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Digital technologies in wine sector: Russian legislator preferences

Ekaterina Kudryashova^{1,*} and Michele Casetti²

¹The Institute of legislation and comparative law under the Government of Russian Federation, Bolshaya Cheremoshkinskaya 34, 117218, Moscow, Russia

²Scrypta Foundation, Università di Bologna, 259, St. Paul Streetzr, Valetta, Italia

*E-mail: ev_kudryashova@inbox.ru

Abstract. Russia has revived its vitiviculture in the beginning of XXI century. Without the burden of old regulation and established reputation the modern technologies including digital technologies could be expected to prosper here. To certain extent it happened and Russian academics and innovators have offered some digital solutions for the wine makers related to the mapping of the vineyards and crop. Still predominantly, the digital technologies in Russia are designed for the control and surveillance. The legislation on viticulture and wine making and its social environment push the technology development toward the vigilance and control of the final product rather than towards the transformation of vineyards management. The renaissance of the viticulture in Russia opens unique opportunity to make Russian vitiviculture modern and advanced sector of economy. However, this innovative potential is still left unexploited.

1. Introduction

Only a small part of Russian territory falls within the wine climate zone. In these regions Russia had quite a long tradition of wine making, but viticulture and wine making were seriously impaired by the political turbulences of XX century, “prohibitions” and the economic recession in 90-s. The end of XX century earned Russia a nightmare of political instability. The 90-s political crisis negatively influenced the wine industry damaging the viticulture and wine making more than other sectors of agriculture. Until now Russia has a dynamic political life and at any time the policy can be modified as well as the political preferences and orientations can be changed [1].

The truth is that Russia restarted production of wines in the beginning of the XXI century and replanted many of vineyard during the recent two decades. Some economic and legal measures were undertaken in Russia recently in order to support the domestic wine making, including quite a few state programs for the technological upgrade of the agricultural sector. Bearing in mind the experience of political changes the special law on viticulture and wine making adopted recently creates certain solid basis for the further development of the wine sector of agribusiness.

The Federal Law of 27, December, 2019 No. 468-FZ «On viticulture and wine making in Russian Federation» came into force in 2020. There are already a few considerations of its aftermath for the wine sector. Although in less than one year after the law was issued any influence on wine market indicators could not be fully determined. By now it is announced that in 2020 the still wine production in Russia grew by 328 mln.l. which is 8 % growth comparing with the production of 2018 (according to the State agency on alcohol regulation). Another trend is identified by analytics and specialists. The grape originating from Russia is becoming more expensive which may affect the final prices of wines.



Comparing to 2019 in the 2020 the prices on the Russian grape for winemaking have grew by 20-30% and on the high-quality wine grape the prices grew even by 50% [2]. The production of wine was expected to grow by 3-5 % in 2020 comparing to 2019 [3]. The raise of the prices could be explained by the requirement of specific labeling for the imported wine-material which was so popular previously. Many still wines coming to the Russian market as the Russian wines were imported as a bulk and just bottled in Russia. Even the “dry wine materials” were used without specific labelling. The new law on viticulture and wine growing means to prevent this misinformation of the consumers and support the real domestic wine production in Russia.

The modern technologies in wine are a popular for international researchers [4]. There are many comparative studies of innovations in viticulture and wine making [5,6,7]. However, Russian experience was not taken into consideration in these studies including the comparative ones. Russia puts a lot of efforts in the restarting of domestic wine producing and its experience shall draw attention of researchers in the nearest future. In this article we intend to demonstrate only a specific issue of the digital technologies development in Russian wine sector. The hypothesis is that currently digital technologies designed for control and vigilance prevail over the others in Russia for the wine sector. The new law on viticulture and wine making does not change this situation and rather support this trend. The law and other documents devoted to Russian vitiviniculture favor mostly the innovations designed for the final product control and traceability although this stage is not the one where the value of wine is generated in Russian context.

2. Methods and materials

The information about the digital technologies in wine making is scattered across the academic publications, magazine publications, web sites etc. These scattered facts were collected for the analysis. The methods of analysis and synthesis were mostly employed in this research.

Due to the context of the winemaking development in Russia (prohibitions, political turbulence) not much of retrospective data on Russian viticulture and wine markets with proper analysis is available. The systematic analysis of the wine market with coherent information is still not well developed in Russia. The information about viticulture and wine making was collected by different public bodies. Till the 2013 wine in Russia was characterized only as the alcohol-containing product which had nothing to do with the agriculture. The data on the Russian wine market was collected by the state agency on the regulation of alcohol – containing products (Rosalkoholregulirovaniye) [8].

Since 2013 still and sparkling wines in Russia are treated not only as the alcohol-containing products but also as products of agriculture. Because the wine became the agricultural product the information about wine market in Russia now can be found in the open resources of the Ministry of agriculture of Russian Federation [9]. For collection and analysis of data in the agricultural sector of economy the Ministry of agriculture of Russian Federation founded the federal state budgetary institution “Center for Agro-analytics” [10]. The Center for agro-analytics is specialized on the prognoses and analysis of the markets of agro-products, foodstuffs, raw materials, products and services linked to the agricultural sector of economy. Information about the grape for wine and wine market is now covered by the Ministry of Agriculture of Russian Federation and by the Center for Agro-analytics. In fact the information collection and processing in this sector are still under the process of systematization.

There are a few independent institutions collecting data on wine market and related issues. Among them the independent statistics collecting agency focused on the data about the alcohol markets - ciffra [11]. However, the information and analytics of the market usually serve specific purposes.

Due to the difficulties with the systematic and coherent open data in this research we mention only the sporadic data available and relevant for our research. Even less data related to the technologies in wine sector is available.

The comparative approach served this study a lot. Besides the information about the digital technologies’ implementation in Russia interesting examples from foreign practice are mentioned in the paper. The comparative approach allowed to amplify the study. The Russian experience is placed in the context of the general trends in viticulture and winemaking.

3. Results

The revived vitiviniculture in Russia is the most prospective sector of agriculture for modern digital technologies implementation. However, the winemaking is still underestimated in Russia. The current regulation favors the digital innovations focused on the control and surveillance of final products rather than the technologies aimed to upgrade the vineyards management. The expressed support for innovations designed to meet the vineyards needs could help a lot to turn the digital technologies development in Russia towards the farmers and wine producers.

4. Discussion

Technologies, including digital technologies, turn to be more and more important in the viticulture and wine making sector of agriculture. It is observed in the current publications that the wine producers advanced significantly in the implementation of technologies. Wine making became a knowledge-based rather than traditions-based sector of agriculture. The innovations nowadays create value which is not limited by the economic benefits for the wine-producer or wine promoter, but also include the value for the territory and for the society [12].

The attitude to innovations is a basis for the difference between two streams on the global level in the vitiviniculture: the “Old World” (Italy, Spain, France, Germany) and the “New World” (Australia, USA, South Africa etc.). The difference in the style of wines besides the other factors roots in the difference in the approaches to the viticulture. Although, the technologies came to vitiviniculture all around the world still the main feature of the Old World viticulture is the conservative approach and maintenance of the old traditions while the feature of the “New World” is application of the newest technologies and openness to all sorts of innovations.

The “New World” wine producers are open to innovations and advanced technologies. The “Old World” style adhere its traditions, established fame and reputations coupled with restrictions on the innovative novelties. For the Old World the traceability of the precious and collectible wines plays far more important role comparing to the New World. The New World wine producing countries focused more on the technologies improving the quality of wines or the new wine concepts. Russia is likely to follow the “New World” style of winemaking as the wine sector is recently revived. It is quite expectable to implement the modern technologies in this period of vitiviniculture renaissance in Russia.

Currently there are a few digital solutions already developed and implemented in Russia.

The digital technologies and artificial intelligence most readily used in agricultural sector for corrections of the existing maps, data bases and information banks as well as for producing prognoses on the basis of accumulated massive of data (big data) [13]. The corrected version of the digital system for optimal geographical allocation of varieties and crops appeared in many countries of the world and Russia joined the list of these countries. The scientists from the North-Caucasian academic center for horticulture, viticulture and winemaking have developed a map of resource capacity of Krasnodar region agro-territory indicating the homogeneous zones and sub-zones for breeding the most appropriate varieties of grape. There are more solutions currently under development and more technological products for vitiviniculture can be expected in the nearest future [14].

The technology which is widely used to help the wine makers for cultivation of vineyards is GPRS, the Russia’s alternative of GPRS is GLONASS. It is used, for example, for navigation during the vineyard planting. In Russia this technology finds its way to the agricultural sector.

The Rosselkhozbank have launched a project using GPRS/GLONASS for control over bank collateral. The agricultural machinery used as collateral for the bank loans shall be equipped with ge-positioning system indicators. [15] The project is designed strictly for the bank use while it could be double-purposed. It is obvious that the equipment could not only trace the machines, but also help the farmers. This fragmentation of interests is one of the features of contemporary Russian economy which is curbing the development of technologies.

If we speak more broadly about the digital technologies generally in the agricultural sector, we shall find the example of GLONASS use for pilot-less cultivation of farms in Russia. The integrated digital platform of agrobusiness management “Agrosignal” based on the GLONASS technology was

presented recently to Russian market [16]. It was launched by a private company. The platform allows to fulfill a few tasks including the pilotless machinery operation, monitoring of the machinery, the fuel consumption control, downtime of the machinery monitoring etc. Besides, sensors for the ongoing monitoring of the different characteristics of soil, crops conditions etc. are integrated in the platform. The system includes the on-going decision supporting module as well as a mobile application. Agrosignal is expected to be introduced in 30% of the agricultural market in the amount of more than 20 million hectares [17]. It is not mentioned in the information about the Agrosignal system, but its general description implies that Agrosignal can be modified for the viticulture. Still there are no evidence that it is used in vineyards. Usually, viticulture requires specially designed digital technology solutions [18]. The platform is brand new and not much is known about the results of its implementation, however, it is emphasized that the platform allows to trace the machinery first and foremost.

It is appropriate here to mention a good example of a very advanced and sophisticated digital technology designed especially for viticulture from the New World wine-producing country. A very interesting project was announced in Australia - VitiVisor. This project is the outcome of unified efforts of different sectors of economy and government. The Australian project VitiVisor is one of the most advanced in terms of digitalization of vitiviculture. The VitiVisor platform is designed to collect the data from the vineyards by means of sensors and cameras generating the massive of data. The collected data is stored and analyzed by the digital technology and artificial intelligence. On the basis of the analysis the VitiVisor offer advice on the irrigation, pruning, fertilizers, fungicide application etc. The digital technology helps to aggregate together different technologies and scientific knowledge: the engineering, agriculture economics, water technologies, artificial intelligence, robotics, remote sensing. The VitiVisor is a digital platform developed by the University of Adelaide in cooperation with the non-commercial organizations from the wine sector. The project is supported by the wine industry and regions of Australia. The platform shall be open for access to all the winegrowers in Australia. This kind of projects became possible only due to teamwork of research (academic), policy (government) and industry and synergy of their intentions and interests [19, 20]. The VitiVisor is focused mostly on the data collection and better decision taking in vineyard management.

The lack of promotion of IT technologies in agro-industrial sector was mentioned as a general problem for the agriculture in Russia. [21, 22] It is true in terms of the technology implementation in the farms, but it is only partly true if we look at the state programs aimed to promote technologies in Russian agriculture. The issue of the technological upgrade of the agriculture in Russia was articulated officially already in 2016. The Presidential decree of 21, July of 2016, № 350 “On the measures for implementation of the state science and technical policy in favor of the agriculture development” announced the goals of modernization in the agricultural sector. This decree was further detailed in the Federal science-technical program of the agriculture development for 2017-2025 (Government Decree of 25, August of 2017 № 996). By the 2016 wine was already an agricultural product and the technological upgrade was supposed to cover the wine sector of agriculture as well.

In 2020 the technological upgrade of viticulture and wine growing with state support became a trend recognized by Russian legislator. The state policy and the government support for the viticulture and wine producing has a substantial part in the new law “On viticulture and wine making in Russian Federation”. Since 1985 till 2012 basically the government refused to acknowledge that the winegrowing needed any support [23]. Till 2013 the viticulture was not part of the agriculture in terms of regulation and wine was not the agricultural product as it is the case in the wine-producing countries around the world. It is not perhaps the exaggeration that the whole wine sector in Russia was somewhat mistreated on the official level. Comparing the allocations for sub-programs within the Federal science-technical program of the agricultural development 2017-2025 it seems that the wine sector is still underestimated in Russia (Figure 1 – according to the Ministry of Agriculture of Russian Federation and Agroinvestor Journal).

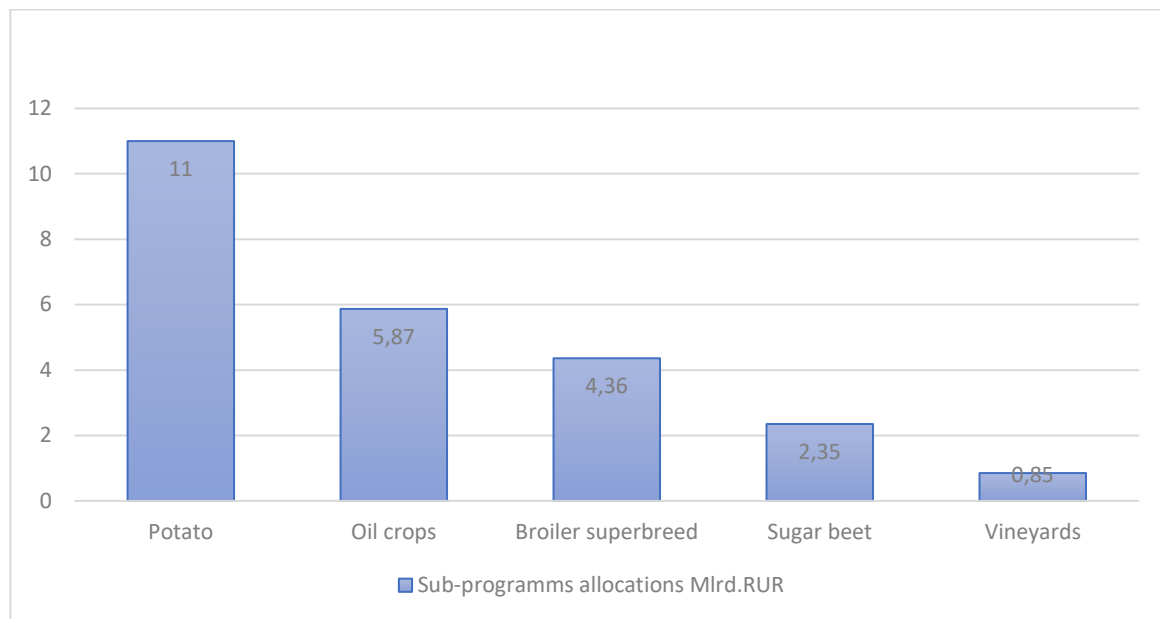


Figure 1. Sub-programms allocations within the Federal science-technical program of the agricultural development 2017-2025 Mlrd. RUR

The promotion of technology is mentioned specifically in the law as one of the priorities of state policy. The promotion of technologies is dealt with in the article 4 “State policy in the field of viticulture and wine making”. Among the mainstays of the state policy there is a development of research, technology and innovation for the viticulture. The provision specially mentions the technologies for control of the quality, identification of the fake, substandard or counterfeit products.

The article 34 devoted to the state and local financial aid for the wine growing and making also suggests that the financial aid is provided mostly for technologies related to the control and protection of consumers.

Although it seems that all the technological developments fall within the scope of the state policy priorities, the surveillance technologies are somewhat dominating in the text of the law. We would add here that the law “On viticulture and wine making” was presented in the Russian mass media as the legal measure for protecting wine consumers rather than supporting the wine growing farms and wine producers. The support for farmers limited to the special labeling of the wine made of Russian grape.

Besides the special law on viticulture and wine making the wine in Russia is regulated as an alcohol containing product according to the law on the turnover of alcohol-containing products. Since 2016 a special electronic registration system for all the alcohol-containing products was gradually implemented in Russia (Unified State Automated Information System). By 2018 each item of alcohol-containing product was strictly registered, and the transactions history could be traced back. So, the provisions about further development of the control technologies in the law on viticulture and wine making were introduced in addition to the already functioning control system.

The topic of technology development for control and surveillance appears in the early documents on science technology upgrade of the agriculture in general. In the Presidential decree and the Federal program on scientific and technological development which we mentioned above among the goals of technological modernization there is a goal to improve the quality control of agricultural products, raw materials and food as well as examination of genetic material.

There is certain disbalance in the priorities of digital technologies development in Russia. It follows from the analysis of the official documents on technological upgrade of agriculture and wine sector in particular. The trend is suggested by the examples of the technologies already available in the agriculture and viticulture. Earlier in this article we mentioned the project of Rosselkhozbank aimed at control over

the collateral machinery. The Agrosignal platform is mostly presented as a surveillance platform. Its control functions are underlined and stressed.

It is somewhat doubtful that with this approach to digital technologies development we can expect in Russia some kind of synergia like the one which brought to existence the VitiVisor project in Australia. Both the government and business are keeping their aims and purposes distant from those of the farmers and wine makers. There is a fragmentation of interests could be identified in the approach of the government and legislator in Russia.

The Australian experience affirm that only the synergia of interests and efforts of different actors can result in an efficient digital tool for viticulture development.

The renaissance of the wine sector in Russia opens unique opportunity for promoting Russian vitiviculture and make it modern and advanced sector of agriculture. However, this innovative potential is still left unexploited. The digital technology development tends to modernize the control over the machinery and the final products, especially tracing technologies, rather than the vineyard management. The traceability of the final product may be considered a value-generating technology for the famous and precious wines from the traditional vineyards of the Old World. In Russia where the viticulture is restarted recently and there is not a deep-rooted fame of wineries technologies are rather needed on the level of vineyard management, which is not the case yet.

5. Conclusion

There are some digital technologies solutions for wine sector in Russia, but there is a certain trend to favor the digital technologies designed for surveillance. The legislator is advised to shift the focus from the control and wine traceability to the development of digital technologies for the vineyard management.

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