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## VIRTUAL AGRICULTURAL MARKETS – TRENDS AND CHALLENGES

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### ABSTRACT

In recent years, a process of restructuring of farms in Bulgaria has been observed, which consists in the modernization of agricultural markets through the use of different platforms. This change is associated with many challenges for farmers, as well as following certain trends in the agricultural sector.

The purpose of the research is to trace to what extent innovations are imposed in the economic sector, where the production is available on the virtual market. Innovations in virtual agricultural markets allow quality fresh produce to reach a greater number of end consumers.

Research methods are prospecting and analysis of the current platforms for trading agrarian products: electronic stores, social networks, sites, applications for direct sales.

The results of the research show that there are a wide range of opportunities to participate in virtual agricultural markets and they support the development of farms, but at the same time they are associated with challenges and important problems in the realization of agricultural production.

Following and developing modern market trends is necessary for adapting manufacturers to the constantly changing market environment and increasing their competitiveness. As a result, virtual agricultural markets are developing as a means of sustainable commercial relationships and represent an alternative for easy access of agricultural products to consumers.

**Key words:** farm restructuring, innovation, market trends, e-commerce, platform for agrarian products

### INTRODUCTION

Agriculture is a major and key branch of the Bulgarian economy. Food and agricultural products contribute to improving the quality of life for all: especially the poorest, economically, socially and environmentally. Against the background of economic development in the country, farmers are faced with various problems related to global political and economic crises and increasingly acute climate changes. The impact of climate change is felt both in agricultural yields and in average food prices. It thus directly and indirectly affecting a large part of the population. Globally integrated production processes have brought many benefits, but present challenges in terms of their regulation and the need to steer them towards fairer and more sustainable outcomes

for both food producers and consumers (1). In order to overcome the current economic and environmental challenges, measures and means are needed to increase the technical level in agriculture and the wide use of technologies related to ICT (Information Communication Technologies) to create virtual agricultural markets. The modernization of rural holdings involves many innovations in various aspects and in recent years enormous progress has been made worldwide to improve the distribution and realization of agrarian production. Societies are changing radically due to developments in technology, the rapid adaptation of innovations and their entry as an invariable part of the lifestyle of producers and consumers. A major problem for agricultural producers is the way they participate in the market and their dependent position on purchase prices, resellers, agricultural exchanges and retailers. In traditional supply chains, the farmer is at the beginning of the trade chain without having the opportunity to communicate with consumers.

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But this becomes imperatively necessary with the modernization of the approaches to the production and sale of agricultural products (2). The need to increase the qualification of the trader in order to be adequate to the trends in the agro-sector also emerges. Challenges for farms include ways to produce clean organic products, mechanization of farms, training and selection of labor, participation in local agricultural markets, as well as the realization of production through virtual agricultural markets. Although the economic and technical conditions change dynamically, it is quite possible to adapt to them by finding new forms of implementation and access to technologies (3).

### METHODS

In order to meet the requirements and trends towards innovations in the agrarian sector, the need to stimulate and share knowledge, innovation, digitization and digitization of the markets is highly imperative. The research methods are an analysis of the current state of virtual agricultural markets and trends for their future development. The tools used include the collection of information about farms, a review of the most frequently used e-commerce platforms, an analysis of the regulatory and tax framework (Commercial Law) and technical innovations. The use of the Internet and information technology and applications quickly enters agriculture and rural areas. However, the country lacks statistics on the degree of use of computers and digital technologies in the agrarian sphere, Bulgaria lacks in-depth analyzes of the digitization (digitization) of the agrarian sphere and in rural areas. The reason for this is both the lack of sufficient official statistical information and sufficient public interest in the development of this important system. The use of information technology in commerce is an important factor for effective commercial activity in the modern world (4). It helps to intensify and increase the efficiency of the commercial process, as well as to optimize the product range and stock, to improve the economic results of intermediaries

and farmers. Identifying the main problems in technological innovations through the research will assist farmers in the task of modernizing their sales methods and reaching a wider range of consumers (5). A first step in this direction is an assessment and analysis of the current state of technologies and their use by farmers at the national level for a period of recent years. Analyzing the state and development of digitalization in our country and in the agricultural sphere in Bulgaria is related to the use of the Internet in the various regions of Bulgaria.

The use of the Internet and information technologies and applications, on the one hand, increases the competitiveness of farms, and on the other hand, expands the palette of possibilities for the realization of agricultural production and quickly enters agriculture. Alternative ways of offering farm produce are created, under changed circumstances from the usual, such as the occurrence of a pandemic and other crisis situations (6). In this way, it can reach from the producer to the consumer's table through the use of a short supply chain. An example of this is the emerging pandemic of 2020, when farmers markets were forced to sell their produce online after the markets closed. Producers turned to selling through online orders and couriers after their physical activity was limited due to the declared epidemic of COVID-19 in the country and around the world. In this way, a network of short supply chains was created in the country, which allowed fresh agricultural produce to reach the end consumer directly. In this particular situation, our research found information about Bulgarian farms and farmers who use electronic services in the form of a cooperative for a virtual presence on the Internet, with the help of an organized virtual market "Produced on the farm".

In **Table 1**, we present data on the territorial distribution of the farms participating in the virtual markets and their product assortment:

**Table 1.** *Farmers with virtual markets in Bulgaria*

Number	Farmer	Address	Production	Site
1	" Nigella " Ltd	Dimitrovgrad city	HVP craft production	<a href="http://nigellaltd.com">nigellaltd . com</a>
2	ZP Georgi Davchev	Topolovo village, commune. Asenovgrad	viticulture and winemaking	<a href="http://bioferma.org">bioferma . org</a>
3	"Bon Sante " EOOD	Sofia city	HVP craft production	<a href="http://goodhealth.com">good health com</a>
4	Bake Studio Bakery _	Sofia city	gluten-free products	<a href="http://bioferma.org">bioferma . org</a>

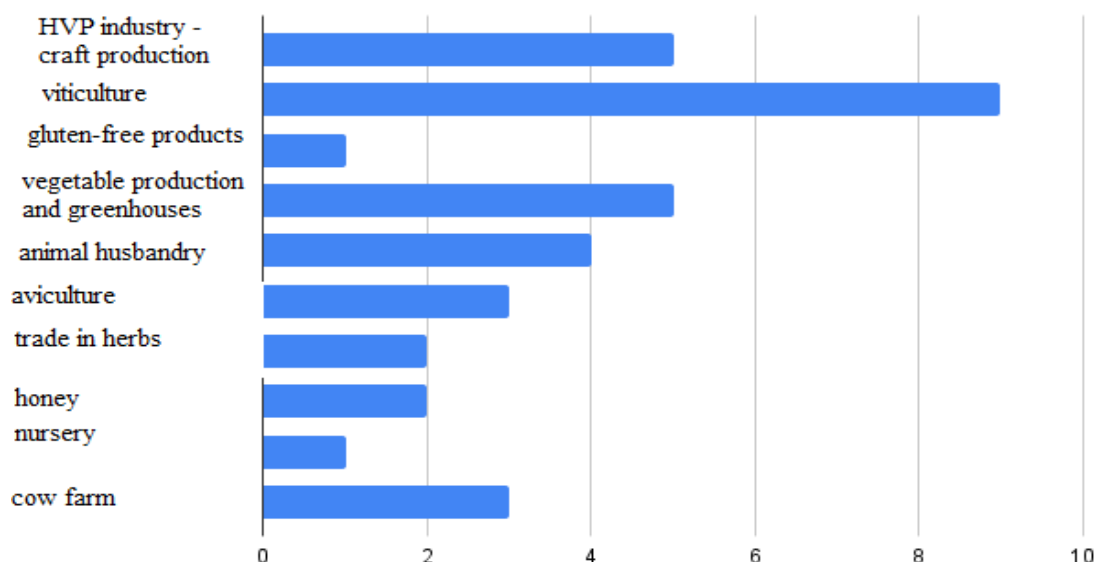
5	ZP Kiril Antov	Sovoliano village, region Kyustendil	viticulture and winemaking	<a href="http://cherries.bg">cherries . bg</a>
6	Theta farm rumah "	village of Gorna Breznitsa, municipality Kresna , region Blagoevgrad	vegetable production and greenhouses	<a href="http://bioferma.org">bioferma . org</a>
7	Winery "Melnishki Pyramids"	Levunovo village, commune. Sandanski	viticulture and winemaking	<a href="http://bioferma.org">bioferma . org</a>
8	" Dalvita " EOOD	Sofia, Agricultural market	HVP craft production	<a href="http://bioferma.org">bioferma . org</a>
9	ZP Spas Asaliyski	Parvomai village, Petrich town	vegetable production and greenhouses	<a href="http://bioferma.org">bioferma . org</a>
10	ZP Mariana Karimova	Krajnitsi village, commune. Hole	vegetable production and greenhouses	<a href="http://bioferma.org">bioferma . org</a>
11	ZP Iwaylo Gabrovski	the town of Svishtov	viticulture and winemaking	<a href="http://izbagabrovski.com">izbagabrovski . com</a>
12	ZP Petar Vitanov	Burzia village , total Berkovitsa	animal husbandry	<a href="http://bioferma.org">bioferma . org</a>
13	Vine and vegetable farm "Bozhi Daru "	Yambol city	viticulture and winemaking	<a href="http://bioferma.org">bioferma . org</a>
14	ZP Slavka Tochkova	Parvomai village, Petrich town	vegetable production and greenhouses	<a href="http://bioferma.org">bioferma . org</a>
15	ZP Petar Petrov	Bosilkovtsi village, commune. Byala , region ruse	vegetable production and greenhouses	<a href="http://bioferma.org">bioferma . org</a>
16	Dairy "Ruchenitsa"	Kostelevo village, commune. Vratsa	animal husbandry	<a href="http://bioferma.org">bioferma . org</a>
17	" Orion " Ltd	village of Zitnitsa, municipality Kaloyanovo , region Plovdiv	HVP craft production	<a href="http://bioferma.org">bioferma . org</a>
18	Wild Farm	Madjarovo town	animal husbandry	<a href="http://divaferma.com">divaferma . com</a>
19	ZP Mladen Kuzmanov	Tsarichina village, commune. Kostinbrod	poultry farming	<a href="http://bioferma.org">bioferma . org</a>
20	ZP Kaloyan Genchev	Zhelezmitsa village	poultry farming	<a href="http://bioferma.org">bioferma . org</a>
21	Bakery "Bread and Health"	Sofia city	HVP craft production	<a href="http://bioferma.org">bioferma . org</a>
22	Stefieli EOOD	Lyaski village , commune. Blagoevgrad	production and trade of herbs	<a href="http://stefielihood.wordpress.com">stefielihood . WordPress . com</a>
23	Bee products "Gift"	Sarnevo village , region Stara Zagora	bee products and honey	<a href="http://med-dar.com">med-dar . com</a>
24	Garden center Velichkovi	Kalekovets village , region Plovdiv	nursery (flowers and vegetables)	<a href="http://bioferma.org">bioferma . org</a>
25	Biotikva EOOD	Kubratovo village , region Sofia	viticulture and winemaking	<a href="http://bioferma.org">bioferma . org</a>
26	Bulgarian Tea Company	Sofia city	production and trade of herbs	<a href="http://bteaco.com">bteaco . com</a>
27	Farm "Under the Balkan"	of Vasil Levski, region Karlovo	cow farm	<a href="http://podbalkanafarm.all.bg">podbalkanafarm . all . bg</a>
28	Chemernik Farm _	Bov village, commune. Svoqe, reg . Vratsa	cow farm	<a href="http://chemernik.com">chemernik . com</a>
29	Misto Ltd	Isperihovo village, commune. Bratsigovo , region Pazardzhik	viticulture and winemaking	<a href="http://bioferma.org">bioferma . org</a>
30	Yulia Stoyanova Farm	Gintsi village, commune. Godech, Northwestern Bulgaria	animal husbandry	<a href="http://bioferma.org">bioferma . org</a>
31	Ivan Ivanov Farm	Zhelezna village , region Montana	poultry farming	<a href="http://bioferma.org">bioferma . org</a>

32	"Albena Simeonova 1" EOOD	Lyubenovo village, commune. Nikopol	viticulture and winemaking	<a href="http://bioferma.org">bioferma.org</a>
33	"Bio Nuts Niki" EOOD	Slavyanovo, Plevensko	viticulture and winemaking	<a href="http://bioferma.org">bioferma.org</a>
34	Biopchelin EOOD	Kalofer town	bee products and honey	<a href="http://bioferma.org">bioferma.org</a>
35	Cow farm in the village of Nefela Vrachansko	Nefela village, region Vratsa	cow farm	<a href="http://bioferma.org">bioferma.org</a>

Source: Own research

Participation in virtual agricultural markets occurs at several levels: registration of an online store for direct sales, participation in electronic forums of agricultural exchanges, own sites for advertising activity, marketing strategies for developing online activity, posting ads on platforms and sites, participation in groups and

social networks and others. The presented table provides a part of the companies involved, in addition to physical sales, and online trading of agrarian products. On **Figure 1**, we show what share is occupied by the type of production that is offered on the virtual market:



**Figure 1.** Production Types

Source: Own research

From the extracted statistics on the degree of use of computers and digital technologies in the agrarian sphere, it is clear that the largest share of goods offered online is occupied by viticulture and wine production, followed by artisanal food production. Vegetable production and cow farms are right after them. Other industries in our sample have a smaller share: production of herbs, honey, nurseries and gluten-free products. The offer of the production in the virtual market is carried out through mass communications, which are traditional and in recent years have gained exceptional speed and reap great success among producers, since their production has the opportunity to be sold in the shortest possible

time and there is no danger of stagnation. For the last 10 years, there has been a significant improvement in the access of Bulgarian households to the Internet in general and in areas with different degrees of population density (**Figure 2**) (7). It can be assumed that the general trends for the country also apply to rural households and to the households of agricultural producers, which means that the use of the Internet is progressively increasing in the agrarian sphere as well. In Bulgaria, several regions stand out, which are progressively active in the e-commerce of agricultural goods. **Figure 2** shows the proportion of farmers and farms that sell online

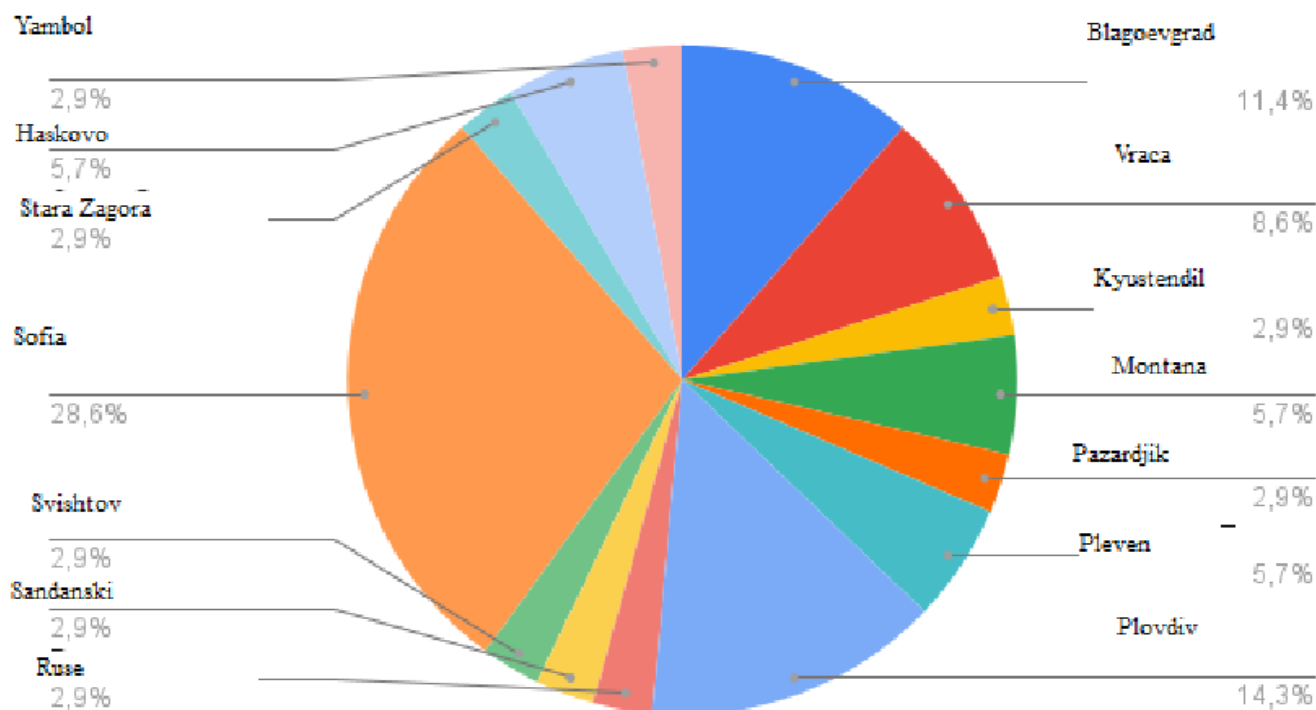


Figure 2. Number of districts

Source: Agriculture Fund

On **Figure 2** we observe the representation of agricultural producers and farms by district (8). What they have in common is that they actively participate in the virtual agricultural markets and part of the production they realize happens thanks to the use of the Internet and modern technologies. In Bulgaria, agrarian markets have acquired a wider spectrum of continuity in recent years and are becoming more and more popular and widely available to the end consumer. The largest share of producers offer their products online from Sofia Region, followed by Plovdiv Region, Blagoevgrad Region, Vratsa Region. The rest of the areas in percentage ratio are further behind in the virtual markets, but have development tendencies in a further stage.

## RESULTS

In the researches and studies made, a trend towards the development of virtual markets is reported. Determining these positive results are the analyzes of the agricultural goods market in the last few years and the various circumstances that determine the conditions for the sale of the goods. The emerging pandemic and the impossibility of selling in physical markets also determines the creation, development and acceptance of the virtual market as an invariable part of the trade chain. In Bulgaria, the virtual

market with agrarian goods is actively developing, the best being developed in Sofia, Plovdiv and Blagoevgrad, and the products of viticulture, craft production and vegetable production are the most sought after. Supply chains and the relationship with the customer are essential for the timely delivery of goods as well as the final price of the output. The positive thing for producers is that their goods will be consumed in the shortest possible time, they will quickly and easily reach a larger number of consumers, in a short time they can reach any point in Bulgaria, they have a feedback relationship with the client and end user and can hear feedback on their production.

## CONCLUSION

Agriculture is a major and key branch of the Bulgarian economy and in recent years its development is mainly related to scientific and technical progress and new technologies. Against the background of economic development in the country, farmers are faced with various problems related to global political-economic crises and increasingly acute climate changes, but a solution that can lead to improving the way consumers, producers and suppliers interact is the creation and development of virtual markets. They present challenges in terms of their regulation and the

need to steer them towards fairer and more sustainable outcomes for both food producers and consumers. The possibility of a more adapted public influence on the agrarian market is precisely in the qualification of the farmers and their aspiration to modernize and manage a virtual market. From the research done, we can conclude that in situations such as pandemics, closure of physical markets and other climate changes, virtual markets are a convenient and practical way to sell agricultural produce and are the future in the modern world. Convenience and results come almost immediately after starting this type of market.

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