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ANALYSIS OF THE COMPETITIVENESS OF THE VEGETABLE SECTOR OF THE REPUBLIC OF MOLDOVA

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Abstract

This paper presents a general overview and analysis of the Moldovan vegetable sector. The purpose of the article is to obtain a comprehensive picture of the Moldovan vegetable sector`s value chain. The results of the paper are based on the primary and secondary information collected from different data sources. The primary tool for collecting the information was the individualized interview with different categories of participants on the Moldovan vegetable market, as well as the questionnaires made on a sample of 65 consumers. Thus, 65 consumers were questioned both in supermarket chains and in agricultural markets to identify their consumer preferences. Discussions were also held and 10 persons responsible for procurement from commercial units have been interviewed in order to analyze the model for integrating distribution units into the value chain in the vegetable sector. Conclusions on the competitiveness of the sector allow us to note that most of the analyzed vegetables sold on the market are produced by agricultural enterprises and peasant farms with areas over 10 ha and the access of domestic vegetable producers to the supermarket market is affected by a series of problems.

Key words: *vegetable sector, agricultural producers, consumption, value chain.*

INTRODUCTION

Vegetable production, including the categories of analyzed vegetables (carrots, potatoes, onions, table beet and pumpkin), is a seasonal one, largely dependent on natural factors and markets.
According to data from 2015, the area occupied by vegetables and potatoes represents 3.8% of the total area sown in the Republic of Moldova [3]. The potato and vegetable sector is characterized by a poorly developed organizational structure of the vegetable producers as well as the insufficiency of the institutionalized cooperation culture on the product, in order to improve access to the input and product market and to the post-harvest infrastructure.
In the sectoral field, compared to fruit growers, there is a lower dynamic of professional integration of producers, which is based on a greater flexibility in changing the product portfolio (in case of the lack of investment in post-harvest infrastructure), the specificity of the marketing of production mainly focused on the local market, insufficient awareness of the importance of establishing group marketing strategies in contrast to the use of momentary marketing opportunities.
At the same time, the trade balance of the vegetable sector is negative for the period 2011-2015. The value of the vegetable products exported in 2011 amounted to approximately 25 mil. USD, while in 2015 this value diminished to about 9 mil. USD. The same decreasing trend was seen in imported vegetables, from 38 mil. USD in 2011 to 25.5 mil. USD in 2015 [6]. Several factors have conditioned such a trend, the main being restriction of Moldovan products access to the Russian market by embargo and introduction of export taxes.
Therefore, the paper aims to present a comprehensive analysis of the Moldovan vegetable sector`s value chain.

MATERIALS AND METHODS

The Results of the carried out research are based on the primary and secondary information collected from different data

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sources. Therefore, documentation represents the main research method used. Individualized interviews with different categories of participants on the Moldovan vegetable market, as well as the questionnaires made on a sample of 65 consumers represent the primary tool for collecting the information. Thus, 65 consumers have been questioned both in supermarket chains and in agricultural markets to identify their consumer preferences. Discussions were also held and 10 persons responsible for procurement from commercial units have been interviewed in order to analyze the model for integrating distribution units into the value chain in the vegetable sector.

RESULTS AND DISCUSSIONS

Market structure. According to the research on consumer preferences, for all categories of analyzed vegetables, except for pumpkins, consumers tend to buy 34-38% of them from supermarket chains. Among the main supermarket chains can be mentioned: Fourchette, Nr. 1, Fidesco, Metro Cash & Carry, IMC Market, Linella and Green Hills, etc. [1].

In most of cases, supermarket chains have agreements with distribution companies that are responsible for supplying supermarket chains with vegetable products. On the other hand, depending on the supply chain, supermarkets buy vegetables directly from wholesale markets.

In order to have a clear vision on the procurement process in the most competitive supermarkets, the purchasing managers of the most important supermarkets were interviewed and questioned. As a result of this exercise we can draw the following points:

-Most of the marketed vegetables are of local origin. However, some products are imported (e.g. Fidesco - all vegetable products are local and only 10% of carrots are imported, referring to cleaned carrots; in the case of Fourchette, the ratio of imported carrots to local ones is about 60 to 40, and the ratio of other products is 90 to 10, with the exception of pumpkin, which are totally of local origin; Linella also is oriented to vegetables of local origin, however, about 60% of potatoes, 20% of onions, 30% of pumpkins are of import origin, etc.); at the same time it is noted the lack of such products as garlic, which in most of cases it is imported in a ratio of 90-95%.

-Supermarket networks purchase vegetables both directly from the local producers and through intermediaries. The results of the questionnaires present us a ratio of 55 to 45 in the favour of contracts with intermediaries. The main findings show that the preference of supermarkets to negotiate with intermediaries arise from the low technical capacities of producers as well as their reduced quantities of products. Also, the payment method (cash money) that producers require represents another factor for the supermarkets' preference to intermediaries.

Price formation and developments. The usual flow of fresh vegetables consists of: producer – wholesaler / intermediary – retailer -consumer.

A wholesaler / intermediary will usually get an add-on of 0.5-1.0 MDL / kg in order to make a decent profit, regardless of the overall price. When there is a product deficiency and the product is sold for a higher price, his / her profit also increases. The profit made by the intermediary (wholesaler) varies depending on the year and market conditions.

Vegetable prices have a year-by-year dynamics determined by the production cycle. This is characterized by a decrease in the prices during the harvest period, especially of field production, and their increase during the harvesting of the products in the period of extension of the season by delivery of crops grown in protected land, and delivery on the market products held for storage.

Domestic vegetables are marketed without packaging, or in bags. For lightly perishable vegetables boxes are used, reused from other products or wooden cases. Potatoes, onions, carrots and red beets are packed exclusively in bags, from 5 kg and more. Imported products, mainly from Poland and Germany, which are not only sorted but also washed, are packed in individual packages of 1-3 kg, as a rule.

The sorted and washed products (potato and carrot) are sold, as a rule, with a minimum price of 30-40% higher than other similar products.

Demand of vegetables and consumption preferences. Potato, onion, carrot, beet and pumpkin vegetables are part of the basic food products, therefore their consumption is relatively stable and inelastic depending on the price [5].

Analysing the volumes of vegetables consumption for the years 2011-2015, there can be observed a continuous decrease with some more pronounced accents in 2012 when the decline in production and consumption volume was caused by unfavourable climatic conditions. Although in the years 2013-2014 the situation was little restored, in 2015, which in fact was a relatively good year in terms of agriculture, the level of production and consumption decreased significantly.

Table 1. Total consumption of selected vegetables, 2011-2015, thousands tons

	2011	2012	2013	2014	2015
Potato	341	192	264	286	184
Onion	60	41	54	60	39
Carrot	24	21	25	26	21
Pumpkin	54	33	46	59	48

Sources: [2, 3]

Based on the average value of the consumption of vegetables calculated over the last five years and the average number of 3.5 mil. people in the Republic of Moldova for the same period, the consumption volume of these vegetables per capita was calculated. Thus, we can see a potato consumption of about 71 kg per year per capita. This indicator is lower than potato consumption in Ukraine (140 kg), Russia (111 kg), Belarus (188 kg) or Romania (98 kg), but is comparable to many European countries such as Austria and Hungary (61 kg), the Czech Republic and Finland (67kg) [4]. Onion and pumpkin consumption is significantly lower compared to potato and reaches about 14 kg per capita, and carrot consumption is about 7 kg per capita per year.

Consumer psychology. Consumer psychology was identified as a result of the questioning of a group of 65 people. The average age of interviewees is about 42 years. Of the total number of interviewees, 72% are men and 28% women. Most respondents (56%) have higher education, 34% have specialized secondary education and 10% secondary education. Most interviewees are employed, of which 42% have a stable service, and 18% are temporary employed.

From the analysis of the structure of the families of the interviewed persons it can be seen that the size of these families is predominantly made of two, three or four persons. Only 8% of respondents mentioned that their family consists of only one person, and another 8% mentioned that their families are made up of more than five members.

Final consumers of vegetables usually have monthly incomes between 1,100 and 6,000 lei, including incomes between 2,000 and 4,000 lei - 36% of the respondents, with incomes of 1,100 and 2,000 MDL - 28 respondents and with incomes of 4,000-6,000 MDL - 22% of interviewees. Only 12% of respondents mentioned that they have monthly incomes of over 6,000 MDL, and 2% have incomes lower than 1,100 MDL.

The frequency of purchasing vegetables for domestic consumption denotes certain trends for all types of analyzed vegetables. Thus, most respondents purchase vegetables once a week (19% of respondents), once every two weeks (13% of respondents), or once a month (17% of respondents).

At the same time, each type of vegetables also has certain peculiarities regarding the frequency of shopping. Carrots, potatoes and onions are bought in most cases once a week. The frequency of buying table beets is smaller, being bought once every two weeks or once a month. In the case of pumpkins, such trends have not been identified, with purchases being made predominantly during the season, or in many cases it was mentioned that these vegetables are collected from their own gardens or other non-commercial sources.

There are also peculiarities in terms of the quantity of purchased vegetables. Most respondents prefer to buy relatively small quantities of vegetables such as 1 kg, 2 kg or 3 kg. In the case of potatoes, quantities of more than 50kg are often purchased and onions are often purchased in the amount of 20kg.

The seasonal factor has a certain impact on the consumption pattern of vegetables, but it is not decisive in the case of pumpkins and table beet that are fairly stable in sales throughout the year. In the case of potatoes, onions and to a lesser extent carrots, there is an increase in sales volumes in October, which can be explained by purchases in the preparations for the winter season.

There are also some patterns regarding the places where vegetables are purchased. Thus, no respondent reported purchasing vegetables directly from the producer or from the street sellers. About half of the respondents mentioned the "Neighbourhood Agro-Food Markets", followed by "Neighbourhood Supermarkets" or "Other Supermarkets" as the places to buy domestically-grown vegetables.

The overwhelming majority of those interviewed prefer vegetables of local origin. These preferences are motivated by the fact that "They are tastier" - 77% of the respondents, "They are cheaper" - 30% of the respondents, from the patriotic feelings - 24% of the respondents. Among other arguments for the purchase of local vegetables, it has been mentioned that they are cleaner from the ecological point of view compared to the imported ones. It is significant the fact that no respondent mentioned among the advantages of local vegetables that they are "cleaner" or that "they are packed more comfortably" and only 2% of the respondents mentioned that the local vegetables "have a more attractive exterior appearance". From here it can be concluded that the local buyer prefers local vegetables primarily because of taste, price and patriotism.

The main places of purchase of consumer goods. As a rule, retail networks acquire about half of the vegetables marketed through contracts concluded directly with local producers and the other half through intermediaries. The fact that only half of the vegetables are purchased on the basis of a contract concluded directly with local producers is explained by the fact that local producers do not have the necessary logistics, such as warehouses and refrigerators, and as a rule do not have sorting and packaging equipment.

A critical issue is the lack of continuity of quality, the products being not standardized and properly packaged with the requirements of distribution networks. As a rule, vegetable producers do not have the opportunity to deliver vegetables throughout the year, preferring to sell products that can be easily purchased from wholesale markets. Another problem is that domestic producers prefer being paid with cash. In many cases, such as table beets, it has been mentioned that local production cannot assure the necessary volumes of deliveries.

At the same time, in the opinion of the representatives of the retail networks, there are certain advantages of purchasing vegetables from the local producers, namely that they are closer to the point of sale, are always fresh, have an external aspect and taste better compared to imported ones. Another advantage is flexibility in negotiating purchase prices with the local vegetable producers.

Production and cultivated areas. The largest areas of potatoes, vegetables and pumpkins in agricultural enterprises and peasant households with a surface area of more than 10 ha are located in the North region, with a share of about 69% of the total area. The share of households in the Centre region was about 22 percent and those in the South region of 9 percent of the total area occupied by potatoes, vegetables and edible pumpkins.

Most of the vegetables grown in the Republic of Moldova are open field. The proportion of vegetables grown in greenhouses is not significant. The area occupied by vegetables and potatoes in the Republic of Moldova denotes a stable trend of reduction. Thus, between 2006 and 2014, the area occupied by vegetables decreased from 42.4 thousand ha to 31.9 thousand ha or by about 25% and the areas occupied by potatoes decreased during the same period from 34.4 thousand ha to 22.8 thousand ha or by about 34%.

Taking into account the fact that agricultural enterprises and peasant farms with a surface area of more than 10 ha produce predominantly vegetables for trade, and auxiliary households predominantly for their own subsistence consumption, the focus of the analysis is on agricultural enterprises and peasant farms with the larger surface area sea of 10 ha.

The largest reductions in the areas occupied by potatoes, vegetables and pumpkins in agricultural enterprises and peasant farms with a surface area of more than 10 ha were registered in the Centre region, where they decreased in the period 2011-2015 by about 51%. In the North region these areas decreased by about 40% and in the South region by about 35%.

(a)Potato: The potato sown area has decreased from 29.2 thousand hectares in 2011 to 22.1 thousand hectares in 2015 or by about 25%. At the level of agricultural enterprises and peasant farms with an area of more than 10 ha, the largest areas of potatoes in the Republic of Moldova are found in the North region, where about 86% of the potato areas are concentrated, according to data from 2015. About 10% of the total potato areas in 2015 were in the Centre region and about 3% in the South. Global potato production declined more than half in 2011-2015, from 350.8 thousand tonnes in 2011 to 158.2 thousand tonnes in 2015.

(b)Onions: The onion-sown area decreased from 6.5 thousand hectares in 2011 to 5.1 thousand hectares in 2015 or by about 22%. The largest area of onions in 2015 was registered in the North region - about 48%, followed by the Centre - about 28% and the South - about 24%. Global onion production declined from 58.3 thousand tons in 2011 to 38.1 thousand tons in 2015 or by approx. 35%.

(c)Carrot: Carrot had a more or less constant trend compared to other crops analyzed, both in terms of sown area and global production. Thus, the area planted with carrots diminished from 1.6 thousand hectares in 2011 to 1.5 thousand hectares in 2015, or only by about 8%. The largest carrot areas are in the Centre region - 43%, followed by the North - 33% and South - 24% of total carrot areas in 2015. Global carrot production has shrunk from 14.3 thousand tons in 2011 to 13.8 thousand tons in 2015 or by about 3%, maintaining a quite constant level.

d)Table beet: The sown area of table beet has registered a slight decrease from 1.2 thousand hectares in 2011 to 1.1 thousand hectares in 2015 or about 19%. As in the case of carrot, the largest area of table beet is in the Centre region - 46%, followed by North - 45% and South - 9% of the total area of table beet in 2015. Despite a modest reduction in sown areas, global beet production declined from 13.2 thousand tonnes in 2011 to 10.1 thousand tonnes in 2015 or by about 23%.

e)Pumpkin: The area planted with pumpkin increased from 2.4 thousand hectares in 2011 to 3.2 thousand hectares in 2015 or by about 33%. Although the area has been increased, global production has shrunk from 33.8 thousand tonnes in 2011 to 31.7 thousand tonnes in 2015 or by as much as 6%. In the middle of 2011-2015, the largest areas were in the Centre region - 36%, followed by Gagauzia ATU and the Northern region with 21% and the South region - 19% of the total area during the period 2011-2015.

Processing industry. The vegetable processing sector of the Republic of Moldova includes both small-scale processing (households, farmers), which are designated for own consumption or commercialization through the nearby agricultural markets; intermediate processing which is carried out either on the basis of the use of its own production or on the basis of contractual relations of production acquired from agricultural producers and is characterized by a relatively narrow specialization over a defined range of products; and large-scale processing, characterized by a high degree of complexity of the raw material supply system.

CONCLUSIONS

The activity of the vegetable production sector is affected to a large extent by the specific climate conditions of the Republic of Moldova;

The vegetable sector is dispersed and fragmented, which does not contribute to the concentration of commercial quantities, homogeneous according to the variety criteria, quality, etc. The largest quantities of vegetables are produced in households and peasant farms. The specialization of agricultural producers only in the production of vegetables from the subgroup of analyzed vegetables is a very rare phenomenon for the agricultural sector of the Republic of Moldova.

From 2006 to 2014, the area occupied by vegetables decreased from 42.4 thousand ha to 31.9 thousand ha or by about 25% and the areas occupied by potatoes decreased during the same period from 34.4 thousand ha up to 22.8 thousand ha or by about 34%. Respectively, there are also significant reductions in production volumes.

Most of the vegetables in the nominated group that are marketed on the market are produced by agricultural enterprises and peasant farms with areas over 10 ha. Auxiliary households and peasant farms of less than 10 hectares, although producing most of these vegetables are using them predominantly for non-commercial use.

Most of consumers prefer home-grown vegetables. These preferences are motivated by the appreciation of the taste qualities, the price factor and patriotic reasons.

Recommendations:

-Local production has to meet the quality, packaging and labelling requirements of the end-users and intermediaries. It is absolutely necessary that the price-quality ratio be in favour of local vegetable production;

-Stimulating the implementation of advanced technologies in the field of vegetable production in order to extend the production season;

-Supporting the implementation of irrigation systems for the production of vegetables;

-Support the implementation of modern technologies for post-harvesting, storage and packaging operations;

-Promotion of public-private partnerships for the creation of regional centres for information and wholesale trade with vegetable products.

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