which a more complex approach to accounting has been adopted as a result of the drive to improve product quality. In our opinion, the effectiveness of product quality improvement should be determined by the relevant regulatory and legal instruments, taking into account its assessment and technical requirements, etc.

Continuing our research in this area, we strongly defend the position of the impact on the cost of production of the relevant approaches to the methods and bases of distribution of management costs specified in the accounting policy of an entity.

One of the issues that is actively discussed in scientific debates Wittwer, G., & Anderson, K. (2021) and is key in the practical activities of wineries is the formation of a pricing policy. The conducted research on the cultivation of viticulture and production of wine allowed us to identify the features that influence the formation of their prices, which is provided by information sources of the accounting process by strengthening its control function depending on the categorical classifications of wine.

CONCLUSIONS

Summarizing the above, it can be concluded that the pricing of wine products on the world market plays a key role in the implementation of an efficient and competitive wine business. Therefore, based on the results of our research, we have made the following conclusions:

1. The study of the evolution of the development of "wines of controlled designations and origins", the analysis of world wine production and the identification of factors influencing its changes allowed us to identify the leading countries that adhere to this status and ensure the quality characteristics of wine, in particular: France, Italy, Spain, Portugal and others.
2. The assessment of export-import operations for the sale of grapes and wine in Ukraine in the recent period allowed us to forecast the market based on a model that takes into account historical market trends in various macroeconomic indicators.
3. The degree and compliance of wines with certain standards are determined by the categorical classification of wines. The paper groups and presents the categorical classification of wines and describes them in terms of the leading wine-producing countries.
4. The effectiveness and strengthening of the control function of accounting aimed at ensuring the quality of wine plays an important role in the formation of the price of finished products and may depend on its categorical classification. Different categories of wine have different properties and meet different requirements set out by international standards and are required to be met by producers, which undoubtedly affects the cost and consumer value of the product on the international market. The identification of quality characteristics and standards of wines and the disclosure of the experience of the leading wine-producing countries in controlling its quality allowed us to outline the need to strengthen the control function of accounting all the way from the production process, storage and to the process of selling to consumers.
5. Viticulture and winemaking are specific industries that have their own peculiarities in the technological process, which is accompanied by specific accounting and strengthening of its control function, which will ensure qualitative qualification features and form the price of both raw materials and finished products and the implementation of control measures that ensure quality qualification features and form the price of both raw materials and finished products.
6. The price of wine products is formed taking into account various factors, such as production costs, transportation, marketing costs, taxes, supply and demand, as well as competition in the market.

7. The accounting and control system includes accounting for costs at each stage of production in the formation of the cost of wine products, taking into account the variety, type and clone of grapes, additional costs associated with fermentation and ageing, as well as certification costs.

Particular attention should be paid to the accounting of sales costs, which will include packaging costs, marketing costs, analysis of competitors' pricing strategies, monitoring of market conditions and response to changes in them.

With the help of accounting and control support, wine producers can ensure an optimal price level that takes into account both their own interests and the needs of consumers and the dynamics of market conditions. Effective management of the pricing policy contributes to increasing the competitiveness of wine companies in the international market and ensuring stable profits.

Accounting and control support includes keeping records of costs at each stage of production and supply of wine products, analyzing competitors' pricing strategies, monitoring market conditions and responding to changes in them.

Quality control of wines must be carried out and strengthened all the way from the production process, storage and up to the process of selling them to consumers. Reliable cost accounting and control over compliance with quality characteristics help winegrowers maintain stable production activities and ensure high quality and competitiveness of products, which affects the market price and consumer value.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

FUNDING

The Authors received no funding for this research.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

REFERENCES

1. Belitz, H.D., Grosch, W., & Schieberle, P. (2009). Food Chemistry. Mit 634 Tabellen, 4th ed., Springer, Berlin Heidelberg, Berlin, Heidelberg, 1071 p.
2. Blake, John, Amat, Oriol, & Moya Gutiérrez, Soledad. (1998). The Drive for Quality - the Impact on Accounting in the Wine Industry. *Economic Working Paper*, 251. <https://ssrn.com/abstract=78048> or <http://dx.doi.org/10.2139/ssrn.78048>
3. Dubois, M., Agnoli, L., Cardebat, J., Compés, R., Faye, B., Frick, B., & Simon-Elorz, K. (2021). Did Wine Consumption Change During the COVID-19 Lockdown in France, Italy, Spain, and Portugal? *Journal of Wine Economics*, 16(2), 131-168. <https://doi.org/10.1017/jwe.2021.19>
4. Egorov, E.A. (2001). Prospects for the production of wines of the highest quality. Forms and methods of increasing the economic efficiency of regional horticulture and viticulture. Organization of research and their coordination. Part 2. Viticulture. Krasnodar, 134-137.
5. Global wine trends to watch in 2021. (2021). IWSR drink market analysis. <https://www.theiwsr.com/global-wine-trends-to-watch-in-2021/>
6. Gutsalenko, L., Marchuk, U., Hutsalenko, O., & Tsaruk, N. (2020). Wine industry: economic and environmental factors which influence development and accounting. *Economic Annals-XXI*, 181(1-2), 105-114. <https://doi.org/10.21003/ea.V181-09>
7. International Trade Centre. (2009). Guide to Geographical Indications. <https://doi.org/10.18356/43475316-en>
8. Ishchenko, Ya., Podolianchuk, O., Struk, N., Yasyshena, V., & Stender, S. (2021). Accounting of real costs for the production of organic food: world experience and practice of Ukraine. *Independent Journal of Management & Production*, 12(6), 610-631. <https://doi.org/10.14807/ijmp.v12i6.1776>
9. Ivanenko, O. (2024). Wine production: documentation, cost, accounting, reporting. *GolovbuhAgro*, 3. <https://agro.expertus.com.ua/10013291>
10. Kirchert, S., Kaiser, R.E., & Morlock, G.E. (2018). In-process quality control of wine by planar chromatography versus micro planar chromatography. *Journal of Chromatography A*, 1588, 137-149. <https://doi.org/10.1016/j.chroma.2018.12.045>

11. Kolesnichenko, O. (2022, September 06). Have you started drinking less? How the war changed the alcoholic habits of Ukrainians and the market. *Economic Truth*. <https://www.epravda.com.ua/publications/2022/09/06/691168/>.
12. Agnoli, L., & Charters, S. (2022). The alcohol consumption of wine drinkers with the onset of Covid-19. *Food Quality and Preference*, 98, 104489. <https://doi.org/10.1016/j.foodqual.2021.104489>
13. Lavrenova, K. (2022). Support your own: how to develop the Ukrainian craft alcohol market. *Mind*. <https://mind.ua/openmind/20235549-pidtrimati-svovih-yak-rozvivati-ukrayinskij-rinok-kraftovogo-alkogolyu>
14. Law of Ukraine. On Accreditation of Conformity Assessment Bodies. Revision on January 1, 2021, on the basis - 377-IX. <http://zakon5.rada.gov.ua>
15. L'Institut national de l'origine et de la qualité. (2021). Official website. <https://www.inao.gouv.fr/>
16. Marchuk, U. (2016). Relationship of operational control and operational accounting. *Economic Annals-XXI*, 161(9-10), 91-94. <https://doi.org/10.21003/ea.V161-20>
17. Ministry of Agrarian Policy and Food of Ukraine. (2021). Approval of wines of controlled names by origin. <https://minagro.gov.ua/ua/napryamki/administrativni-poslugi/zatverdzhennya-vin-kontrolovanih-najmenuvan-za-pohodzhenniam>
18. Ministry of Agricultural Policy of Ukraine. (2008). About approval of the branch Program of development of gardening of Ukraine for the period till 2025 and the branch Program of development of viticulture and winemaking of Ukraine for the period till 2025. On July 21, № 444/74. <https://zakon.rada.gov.ua/rada/show/v0444555-08#Text>
19. Ministry of Economy of Ukraine. (2021). Draft law of Ukraine "On amendments to the law of Ukraine "On grapes and grapes". <https://www.me.gov.ua/Documents/Detail?lang=uk-UA&id=d024c3e4-b42e-473c-9745-df5318fab53&title=ProktZakonuUkrainiproVnesenniaZminDoZakonuUkrainiproVinogradTaVinogradneVino>
20. National Standard of Ukraine. DSTU 2163-93 Winemaking. Terms and definitions. (1994). State Standard of Ukraine. https://online.budstandart.com.ua/catalog/doc-page.html?id_doc=86412
21. National Standard of Ukraine. DSTU 4806:2007. Wines general technical conditions (33854). (2008). State Standard of Ukraine. https://ksv.do.am/GOST/DSTY_ALL/DSTY2/dsty_4806-2007.pdf
22. Over the year, the cost of wine production in Ukraine increased by 48%. (2022). *Agravery*. <https://agravery.com/uk/posts/show/za-rik-v-ukraini-sobivartist-virobnictva-vina-zroslo-na-48>
23. Pirozhok, O. (2020). How Ukrainian winemakers have grown in 5 years and what still needs to be done. *Economic Truth*. <https://www.epravda.com.ua/publications/2020/11/16/668037/>
24. State Customs Service of Ukraine. (2023). Statistical exports and imports of goods. <https://bi.customs.gov.ua/uk/trade/>
25. The International Organisation of Vine and Wine. (2020). State of the world vitivinicultural sector in 2019. <http://www.oiv.int/public/medias/7298/oiv-state-of-the-vitivinicultural-sector-in-2019.pdf>
26. Tsaruk, V. (2017). Domestic and Foreign Methods of Cost Accounting: Comparative Characteristics. *The Institute of Accounting, Control and Analysis in the Globalization Circumstances*, (1-2), 49–57. <https://doi.org/10.35774/ibo2017.01.049>
27. Tudisca, S., Testa, R., & Sgroi, F. (2011). Competitiveness and sustainability of extreme viticulture in Pantelleria Island. *New Medit*, 10(4), 57–64. https://newmedit.iamb.it/edizioni_new_medit_229,229,2011_99,406,competitiveness-and-sustainability-of-extreme-viticulture-in-pantelleria-island.htm
28. Wittwer, G., & Anderson, K. (2021). COVID-19 and Global Beverage Markets: Implications for Wine. *Journal of Wine Economics*, 16(2), 117-130. <https://doi.org/10.1017/jwe.2021.13>

Марчук У., Гуцаленко Л., Бондар М., Царук Н., Ренькас Ю.

ОБЛІКОВО-КОНТРОЛЬНЕ ЗАБЕЗПЕЧЕННЯ ФОРМУВАННЯ ЦІН НА ВИННУ ПРОДУКЦІЮ НА СВІТОВОМУ РИНКУ

Метою дослідження є розкриття особливостей контролю формування цін на винну продукцію на світовому ринку з урахуванням їхніх кваліфікаційних категорій.

Якість винної продукції забезпечує комплекс нормативно-правових документів, спрямованих і на захист виноградарників, і на технологію виробництва. Дослідження ґрунтуються на дотриманні країнами-виробниками статусу «вин контрольованих найменувань та походжень» (вина КНП). Вивчення експорту й імпорту вина на світовому ринку дозволило довести, що домінуючу роль у виборі споживачами вина відіграють якісні характеристики, визначені стандартами. Використовуючи метод групування, сформовано категоріальну класифікацію вина в країнах-лідерах: Франції, Італії, Іспанії, Португалії, Німеччині. Здійснено характеристику класифікацій вин країн-виробників. Виокремлено інструментарій якості виноробної продукції України.

Оригінальність проведеного дослідження полягає в контролі формування цін на винну продукцію на світовому ринку з урахуванням їхньої категоріальної класифікації.

Категоріальна класифікація вин дозволить споживачам означити відповідність вина встановленим стандартам, географічному походженню та іншим категоріям і підтвердити співвідношення «якість-ціна».

Ключові слова: облік, контроль, якість, вино, ціна, продукція, класифікаційні категорії, вартість, виноградарство

JEL Класифікація: D40, D29, L11, M40