

Research on Features of the Product Development Process in Supply Chain Management in Russia: Assessment, Trends, and Prospects

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Abstract— Designing products to match the processes and supply chains, processes to match product platforms and supply chains, and supply chains to match the product platforms and process are they ingredients in today's fast developing markets. In the course of the study the following results were achieved: assessment of trends in the development of wine production from the supply chain management retrospective at the national and international levels was done. Market of grape wine, wine products, as well as champagnes and sparkling wines in the Russian Federation were studied through the supply chain management for wine production process from supplier to customer. The structure of the wine sales in Russia by types was evaluated and positive and negative tendencies in development of modern Russian winemaking were formed. Results showed that supply chain system in wine industry of Russia can overcome the difficulties of import and export in this country. In conclusion, a specific list of measures that need to be implemented at the state level to ensure a sustainable trend in the development of the domestic wine industry was defined.

Keywords— product development, supply chain management, viticulture and winemaking, retrospective, production, market, state regulation.

1. Introduction

Supply chain management refers to management between companies by means of their business processes; where they seek to maximize potential synergy, reduce waste, increase efficiency and the effectiveness of business processes, with the objective of adding value for the clients and stakeholders, making the supply chain more competitive [1]. Impact of the SCM on various production have been investigated in the literature review [2-6]. The process of grape cultivation and wine production has not only survived to the present moment, but has also acquired special forms of organization and management, and today has a high degree of relevance and significance not only for the national economy of our country, but

also for the entire world market of food products and beverages. The history of domestic viticulture and winemaking begins with Ancient times, developing to the present time, the system of organization and management of this sphere of management was very seriously transformed, which determined the presence of a specific list of system problems, as well as a high degree of relevance and prospects for their solution. Basic organizational and managerial, legal, social, technological, financial, industrial and economic aspects of development of domestic viticulture and winemaking were thoroughly analyzed and justified in scientific works of many scientists, but it is necessary to note such scientists as [7-12]. Nevertheless, many issues remain open and very relevant for the current moment, in particular, they require scientific, theoretical and methodological study, as well as the development of specific applied solutions to such systemic problems as: reducing the fruitfulness of old vine-yards, especially this problem is typical for the Crimea; mass use of imported wine material (concentrate) by domestic winemakers in the production of Russian wines; until now, the legal regulation of the production of wines from concentrate has not been properly organized, and the law on geographical names and wine-making zones in our country is poorly implemented in practice; the presence of a “shadow” market, as well as a large number of counterfeit products on the consumer market, remains an urgent problem.

Purpose and objectives

The purpose of the work was to work out the basics of organization and supply chain management of this sphere of management, identify key problems and develop effective solutions in the context of the latter. This purpose identified the following range of tasks: to examine the revenues that come to the Russian budget from excise duties on alcohol; to set the dynamics of volumes of production of grape and area of its plantations in the Russian Federation; to analyze

the sales of grape wine, wine products, as well as champagnes and sparkling wines in the Russian Federation; to determine the dynamics of average prices of Russian producers of wine; to study the structure of wine sales in the Russian Federation by type; to identify positive and negative trends in the development of modern domestic winemaking; to develop a specific list of measures that need to be implemented at the state level to ensure a stable trend in the development of the domestic wine industry.

2. Methods and materials

In the course of the study, scientific works of domestic and foreign scientists engaged in research on the functioning of supply chain in wine production at the national and global levels were used. In particular, we used the legal regulations governing the sphere of viticulture and winemaking in the Russian Federation; official data from Rosstat. The following scientific approaches were used: system, situational, logical, dialectical, and functional. Among the methods, it is worth noting: an empirical group (description, comparison, and expert evaluation), a theoretical group (analysis, synthesis, induction, deduction, generalization, concretization, abstraction); a general scientific group (abstract-logical, retrospective, economic-statistical, and graphic).

3. Results and discussion

It is believed that through the supplier involvement in production development process model, a basic conceptual structure has been generated that can help the connection between the supply chain management process and the product development management process. We will conduct an analytical study of production and economic indicators and market trends that are typical for modern wine production in our country. Viticulture and winemaking are two interrelated production segments that form a single branch of the national economy of the Russian Federation [11]. It brings very significant revenue to the Russian budget (Fig. 1) [13].

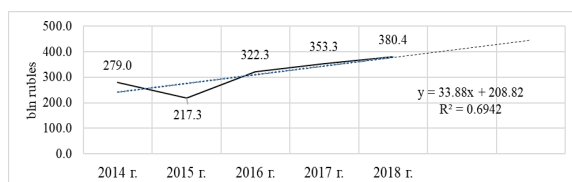


Fig. 1. Revenues to the budget of the Russian Federation from excise taxes on alcohol, billion rubles

Most researchers have already identified viticulture from the market of alcoholic beverages in a separate sector of management, which has significant distinctive features in terms of organization, functioning, financial and socio-economic significance. And all this deserves a very close study from the point of view of production, management, strategy and social aspect [14]. At the beginning, we will pay attention directly to the raw material segment of this industry, as the most important and relevant problem characteristic of modern domestic wine-making. In particular, in Fig. 2 volumes of grapes production in Russia in all categories of farms are given, at the same time, recent data adjusted for grape plantations in the Republic of Crimea [15-20].

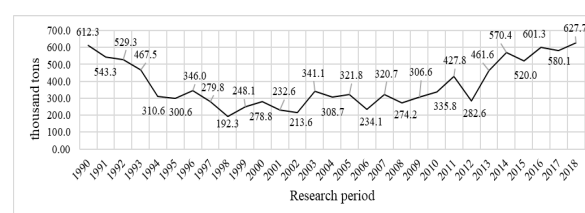


Fig. 2. Volumes of grape production in Russia for the period 1990-2018, thousand tons

In 2018, the total production of grapes (table and technical varieties) amounted to 627.7 thousand tons, of which more than 90 % were technical varieties that are used for the preparation of juices, compotes, soft drinks, concentrates, marinades, cognac, wines and secondary products of winemaking. This volume of technical varieties in the future will produce more than 370 million liters of wine. However, the current demand for wine is about 800 million liters. The missing volume is covered by imports of ready-made wines and wine concentrates, from which domestic enterprises produce finished products. Let us note that the total dynamics of grape production in the period from 1990 to 1998 had a sharp decline. The volume of production of this product for this pe-riod decreased from 612.3 thousand tons to 192.3 thousand tons. Subsequently, there was an increase, which reached the figure of 627.7 thousand tons in 2018 [12, 13, 16]. In our opinion, it would be very logical and appropriate to compare the dynamics of grape production with the profile of trends in the areas of agricultural plantations of vineyards (Fig. 3) [20] and the volume of sales of wines and wine products available in our country (Fig. 4 and 5) [12, 15, 20].

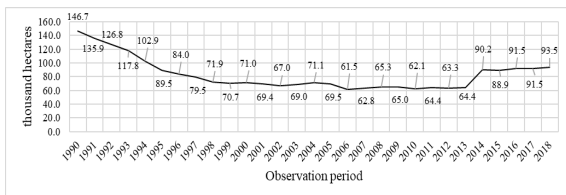


Fig. 3. Dynamics of the area of planting vineyards in Russia, thousand hectares

According to research, at the moment, the total area of vineyards in our country is about 93.5 thousand hectares, about 80 thousand hectares of which are fruit-bearing. Regarding the area of grape plantations, it is worth noting that it has significantly de-creased over the period 1990-2012. The Total decrease in the area of plantations was 83.4 thousand hectares (from 146.7 thousand hectares to 63.3 thousand hectares). Sub-sequently, moderate growth began, and in 2018, the area of vineyards was 93.5 thousand hectares, which is lower than in 1990 by 53.2 thousand hectares. All this became possible due to the fact that in 2013 the state began to pay special attention to this segment of the industry, and in the same year more than 20 thousand hectares of this agricultural crop were planted. At the moment, these vineyards are already bringing fruit and good economic income to farms and budgets of various levels. It should be noted that the Republic of Crimea accounts for about 20 thousand hectares of all plantings, but today the quality of these vineyards requires serious scientific and technical work to re-store them [12, 14, 15]. Comparing overall trends in production of grapes and the area of plantations, we note that there is a certain imbalance, which consists in the fact that in the period from 1998 to 2012, the planted area decreased, and the output of grapes grew. Despite the fact that there were some seasonal fluctuations in the direction of in-creasing and decreasing indicators, the overall picture was the same. Having worked this issue more carefully, we come to the conclusion that all this is due solely to the growth of performance indicators of domestic viticulture farms. More and more organizations began to use intensive methods of this crop growing, which allowed collecting more crops from a unit of cultivated agricultural land.

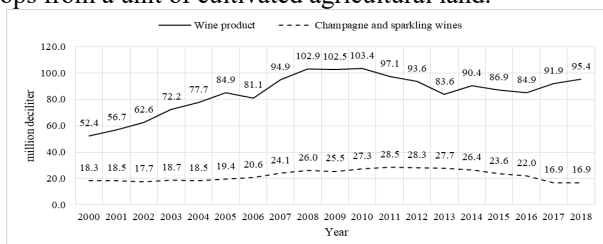


Fig. 4. Sales volumes of wine products, as well as champagne and sparkling wines in the Russian Federation, million deciliter

It should be noted that today there are about 200 wineries in Russia. Every year their number increases. State support helps build wineries, purchase equipment, and the state program subsidizes interest on loans. Today, domestic winemakers produce about 800 million bottles of wine a year. And not just in quantity, but also in quality, they expect to become one of the leading countries in the production of wine, such as Chile, Argentina, South Africa and New Zealand [13, 18].

The data show that in the period from 2000 to 2010, there was a steady trend of growth in sales of wine products in the domestic markets of alcoholic beverages with 52.4 million deciliter up to 103.4 million deciliter.

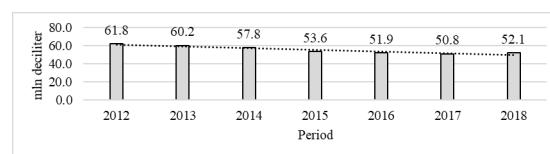


Fig. 5. Sales volumes of grape wines in the Russian Federation, million deciliter

Further, until 2016, there was a decrease to 84.9 million deciliter. In the last two years, there was an increase in sales of wine products; in particular, in 2018 95.4 million barrels of this product were produced. Over the entire research period 2000-2018, sales of champagne and sparkling wines were very stable at the level of 20 million deciliter. Regarding grape wines, we can say that their sales are declining, in particular, for the pe-riod 2012-2018 they decreased by 15.7 % from 61.8 million deciliter up to 52.1 million deciliters. The constant rise in the price of wines led to a decrease in the volume of the average purchase. It is worth noting that since 2012 in Russia, there is a steady decline in sales of not only wine, but other alcoholic beverages (vodka, cognac, beer). Of course, it is necessary to take into account the functioning of the so-called “shadow” market, but even taking into account this factor, the population of the country began to drink less alcohol (Fig. 6) [12, 20].

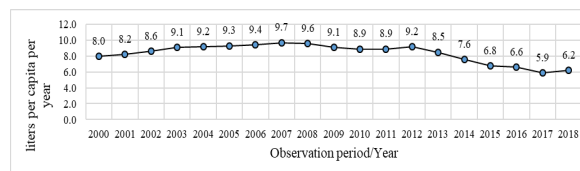


Fig. 6. Sales of alcoholic beverages to the Russian population for the period 2000-2018, liters per capita per year

The decrease in the sales volume of wines in these years is due to regular price in-creases. Prices, in turn, rose due to an increase in excise

taxes and auxiliary materials (labels, bottles, capping) (table 1) [20]. The situation was also exacerbated by the fall in real incomes, when

consumers sought to save money and reduce the volume of wine purchases.

Table 1 – Average prices of national wine producers

Production /Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Champagne, deciliter	805	873	967	1010	1222	1775	1533	1822	2024
Grape wines, deciliter	598	634	587	686	751	827	870	910	980
Fruit wines, deciliter	599	468	540	597	611	1001	1894	2678	3265
Wine beverages, deciliter	492	770	1228	1345	1378	1426	1470	1945	2478

Over the period 2014-2018, the price of wine sales in the retail sector of the Russian Federation increased by 37.2 % from 314 to 431 rubles per liter. The largest in-crease in this indicator was noted in 2015 (+19.3 % compared to the level of 2014), which was directly related to the sharp devaluation of the national currency. The constant increase in the price of wines led to a decrease in the volume of their purchase. If in 2014 the volume of purchases was 9.7 liters per customer per year, in 2018 this figure decreased to 8.3 liters of wine. In the Russian wine market, table wines lead the sales structure (Fig. 7). In 2018, their share of total sales was 76.7 % (705.1 million liters). In second place in terms of sales – sparkling and carbonated wines with a share of 21.9 % (201.5 million liters). The share of sales of special wines in Russia in 2018 was 1.4 % (13.2 million liters). In general, from 2014 to 2018, the greatest decline in product sales was observed in the category of special wines and amounted to more than 56% over the past five years. Sales of sparkling and carbonated wines fell by 20.3 % during the study period. Sales of table wines decreased by 9 % [12, 15].

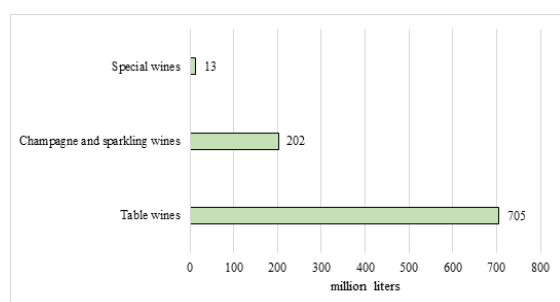


Fig. 7. Structure of wine sales in Russia by type in 2018, million liters

It should be noted that since 2012, serious technical re-equipment has begun in the Russian wine industry [19]. Today, we can already see the results of investments in equipment for processing

grapes, but the key problem of winemakers in Russia, which hinders the development of the entire industry, is the shortage of domestic wine raw materials, a large amount of which is now imported from abroad. The main suppliers of wine materials in Russia are such countries as Spain (43%), Ukraine (19.41%), South Africa (13.2%), Moldova (9%), Uzbekistan (7.2%) and Italy (3.1%) [13, 16]. Imported wine raw materials are used in the production of wine at domestic enterprises and are presented on the consumer market as a domestic product. There is a deception of the consumer without formal violations of normative and legislative acts of Russia. This, in turn, has a significant impact on the reputation of the domestic wine industry.

Today, the import duty is 12.5 %. The market is filled with cheap wine products that cost more than twice as less as products that used local wine raw materials. In this situation the wine is produced from Russian grapes, are unable to compete effectively with imported wine products. Undoubtedly, many large companies are satisfied with this business model, because it allows to reduce significantly the net cost, optimize costs and increase the level of profitability [15, 17, 19].

Based on the results of a study of foreign sources [1, 2, 3, 5, 8, 10], as well as the state of domestic winemaking, the key advantages and disadvantages of the latter were identified (Fig. 8, 9).

As the research of foreign works shows [2, 3, 6, 9, 13, 18, 23] the active implementation of the import substitution program, as well as the adopted set of targeted pro-gram decisions aimed at increasing the production capacity of its national product, re-quire large hedge investments, adaptive strategic decisions and effective state support.

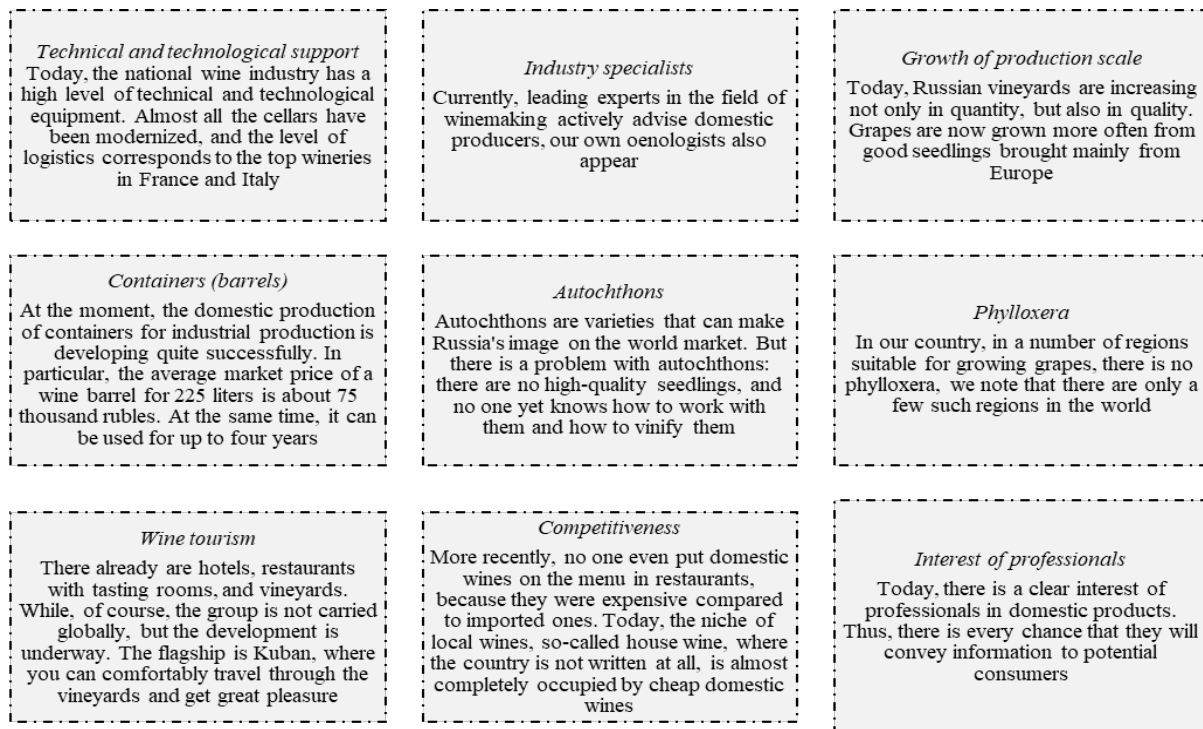


Fig. 8. Positive trends in modern national winemaking

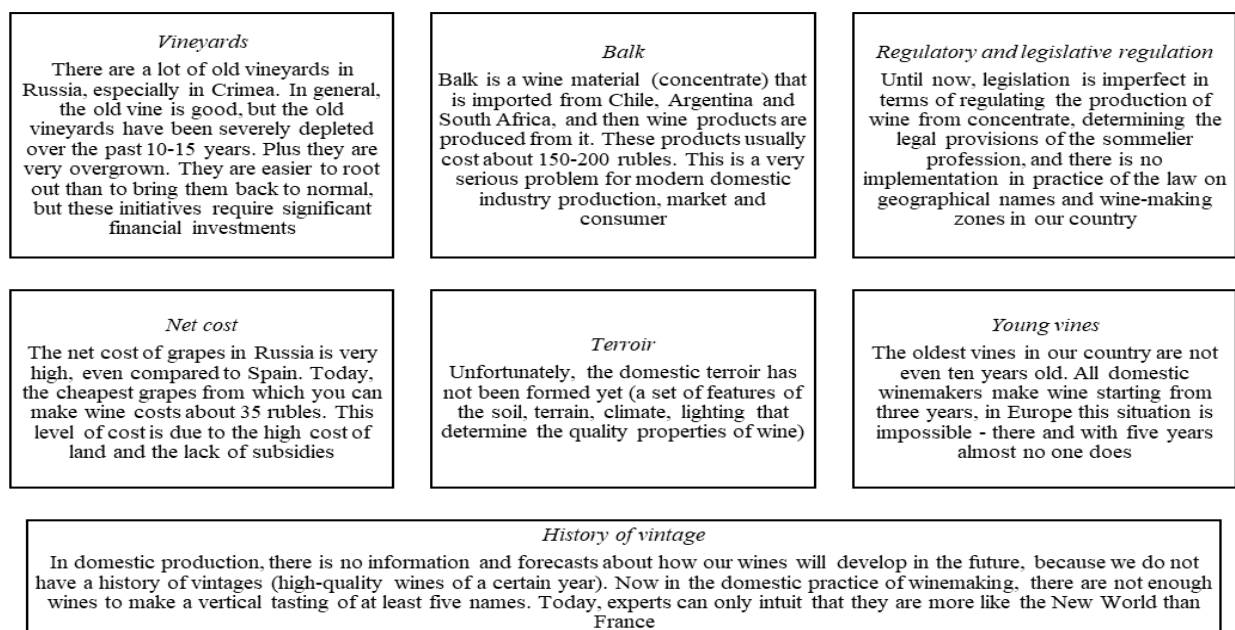


Fig. 9. Negative trends in modern national winemaking

Using foreign experience [2, 4, 6, 7, 9] we come to the conclusion that, at present, to ensure sustainable development of the domestic wine industry, the government should focus on solving the most urgent problems, through the implementation of specific activities: the most complete and high-quality provision of the industrial sector with domestic wine raw materials, which requires increasing the rate of increase in plantings of technical (wine) varieties of vineyards, as well as carrying out restoration measures on

areas that have lost productivity; it is necessary to pay more attention to supporting small businesses, both in the raw material segment and directly in the wine industry; to conduct a more flexible excise policy in relation to domestic wine production; to implement a more effective fight against counterfeiting and the "shadow" market; to encourage domestic winemakers to abandon the use of cheap imported wine raw materials based on the use of financial, tax, regulatory and legal instruments; to orient the modern buyer to refuse to

consume a low-quality and cheap product; to provide targeted financial support to industry experts for the implementation of targeted business projects to increase the area of grape plantations, organize its processing, increase export supplies, and introduce resource-saving technologies in the agricultural and industrial sectors.

In particular, to orient the demand for domestic quality products, it is necessary to develop measures where the buyer can freely get information about both the product and the manufacturer and make sure the quality of this product. Of course, based on the current situation and the dynamics of its change, it is not possible to achieve full import substitution in this industry in the near future. Individual experts and industry specialists indicate that this will take at least 15-20 years, provided that the current volume of state financial and regulatory support is maintained, as well as the pace of restructuring of the entire viticulture and wine industry in Russia. In general, this strategic setting should bring a high positive synergistic effect in the medium- and long-term prospects [13, 16].

In the context of the implementation of the above measures in 2017 the Law "On the development of viticulture and winemaking in Russia" was adopted, which promotes the formation of a transparent legal environment regulating competitive relations, but also conducive to the fullest realization of the principles of legal regulation in this area of AIC. In addition, this normative document includes the basic directions of implementation of the state regulatory management aimed at forming a sustainable trend of socio-economic development of the viticulture and winemaking sector. This regulatory and legislative act defines viticulture and winemaking as a type of agricultural business and clearly prescribes the rules for transferring control and supervisory functions over the process of wine production from Federal Service for Alcohol Market Regulation to the Ministry of Agriculture of the Russian Federation. All this, in the end, will contribute to the activation of business activity in this area and will allow manufacturers to form and implement independently internal control measures, as well as development strategies in certain territories, which, to a greater extent, is aimed at combating counterfeiting, the "shadow" market and low-quality products. Also, the implementation of these conditions will allow establishing more specific and effective benefits for industrialists and agricultural producers engaged in organizing nurseries for growing grape seedlings [12, 19].

The law also provides for a set of measures to

support the industry from the state, represented by relevant specialized institutions and departments, aimed at increasing the area of vineyard plantations (today the state is implementing measures to reimburse 30% of the costs of laying grape plantations); activating the development of nurseries; conducting scientific research and implementing innovative activities; promoting domestic products to foreign markets with a protected geographical indication and/or name of origin; improvement of the mechanism of export deliveries of domestic wine produced from its own wine raw materials.

Also, it is worth noting the positive changes taking place in fiscal policy. In particular, at the beginning of 2019, excise taxes on wines with a protected geographical indication were reduced to 5%. In addition, the cost of the license was reduced from 800 thousand rubles to 65 thousand rubles [16].

In the context of these changes, according to many experts, by 2028 the wine market in our country will grow by 2-3 times. These proposals are based on specific provisions presented in the approved Concept for the development of viticulture and winemaking in Russia [13, 19].

In our opinion, these estimates are quite achievable, as everything indicates that this industry segment is emerging from its crisis state, successfully developing in the current competitive environment, as well as taking into account effective and targeted support from the state.

4. Conclusions

This paper is introduced in the context of a study on the relations between the supply chain and product design. The importance of beginning the study of supply chains in product development process is mainly because it is at this product of lifecycle phase that the decisions responsible for 80% (eighty percent) of a product's final costs are made. Today, there are about 200 wineries in Russia. Every year their number increases. Russian winemakers produce 800 million bottles of wine a year. It is worth noting that since 2012, Russia has seen a steady decline in sales of not only wine, but other alcohol-ic beverages (vodka, cognac, beer). Since 2012, serious technical re-equipment has begun in the domestic wine industry. A significant problem for the industry and the entire market is the shortage of domestic wine raw materials, a large volume of which is currently imported from abroad. The main suppliers of wine materials in Russia are such countries as Spain (43%), Ukraine (19.4%), South Africa (13.2%), Moldova (9%), Uzbekistan (7.2%) and Italy (3.1%). Imported wine raw materials are used in the production of wine at

domestic enterprises and are presented on the consumer market as a domestic product. All this misleads the consumer and causes serious image damage to the domestic wine industry. The Ministry of Agriculture of the Russian Federation paid special attention to this problem situation and worked out a set of initiative solutions that were aimed at activating the potential and expanding opportunities for sustainable development of the domestic wine industry. In particular, we would like to focus on the issue of financial support. So, in 2017 about 1.65 billion rubles were allocated from the budget for the development of this industry, and in 2018 more than 2 billion rubles were allocated. Also today, they are working on increasing import duties on imported wine materials. In 2017, the Law "On the development of viticulture and winemaking in the Russian Federation" was adopted, which contributes significantly to the formation of a transparent legal environment that regulates competitive relations, as well as contributing to the fullest implementation of the principles of legal regulation in this area of ag-bicultural management. Today, positive changes have been noted in terms of fiscal policy. According to experts, by 2028, the domestic wine market will increase by 2-3 times.

The results obtained are of theoretical, methodological and practical significance, and can be used quite effectively in the educational and research environment to conduct more detailed and in-depth research in the relevant subject area of scientific research (viticulture and winemaking). In particular, the content of the scientific work will provide industry researchers with the opportunity to perform more reliably and objectively the assessment and analysis of the industry in their future research. From a methodological and practical point of view, the author's positions, conclusions and recommendations set out in the work will be quite relevant and significant in the development and implementation of organizational and management initiatives by state-level management structures and industrial associations. Certain provisions and specific solutions to problems related to improving the efficiency and ensuring the progressive development of domestic wine production are quite suitable and applicable in the context of developing tactical measures, target programs, strategy maps and other legal acts of the legislative level. The obtained results and conclusions will be very interesting and useful for Industry managers and representatives of modern business structures of the viticulture and wine industry in the process of implementing their own

business planning, developing business strategies, investment programs, commercial forecasts, marketing plans, etc. Thus, the author's research has a high degree of relevance and prospective significance from the point of view of the theory, methodology and practice of managing the development of viticulture and winemaking in modern Russia.

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