

Estimation of Active Roles of Agricultural Economic Agents in the Food Distribution

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ABSTRACT: *This study reveals the content and essence of the key roles in the food distribution played by the leading economic agents on the food and commodity markets in Ukraine. The key properties of distribution systems on the explored markets are examined. The major development problems of these markets at the moment are summarized and presented. Based on the analysis of the relevant scientific literature, common ways to solve such problems are identified. According to the official statistics, the dynamics of goods produced on the discussed markets are presented. Structural analysis of the infrastructure of food and commodity markets was carried out. Based on the results, the functional load on infrastructure elements was assigned. The calculation of the total trade volume of the domestic food and commodity markets, as well as the certain types of goods self-sufficiency levels in Ukraine was performed. The structures of distribution systems of the studied markets are presented, and conclusions about the role of certain economic agents in this system are drawn.*

KEYWORDS: *agriculture, food market, commodity market, distribution system, market infrastructure*

I. Introduction

Providing the effective running of the food and agricultural markets is a prerequisite for a successful solution to the food issues in a country. The current conditions of the competitive relations development in Ukraine require the application of fundamentally new integrated approaches to the national economy structural improvement. Such approaches are expected to provide solutions to market infrastructure problems, the relations between infrastructure and material production agents, these relations proportional development, and the creation of conditions for building and using efficient systems of products and services distribution.

The imperfection of production and commercial relations of market participants, low level of consumers` solvency, enterprises marketing systems` disadvantages, as well as the consequences of the general crisis phenomena in the economy cause a rather slow pace of the market infrastructure development. This also applies to some extent to the domestic markets for food and agricultural raw materials. At the same time, these markets can be considered as an exception, as they are among the oldest and most developed domestic markets. However, the disparity of interests that exist on them and the existing imperfection of certain relationships between its participants make it necessary to work out ways to harmonize the processes of product distribution there and to shape the results of its economic agents.

The effective commodity market activities in a state provide prerequisites for the intensive development of all sectors of the economy. This is caused by an overall market mechanism, which allows consumers to get products they need in needed quantities and within the specified time frame, and suppliers to rhythmically sell products and therefore carry out their tasks efficiently. Analyzing the state of development and the efficiency of certain markets in a state, it is rational to differentiate the market for goods that are critical for economic security from the market for other goods. This is due to the regulatory needs that are aimed at solving possible economic security issues of a state. At the same time, the main components of a state`s economic

security are energy and food. And if the energy markets are generally well-structured and regulated in Ukraine, the situation on the food and commodity markets, despite some positive trends, leaves a big room for improvement, especially if to talk about the profit and losses apportionment within a marketing channel.

II. Theoretical framework

Ensuring the effective work of food producers and bringing food products closer to the final consumer is impossible without building and properly using efficient and rational, from the standpoint of all market participants, distribution systems. Generally, the food market is classified as a consumer market. [1] Therefore, it is characterized by features inherent in most markets, the objects of which are consumer goods. This equally applies to distribution systems used on the market. According to L. Katan [2] and V. Zhmailov [3], the functioning of the vast majority of distribution systems on the food market is identified by the following properties:

- distribution of goods on the market is carried out mainly through intermediary networks as the shipments that are the objects of a specific trade are crushed and move within the distribution channel;
- commodity producers encourage intermediaries to cooperate by implementing a policy of significant price discounts in order to ensure the production rhythm and increase the output volume. As a result, the share of producers' profit decreases, but the ultimate profit amounts increase;
- a certain part of commodity producers invests in their own product distribution systems in order to maximize profits selling products at retail to end consumers. At the same time, the level of costs associated with the sales increases, and the effectiveness of this approach in comparison with the involvement of intermediaries is determined solely by the specific operating conditions of a particular manufacturer;
- the food market, alike any consumer market, is represented by a longer distribution channel in comparison with the markets for raw materials, industrial goods, etc.;
- the infrastructure component of the domestic distribution system on the food market is characterized by maturity and predictability compared to other markets, but its current condition and pace of development lag far behind from the average European level;

These properties of the food market and the results of previous research [4, 5] allow us to identify and structure its key problems. In our opinion, such problems include:

1. The actual absence of integration expertise between producers and intermediaries in the food market.
2. The ingrained market framework that causes the disparity of interests of commodity producers and intermediaries.
3. Insufficient development of the food market infrastructure component.
4. Oligopsony attributed to the commodity market inhibits the harmonized activity of all kinds of participants.
5. The position of a food market economic agent is determined by the terms of a single trade and it is difficult to be changed otherwise.
6. Imperfect state regulation of the food market, in which the use of non-tariff methods of influence prevails.

Solutions to these problems are possible only if certain measures are applied to regulate the market, namely [6, 7]:

1. Creation of equal conditions for all participants on both food and commodity markets;
2. The market monitoring systems implementation with an eye to back up an effective activity of all market participants;
3. Application of tariff and non-tariff regulatory measures to harmonize the market participants' interests;
4. The legal framework improvement aimed at regulating the food market;
5. Assistance in phasing out the use of expenditure (regulatory) pricing models for food and agricultural products;
6. Creating conditions and facilitating the flow of investments from intermediaries to producers and vice versa in order to deepen integration ties between economic agents;
7. Assistance in the further development of food market infrastructure entities.

III. Method

Today, in order to guarantee the effective activity of commodity producers it is necessary to provide them with a scientific basis for the innovative technical and technological production solutions, and for the development of rational and effective sales procedures. At the same time, a comprehensive review of the production and commercial activities of entities in the context of resource supply is important, as well as trends in the development of the commodities and food domestic markets infrastructure. From this perspective, we assume that the functioning of food markets, regardless of the type of a participant, is characterized by certain common features and characteristics. They include the use of a product distribution system, type of competition, supply and demand dynamics, etc. When addressing the functioning of the food market we pay special attention to the formation, operation, and use of distribution systems, because they ensure the flow of all market processes and, thus, determine the development level of a market. When studying the functional value of market infrastructure components, we focused on detailing and structuring market infrastructure elements, explaining their systemic relationships and mechanisms of influence on the activity of producers and consumers, as well as on earlier suggested developing mechanisms for the rational construction of the agricultural and food markets infrastructure.

During our research, based on certain scientific findings, we identify the following core functions of the commodity market infrastructure: (1) distributive, i.e. distribution of commodities and products, financial and human resources among the participants on market; (2) logistical, i.e. accumulation, formation of shipments and their physical movement between economic agents; (3) communicative, i.e. provision of the effective dissemination of information about the supply and demand fluctuations, as well as the availability of prices information; (4) regulatory, i.e. restoring and maintaining a balance of supply and demand on the markets. As elements of market infrastructure, we consider institutions, economic agents and other entities that are involved in performing one or more aforementioned functions of the commodity market infrastructure. Groups of elements formed by the functional load are meant to be the market infrastructure components. As the research represents, the components of agricultural and food markets infrastructure are the physical (marketing and logistics) component, the financial and credit component, and the communicative component.

When analyzing the operation of distribution systems, agricultural enterprises, food and processing enterprises, as well as farms, in our opinion, should be referred to the production area, and all other market participants, which do not use products for the direct consumption, to the trading area. That is, the last category shapes the marketing infrastructure of a commodity market. In turn under a distribution system on a market, we imply a group of economic agents, united by a mutual goal of bringing products from a producer to a consumer, which during their activity form distribution channels on this market. At the same time, a producer acts as a user of a distribution system. And from his point of view a distribution system represents a combination of channels available in a specific period of time for the distribution of products of its own production. After all, a manufacturer can usually only indirectly influence entities that act as trading elements of a distribution system by encouraging them to operate together. The structure of a distribution system used by a producer depends on the results of this influence.

IV. Agro-food markets in Ukraine

The current state of development of the agro-food markets in Ukraine is considered to be fairly stable. This is evidenced by generally positive statistics on both main types of agricultural and food products gross manufacturing volume (Table 1), as well as the high investment attractiveness of the food and processing industry in general.

It should be noted that the rather favorable situation on the food markets is due to the influence of such factors as [8]:

- low food products demand elasticity level, which determines the stability of sales volumes to end consumers;
- market and consumer properties of products that are expected to rely on high standardization requirements;
- the agri-food market competition degree that tends to the perfect competition or oligopoly;
- the maturity of distribution channels that are longer on the food market than those that exist on other markets for goods and services;

- a wide range of mechanisms to provide mutual influence on the food market and related commodity markets.

Table 1. Production of main types of agricultural and food products in 2011-2018

| Product | Production volume by years, thsd. t | | | | | | | | Growth rate (2018 to 2011), % |
|------------------------------|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------------------------|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Crop production | | | | | | | | | |
| Wheat | 16454 | 15762 | 22279 | 24114 | 26532 | 26043 | 26158 | 24605 | + 49.5 |
| Barley | 8171 | 6936 | 7561 | 9046 | 8288 | 9435 | 8284 | 7349 | - 10.1 |
| Corn | 16385 | 20961 | 30949 | 28496 | 23327 | 28074 | 24668 | 35801 | + 118.4 |
| Sunflowers | 8671 | 8387 | 11051 | 10134 | 11181 | 13627 | 12236 | 14165 | + 63.3 |
| Sugar beats | 18740 | 18439 | 10789 | 15734 | 10331 | 14011 | 14882 | 13968 | - 25.5 |
| Potatoes | 24248 | 23250 | 22259 | 23693 | 20839 | 21750 | 22208 | 22504 | - 1.8 |
| Vegetables | 9833 | 10017 | 9873 | 9638 | 9214 | 9415 | 9286 | 9440 | - 4 |
| Livestock production | | | | | | | | | |
| Beef | 414 | 388 | 427,8 | 412 | 384 | 375 | 363 | 358 | + 13.6 |
| Pork | 686 | 700 | 748 | 742 | 759 | 747 | 735 | 702 | + 2.3 |
| Poltry | 991 | 1074 | 1168 | 1164 | 1143 | 1166 | 1184 | 1258 | + 26.9 |
| Milk | 11280 | 11377 | 11488 | 11132 | 10615 | 10381 | 10280 | 10064 | - 10.8 |
| Eggs, mln. | 18298 | 19110 | 19614 | 19587 | 16782 | 15100 | 15505 | 16132 | - 11.9 |
| Food production | | | | | | | | | |
| Sugar | 2300 | 2100 | 1300 | 2100 | 1500 | 2000 | 2000 | 1800 | - 21.8 |
| Flour | 2400 | 2400 | 2400 | 2200 | 2100 | 2000 | 2000 | 1700 | - 29.2 |
| Pasta | 116 | 105 | 100 | 101 | 87 | 96 | 88 | 80 | - 31.1 |
| Sausages | 286 | 288 | 287 | 260 | 229 | 233 | 247 | 248 | - 13.3 |
| Processed milk products | 845 | 909 | 956 | 930 | 858 | 854 | 833 | 831 | - 1.7 |
| Cheese | 255 | 248 | 249 | 205 | 192 | 183 | 189 | 198 | - 32.4 |
| Sunflower seed oil | 3200 | 3800 | 3400 | 4400 | 3700 | 4400 | 5400 | 5100 | + 59.3 |
| Fats and oils products | 183 | 151 | 139 | 137 | 50 | 52 | 88 | 85 | - 53.6 |
| Margarine and spreads | 175 | 178 | 144 | 133 | 142 | 135 | 141 | 137 | - 21.8 |
| Bread and bakery prod. | 1800 | 1700 | 1600 | 1400 | 1200 | 1200 | 1100 | 1000 | - 44.5 |
| Confectionary | 461 | 454 | 415 | 329 | 304 | 284 | 284 | 281 | - 39.1 |
| Total food production | 12021 | 12333 | 10990 | 12195 | 10362 | 11437 | 12370 | 11460 | - 4.7 |

Source: calculated by authors based on [9, 10, 11]

According to official statistics, the indicators of gross production in agricultural and processing industries show stable dynamics: + 43% and - 2% crop and livestock production at constant prices of 2010 respectively, and - 4.7 % in physical terms in the processing industry. However, a more detailed data analysis shows that there is a certain industry asymmetry in the development of processing and food branches. In particular, the production of sunflower oil has gained the greatest development in recent years. At the same time, the volume of grain processing into flour, as well as the production of pasta and bread, has undergone a tangible decline, as well as other types of products in this industry. The associated research suggests that this situation in the food industry is a consequence of the growth in the volume of food imports to Ukraine [12]. This might be caused by the relatively low quality of these types of domestic products compared to imported ones, imperfect use of the industry potential, and the situation in the commodity market, whose participants are increasingly focused on exports.

V. Commodity and food markets infrastructure

The infrastructure of food and commodity markets should be considered as a system of enterprises and institutions that ensures the relationship between the structural elements of individual markets for certain products, thus, promoting the free movement of commodities and food, and providing uninterrupted supply of resources to producers and finished products to end consumers [13].

The effective functioning of agricultural producers is impossible without the rationally organized markets for agricultural raw materials and food, and therefore, first of all, without building an appropriate infrastructure for this market. The existing infrastructure of the domestic agricultural market does not meet the modern requirements of the industry, its individual elements are scattered and often function haphazardly [14]. The appearance and maintenance of these elements occurs in practice spontaneously at the expense of producers and other private enterprises that participate in the product distribution [15]. In general, the market of food and agricultural products in Ukraine is still at the basic stage of its development and needs the interests of its participants to be harmonized.

From the academic perspective, it is necessary to begin the improvement of the discussed market's infrastructure with the adaptation of theoretical and methodological foundations of its modification. First and foremost, the task is to determine the elements of the market infrastructure and their functions. In our opinion, it is appropriate to dedicate distributive, logistical, communication and regulatory functions of the market infrastructure, as well as physical, financial and credit and communicative components. Elements of the physical component should be structured into marketing and logistics components in accordance with their functional load (Table 2). Today, the process of shaping explored markets infrastructure is specified by a spontaneous nature and lack of a systematic approach, which determines the need for more active state intervention. The majority of regulations are expected to concern the establishment and development of individual elements of the infrastructure through the use of both direct and indirect regulatory influence.

Table 2. Functional load of agro-food markets` infrastructure components

| Components of market infrastructure | | Elements of market infrastructure | Functions of market infrastructure | | | |
|-------------------------------------|--------------------------|-------------------------------------|------------------------------------|------------|---------------|------------|
| | | | Distributive | Logistical | Communicative | Regulatory |
| Physical component | Marketing component | Trade and intermediary enterprises | • | • | | |
| | | Procurement enterprises | • | • | | |
| | | Commodity exchanges | • | | | • |
| | | Farmhouses | • | | | • |
| | | Retailers | • | | | |
| | | Agricultural service cooperatives | • | • | | • |
| | | Wholesale food markets | • | | • | |
| | | Exhibitions, fairs, etc. | • | | • | |
| | Logistics | Transport and freight forwarding | | • | | |
| | Storage companies | | • | | | |
| Financial and credit component | | Commercial banks | • | | | • |
| | | Credit unions | • | | | • |
| | | Agro-industrial financial groups | • | | | • |
| | | Insurance companies | • | | | • |
| Communicative component | | Mass media | | | • | |
| | | Advertising agencies | | | • | |
| | | Information and consulting services | | | • | |
| | | Advisory services | | | • | • |
| | | Research centers | | | • | |
| | Price monitoring centers | | | • | • | |

Source: formed on the basis of [16]

It should be noted that the elements of the physical component actually form the existing channels of product distribution. The passage of financial and commodity flows there is mediated by the elements of financial, credit and communication components. The current state of the infrastructure is not conducive to building harmonious commercial relations of a producer and an intermediary, often leaving the manufacturer with not enough money even for simple reproduction. A solution to this problem is possible only if a certain regulatory influence is applied by the state. Such measures are supposed to intensify the development of infrastructure elements, for example, deepening competition in the trading area. This will allow producers to freely vary distribution channels and, thus, achieve the greatest effectiveness.

VI. Agro-food markets distribution system frameworks

Food and commodity markets are known to be among the most important internal markets of the state. This is defined by their key role in guaranteeing state's food security and, consequently, its economic security. The level of self-sufficiency of Ukraine with the main types of food in 2018 showed following figures: meat products – 105 %, dairy products – 107.5 %, eggs – 123.9 %, grain – 312.2 %, potatoes – 101.5 %, vegetables and food melons – 103.4 %, fruit and berries – 91.3 %. The annual volume of trade in the domestic market of food products is about 400 billion UAH., in the domestic market of agricultural raw materials-about 214 billion UAH., the volume of consumption on the market is 525.5 billion UAH [17, 18].

The food and agricultural markets have been developing in almost identical conditions. However, due to certain circumstances caused by various kinds of economic agents, their characteristics differ slightly. Figures 1 and 2 represent the current framework of distribution channels on the domestic food and agricultural markets, which has developed during the evolution of aforesaid markets. These figures formalize the key functional characteristics of existing distribution systems on the discussed markets.

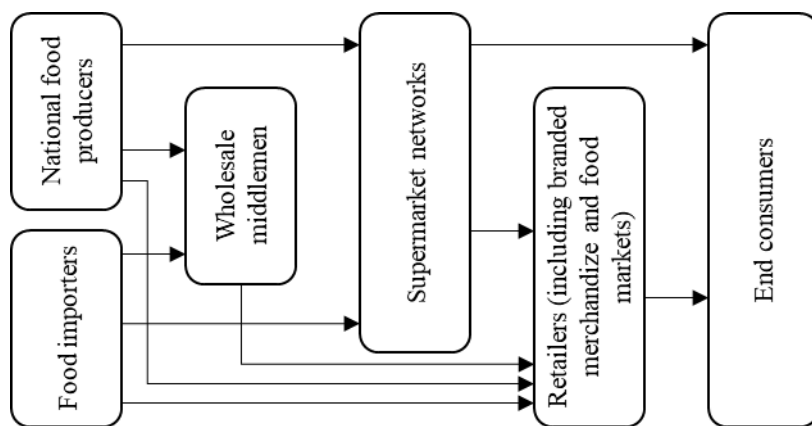


Figure 1 Framework of internal food market's distribution system

The main suppliers of agricultural and food products on the domestic market are producing companies of those products, as well as importers and farms and households. The priority of the supplier category, which refers to the sphere of production on the markets considered, is determined by the object of market activity, the volume and intensity of commercial demand for it, and the ratio between domestic production and imports. In this case, the priority of the supplier category is determined by the most common combination of distribution channels when working with a certain product on the market.

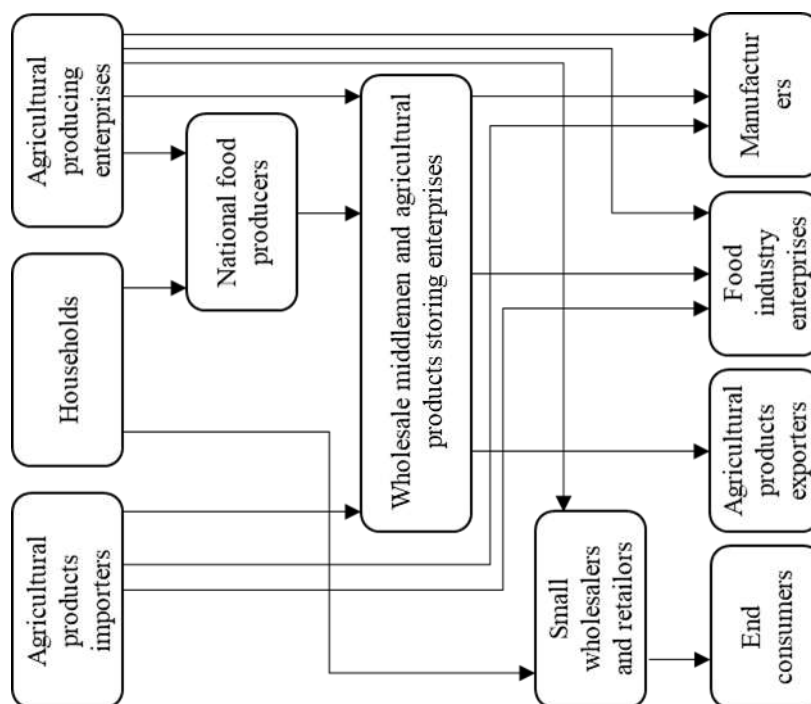


Figure 2 Framework of internal commodity market's distribution system

In particular, according to the research, it includes intermediaries at three levels on the grain market: intermediaries of the first level perform a certain list of logistics and sales services on very unfavorable terms for primary producers, typically, these market operators own the capital of the grain storage sector; the second level of participants in distribution channels are large intermediaries that serve the domestic market and perform large-scale purchases for exporters, their suppliers are the first intermediaries and quite often large producers; the third level consists of exporting enterprises, state grain reserve enterprises and large processing enterprises, their target consumer audience is either already outside the Ukrainian grain market, or on the markets of deeper grain processing products. Direct marketing is not a widespread channel for product distribution on this market, primarily because agricultural enterprises are not able to form large batches of standard grain products, which means that producers cannot compete with intermediaries even at the first level, that is, effectively change their position in the structure of the distribution channel.

On the markets of other types of crops, the importance of direct sales is increasing, especially in the market of vegetable products, sugar beets and other similar products. The fact is that both producers and processors are largely interested in effective cooperation and, despite the objective existence of a conflict of interests, they are quite effective in conducting their activities on win-win terms, basing it on direct long-term relationships.

The meat market is somewhat similar to the grain market. However, the presence of a wide layer of small trade and procurement intermediaries is due to a large number of small producers and private households that specialize in the production of livestock products. Thereby, there is an objective need to accumulate the products, even in small batches and further distribute them on the market. The dairy market is the simplest in terms of implementing market measures. The specificity of this market determines the most widespread use of the direct sales channel among all agricultural markets, because the need for a rhythmic sales of products, due to the specifics of the production and logistics process on this market, forces producers to establish certain direct connections with processors. This commodity flow is almost never served by intermediaries, and therefore the direct sales channel on the dairy market is the main one.

This situation in the use of distribution systems on the markets of agricultural products is due, in our opinion, primarily to a low degree of concentration of capital in the agricultural sector, which does not allow for a certain development of oligopolization at the producer level. Nevertheless, the concentration of capital in the sphere of trade on the agricultural market is quite high. The latter allows us to consider this market as an

oligopoly at the level of intermediaries. An additional proof of this assumption is also the fact that the objects of market activity are a fairly narrow list of products, which, typically, has a homogeneous structure and a sufficient level of standardization.

VII. Conclusion

The situation on the food market differs from the situation on the commodity market as a result of the following circumstances: first, the range of goods, that is, food is much wider than in the commodity market, and, secondly, the level of capital concentration in the food and processing industry is sufficient for significant influence on the market situation due to both marketing and non-marketing factors. In other words, during the market development, manufacturers have effectively attracted marketing tools, which allowed ensuring the dominance of domestic food on the domestic market. This is why the structure of distribution channels on the domestic food market is simpler in comparison with the agricultural market and the development of relations between production and trade is more harmonious. However, the current situation on the food market is also not favorable for producers, because the main centers of profit formation on it are wholesale and retail enterprises. At the same time, the level of integrational relations between manufacturers and marketing intermediaries, as well as the degree of overflow of trade capital into the production sector leaves a big room for improvement.

The results of the distribution system analysis on the markets of food and agricultural products suggest that these two types of systems differ significantly. Their differences are due to the various nature of competition, various levels of capital concentration in the areas of production and trade on these markets, as well as the specifics of products that used to be the objects of market activity. The existing conditions for the functioning of distribution systems on these markets, to date, do not contribute appropriately to the harmonious development of market participants at all levels.

The main scientific task related to the domestic food market improvement nowadays in Ukraine, remains to be a theoretical and methodological substantiation of the extent and limits of the state influence on this market. This ought to be done with the strong emphasis on national features and terms of the food and commodity markets business environment, and taking into account the utmost macroeconomic goal of ensuring the food security of the state. There is the objective need for such an intervention on the part of the state, as well as for the search for a rational tradeoff between involving the market and administrative tools in regulating commercial relations that determine the specifics of the discussed markets in Ukraine.

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