

# “Competition at product markets of various types of commodities”

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# COMPETITION AT PRODUCT MARKETS OF VARIOUS TYPES OF COMMODITIES

## Abstract

This article is devoted to researching the peculiarities of the competitive environment at the markets of various types of commodities (goods). Competition analysis allows making conclusions about the effectiveness of the market to identify the factors of development, market infrastructure weaknesses and provide recommendations to address these problems, and to identify priorities for the market competition development. This, in turn, will contribute to finding ways to improve the competitiveness of products. Timely and adequate assessment of the level of competition is not just a part of analytical instruments for the research of the market environment; this is a necessary condition for effective activity of market participants. The peculiarities of competition at the markets of various types of goods were analyzed: the flower market, the juice market and the market for consulting services. In the course of the research, there were determined the factors that influence the competition, also were identified the main trends of its development.

## Keywords

competition, product markets, search goods, experience goods, credence goods, flower market, juice market, consulting services market

## JEL Classification

M11, M30, M31, O11, O14

## INTRODUCTION

The importance of the chosen topic of research is substantiated by the necessity of constant monitoring of the competitive environment. The market development depends on the conditions of rapid changes in the social, economic and political spheres. It requires an appropriate response from all market participants. Timely detection of deficiencies in the formation of market relations can avoid a number of problems associated with monopolization of the market, unfair competition, consumer misleading.

The orientation of the domestic community towards European integration requires deepening of the analysis of economic processes and phenomena in order to identify problems and obstacles on the way to further development. This contributes to developing appropriate methodological tools for assessing competition. The dynamism of the competitive environment of the domestic and world markets, as well as the European integration tendencies characteristic of the national economy, contribute to the fact that the importance of market environment analyzing significantly increases. Competition research provides conclusions about the efficiency of the market, factors for its development, and weaknesses in market infrastructure and provides recommendations for solving existing problems.

Studying the features of competition on the market and studying the behavior of economic entities identify the positive and negative aspects of its development; that is, provides the opportunity to research

the features of production. Competition is considered the most effective form of organization of market relations, therefore its development contributes to increasing the efficiency of market functioning. The development of theoretical foundations of the research of competitive struggle on the market improves methodical approaches and practical tools for analyzing the competitive market environment, and searching for new ways to optimize business activity is very practical and relevant for modern economics.

In the context of globalization and the transition of Ukraine to a new level of international cooperation, increasing the efficiency of markets is one of the key aspects of the state's competition policy. A qualitative analysis of the competitive environment enables to identify problems and obstacles on the way to effective activity of market participants. The development of markets is indicative for assessing the state of the economy as a whole, as it serves as an indicator of the transition of economic relations to a qualitatively new, higher level of interaction. The study of this issue becomes possible only with a thorough understanding of the theoretical foundations of the analysis of the development of market competition.

## 1. LITERATURE REVIEW

Competition as an economic category was extensively substantiated by foreign researchers such as W. Jevons, H. Demtsec, L. Erhard, R. Dornbusch, J. M. Clark, I. Kirtsner, F. Kotler, A. Cournot, J. Nash, L. Robins, A. Chandler, A. Yang, etc. The consulting services market of Ukraine, ways of improving the quality of consulting services were considered in works by V. Verba, O. Marchenko, A. Pavlutsky, T. Reshetnyak, A. Rogalsky, A. Trivaylo, A. Trofimov, M. Sharko, S. Shevchenko and other. The market for flowers was analyzed by V. Baiura, O. Pogasiy, I. Solomach, S. Sorokina, V. Khodarchenko and others. The juice market was studied by V. Poberezhets, L. Reva, N. Tkach, M. Chumak, V. Sidletsky and others.

The scientific literature (Darby & Karni, 1973; Nelson, 1970) distinguishes between three types of goods: search goods, experience goods and credence goods. The markets for various types of goods differ in structure and by the methods of competitive struggle. Therefore, the directions of development of competition for each of these markets will be different. This article develops and tests a methodology for assessing the level of development of market competition (Rak, 2017). The proposed methodology is based on the systematic study of production, exchange and sale of a product; analysis of relationship between the market participants and research of institutional environment. These methodological approaches are applied to the markets of vari-

ous types of goods, each of which refers to the markets with high level product differentiation. Previous studies (Piatnytska, 2014; Piatnytska, 2015; Popovkin, 1993; Rak, 2014; MarketinG.vc, 2017c) showed that the most significant impact on the overall development of the market environment on the market of search goods performs the characteristics of the behavioral block. The characteristics of the functional block are the most important for the market of experience goods. The most influential on the market of credence goods are the characteristics of structural block. The search goods are characterized by the fact that the consumer can estimate their quality and performance before the moment of their purchase, as an example, the flower market can be considered. Consumers can get relevant information of the actual conditions of information about the experience good only in the process of their use (juice market). The effect of trusting benefits can be estimated by consumers only after a certain period of time (consulting services market).

## 2. AIMS

The main aims of this research are to describe the directions of the competition development in each of the markets (the consulting services market, the flower market and the juice market), in order to identify, which is a market in its structure, and to reveal specific features of the competitive environment.

### 3. METHODS

In order to achieve the tasks set, general scientific and special research methods were used: scientific abstraction – to reveal the content of competition, definition of concepts; analysis and synthesis, induction and deduction, quantitative and qualitative analysis – to study the evolution of competition as an economic category in historical and logical sequences; dialectical – to study the contradictions of the goals and effects of competition as a form of organization of market relations; economic-mathematical modeling, in particular, the method of least squares, the turning point criterion, the Durbin-Watson test, White's test (Durbin & Watson, 1951; Fedulova, 2016), and others. The basis of the approach in previous studies (Rak, 2014) is the identification of the existing interconnections within the three levels: the interaction plane of the market participants (includes such systems as “producer-producer”, “producer-consumer”, “producer-state”); the “field of activity of producers” an institutional plane. Such approach gives the opportunity to deepen the theoretical understanding of the essence of the process of development of competition on the studied markets.

The information basis of the study are the laws of Ukraine, the official statistical report of the State Statistics Service of Ukraine, the research “Analysis of the Ukrainian consulting services market”, conducted by the research company “International Marketing Group Ukraine”, reviews of the consulting services market, the flower market and juice market, and information given in monographs and scientific publications of domestic and foreign scientists.

### 4. RESULTS

The determinants of the search goods market in essence are the level of market competition and the effectiveness of interaction between market participants. The level of trust and brand loyalty plays a decisive role on the market of experience goods, which is determined by the extent to which one or another producer meets certain needs of the consumer. On the credence goods market, further development depends on the effectiveness of the structure (the main elements of structure are

the number of market participants, market barriers and vertical differentiation of goods and services (Piatnytska, 2014)).

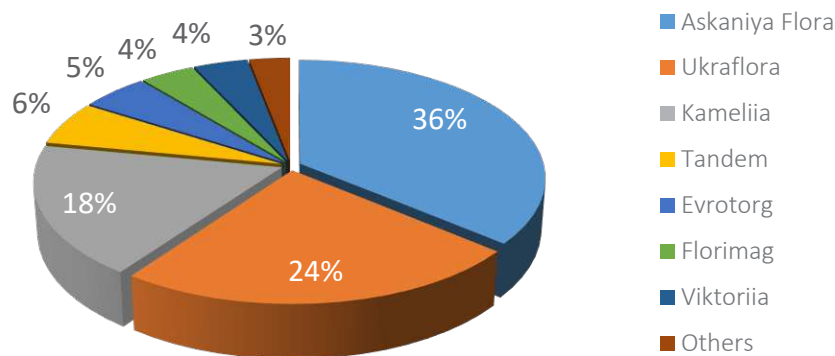
#### 4.1. Economic characteristics of markets

Flowers are characterized by a high level of demand elasticity, since they do not relate to goods of basic necessities. Traditionally, Ukrainians buy flowers mainly on holidays, which lead to significant price fluctuations on the market. The margins that retail sellers in the holidays reach 100-150%. In this way sellers attempt to overcall the material losses that they have in the period of a sharp drop in demand. There are many flowers on the market that were grown by people in the open ground on private plots in summer. As a result, for example, the cost of the roses decreases almost to the cost, and even lower. The period of storage of fresh flowers is rather limited, so the effectiveness of this business depends on the period of the sale of goods. Flowers cannot be kept in stock or in storage, waiting for a favorable price situation. The landmark for flower growers is always consumer demand, which is characterized by its seasonality. And, consequently, there is a need for operational monitoring and forecasting of the market.

Flowers are a classic example of the research goods, because evaluation of their quality, in the vast majority of cases, could be done even before the purchase. Market shares on the Ukrainian flower market are distributed unevenly (Figure 1). Also it could be seen as a market leader whose share is 36%.

The juice market contributes to the continuous updating of the range of its products (MarketinG. vc, 2017c), which is due to the desire of producers to hold positions on the market. Today, the Ukrainian juice market is experiencing high competition. More than 400 enterprises are engaged in the production of juices. Market leaders are such companies as Sandora, Vitmark, Erlan, Coca-Cola (Figure 2). The growing capacity of the market has pushed producers to expand their spheres of influence. So, leaders are on the way of producing brands, which allows them to seize new price segments. PepsiCo has released a series of Premium Sandora Fruit of the World and inexpensive “Sadochok”, “Vitmark” and “Juicy” in similar

Source: Built by the authors on the basis of MarketinG.vc (2017b).



**Figure 1.** Distribution of market shares on the flower market of Ukraine in 2017

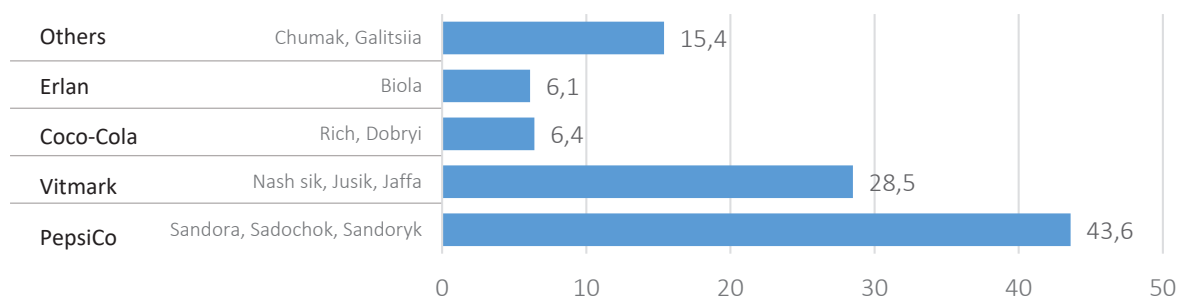
price segments. In addition, both companies are strengthening their production capacity. Ukraine is one of the 5 largest exporters of juice in the world. In January-December 2017, Ukraine exported 69.4 thousand tons of juice. Since 2016, the EU has provided Ukraine with quota for free-of-charge supplies of apple and grape juice in the amount of 10 thousand tons. Quotas have been used completely in the 1st quarter of 2016. Ukraine is an exporter of juice for Poland, Belarus, Moldova, Kazakhstan, Austria, Germany and others. The Ukrainian juice market is 95% filled with domestic products. Imports do not exceed 5%. Most often it is juice with exotic flavors, made from fruits, inaccessible to domestic producers. In recent years, there has been a tendency to reduce the juice market. Juices are partially replaced by cheaper substitutes that are less beneficial for human health, but it is more affordable during a crisis.

The urgency of the problem of competition analysis on the Ukrainian consulting services market is determined by the growing role of consulting as an instrument for solving managerial problems

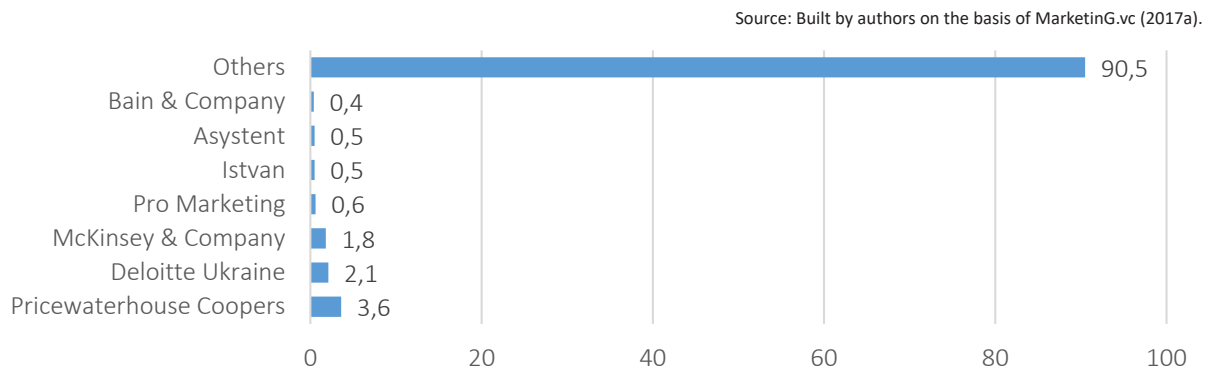
(Figure 3). This substantiates the scientific feasibility and practical significance of theoretical study of the features of the development of competition on the consulting services market. As the world practice proves, one of the important patterns of economic development is the interconnection of economic growth and the increasing role of the service sector. The result of the manufacturing is a product that can act as a service or product if it is produced for the purpose of implementation. Both as material goods and services fulfill the function of satisfying the needs of consumers. However, the service has a number of features that distinguish it from the goods. People participate directly or indirectly in the production of any product or service. In the production of services, the human factor is more influential, since services, in the vast majority, are produced directly by humans, whereas in the production of material goods, people often have only an indirect effect, involving various means of labor in the production process.

The consulting service in its essence is an intangible product. Therefore, it is difficult to assess its

Source: Built by authors on the basis of MarketinG.vc (2017c).



**Figure 2.** Distribution of market shares (%) on the juice market of Ukraine in 2017



**Figure 3.** Distribution of market shares (%) on the consulting services market of Ukraine in 2017

quality and the distinctive differences between two, at first glance, identical services. Often, the quality of providing a particular consulting service can only be assessed over time, since the effect of implementation, for example, management accounting, will be a tangible in six months. Effective realization of consulting projects is possible only in conditions of the formed competitive environment. The provision of consulting services in Ukraine is carried out by expert estimates of about 4 thousand companies (excluding individuals providing consulting services). According to the research “Analysis of the Ukrainian consulting services market” conducted by the research group “International Marketing Group Ukraine” and based on the data of the State Statistics Service of Ukraine, about 3 thousand consulting companies regularly report to the State Statistics Service of Ukraine. Thus, the relatively large number of sellers operates on the market. The consulting services market of Ukraine is quite dynamic. The volume of the market is constantly growing. In the pre-crisis period, namely in 2008, the growth of the consulting services market exceeded 110%, while in the times of the global financial crisis, the growth of the market amounted to only 5.56%. Today the situation on the market has changed for the better, and although the market growth has not reached the pre-crisis level, there has been a positive dynamics of market growth at around 20% per year. Analyzing of the shares of economic entities on the market makes it possible to determine their size and shows how the share of one or another entity is related to the total volume of products on the market. The companies that occupy leading positions on the market are constantly changing. Starting from 2009, the market has more or less clear leader with a share close to

3%. The leader on the market is “Pricewaterhouse Coopers”, an international audit company that opened its consulting business in Ukraine in 2006. About 91% of the market is occupied by companies whose share is not exceeds the limit of 0.4%. This may indicate a high level of competition on the market.

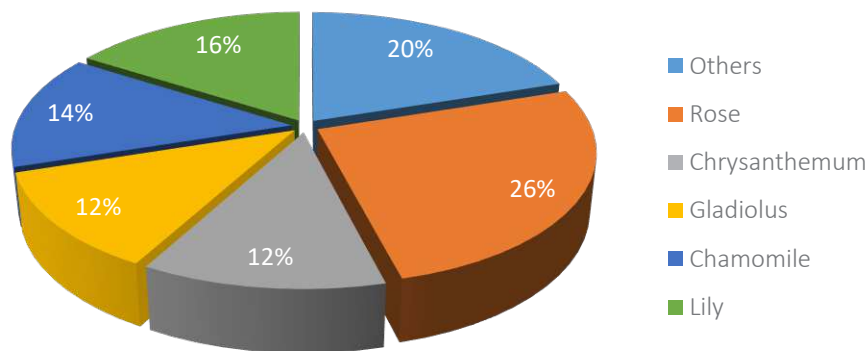
#### 4.2. Structural analysis of markets

The production of floral products is a traditional activity for Ukraine. There are all the necessary conditions for this business. The structural analysis of the market shows (Figure 4) that the queen of flowers - the rose is on the leading position. Ukrainians choose it most often than other flowers. Chrysanthemum, gladiolus, chamomile and lily are also in demand. The task of small and medium domestic flowerers is to establish a stable cooperation with the wholesale, which ensure the implementation of flowers through retail outlets. About 40% of sales volumes for the Ukrainian flower business occur between February 14 and March 8. Another 25% of flowers are sold before September 1, with about 60% of the sales volume belongs to trays. The other 30% is roughly equal in proportion to the distribution of middle class florist shops offering professional florist services and large network stores.

Effective way of increasing profitability for the flower market participants is the “horizontal” diversification of business: that is, the sale of not only flowers, but also seedlings (bulbs, seeds, and cuttings), care products for flowers, fertilizers, soil, etc.

One of the most pressing problems of the juice market is the shortage of domestic raw materials

Source: Constructed by the authors on the basis of MarketinG.vc (2017b).



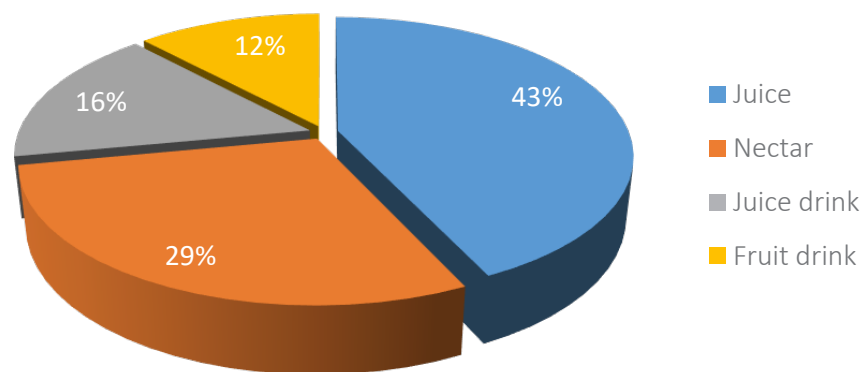
**Figure 4.** Structural analysis of flower products

for processing. Companies are looking for new suppliers of raw materials from different countries, since their share of own raw materials is only about 20%, which in turn leads to dependence on imports. It is very important, in conditions of market competition, to introduce nanotechnologies for further production, to focus on the cultivation of modern varieties of vegetable and fruit crops. Some companies purchase land to get raw materials, in order to obtain the fruits for further processing. Since juice can only be one hundred percent natural product that needs to be stored properly, there are many types of juice products on the market, depending on the type of fruit processing. In order to increase the number of consumers, juice producers are constantly expanding the range of juice products, which includes not only juice. These include nectars, fruit drinks and juice drinks (Figure 5). All these products differ in composition and taste qualities. Juice is a liquid food product that is obtained by squeezing fresh, ripe and non-damaged fruits (fruits, vegetables, berries). Juices do not contain chemical preservatives, dyes, flavors and sweeteners. Nectar is a food product made from concentrated juice (puree) and drinking water. In this case, the proportion of concentrated juice (mashed potatoes) should be not less than 20-50% of the total volume, depending on the type of fruit or vegetables. Nectar is forbidden to add chemical preservatives, flavors and sweeteners. As a rule, nectars are made from those types of fruits, berries or vegetables, concentrated juice which is too thick and has a very concentrated taste. Juice drink is a liquid food product with a proportion of juice (mashed potatoes) not less than 10% made by mixing juice and / or puree, concentrat-

ed juice (puree) and drinking water. It should be noted that the production of juice-based drinks uses the largest number of different types of both traditional and exotic fruits. Fruit drink is a liquid food product made from a mixture of juice of berries (berry puree), drinking water, sugar (or honey), provided that the minimum proportion of concentrated juice is not less than 15% of the total volume. Instead of water, the juice can be added to the water extract obtained during the squeezing. Around 85% of consumption is by young people aged 20 to 35 years living in cities. Of these, about 50% consume juices at least once every six months. Although the juice as a product is consumed equally by both men and women, women still predominate over the number of consumers. The diverse range and correct pricing are a great advantage in the fight for the buyer, allowing the company to respond quickly to market changes.

Structural analysis of the consulting services market (Figure 6), based on data on the amount of revenue that consulting companies receive from the implementation of various types of services, shows that more than 40% of consulting services are provided on business process management, including business reorganization issues; about 20% – falls on the development of corporate culture, business development in general; 12% – this is a consultancy on organizational design issues. The remainder is divided almost equally: financial consulting, sales and marketing consulting or marketing consulting, as well as HR-consulting or personnel development consultancy. The latest advances in information technology, global information networks have changed the

Source: Built by authors on the basis of MarketinG.vc (2017c).

**Figure 5.** Structural analysis of juice market products

perceptions of the boundaries of enterprises and the technology of production, management and business. The saturation of commodity markets requires the search for new approaches to the consumer. As a result, the vast majority of orders from consulting firms are in fact an order for re-organization and business restructuring services. Fig. 6 shows that a significant part of consulting projects belongs to the organization of business processes at the firm. With the deterioration of the general economic climate, this service is becoming more and more relevant, since ignorance of the main and auxiliary operations occurring in the company not only makes it impossible for any methods of their control, but also leads to permanent failures in the work of the company, reduces its efficiency and competitiveness.

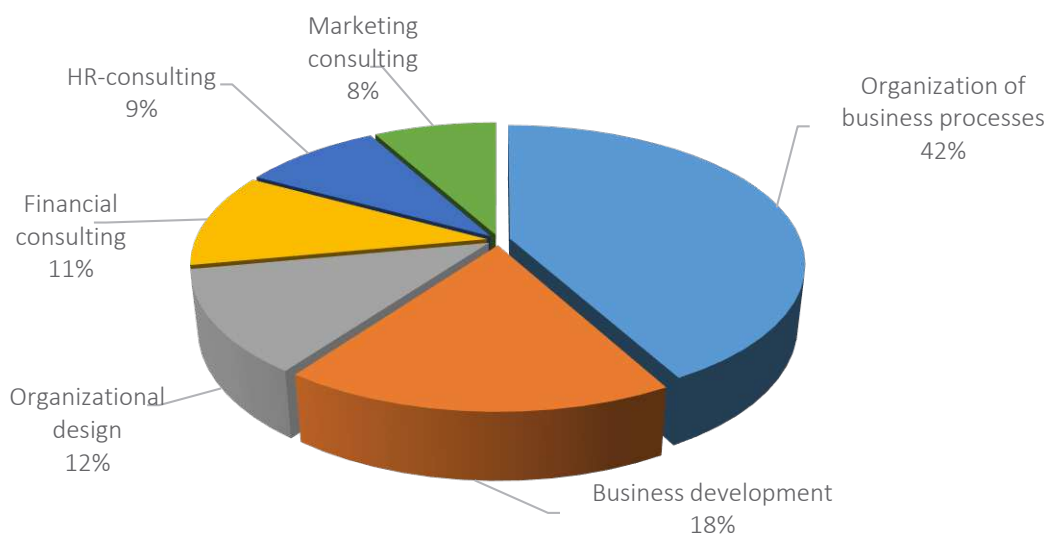
## 5. DISCUSSION

Studying the features of competition in the markets and studying the behavior of business entities will reveal the positive and negative aspects of their development; explore the features of service delivery and sales of goods in Ukraine. The following table shows the ratio of sales volumes on the markets for flowers, juices and consulting services in relation to GDP.

Table 1 illustrates the dynamics of sales volumes on the investigated markets.

Table 1 shows that the market of flowers fell only in 2014 due to the complex socio-economic situation in the country. However, since 2015, the market has

Source: Compiled and calculated by authors on the basis of MarketinG.vc (2017a).

**Figure 6.** Structural analysis of consulting services

**Table 1.** Dynamics of sales volume

Source: Compiled and calculated by authors on the basis of DSSU (2017), Management.com.ua (2017), UNIAN (2017), Marketing G. vc (2017a), Marketing G. vc (2017b), Marketing G. vc (2017c).

Years	Increase			Growth of nominal GDP, %	Growth of real GDP, %	Volume of sales of flowers in relation to GDP	Volumes of juices realization in relation to GDP	Volumes of sales of consulting services in relation to GDP
	Volumes of flower delivery, %	Volumes of juices realization, %	Volumes of sales of consulting services, %					
2003	9.7	4.33	10.01	18.4	18.3	0.0052	0.005	0.003
2004	9.9	4.43	10.21	29.1	29.4	0.0054	0.004	0.003
2005	9.7	4.33	9.08	27.9	32.8	0.0053	0.004	0.003
2006	9.7	4.33	11.03	23.3	25.1	0.0053	0.004	0.003
2007	11	4.98	14.73	32.5	32.5	0.0053	0.004	0.002
2008	10.7	4.83	15.8	31.5	26.1	0.0053	0.006	0.002
2009	11.4	5.18	19.85	-3.7	-34.9	0.0053	0.006	0.003
2010	12.8	5.88	16.18	18.5	16.4	0.0053	0.006	0.005
2011	12.8	5.88	15.95	21.6	19.6	0.0053	0.007	0.005
2012	14.3	6.63	15.56	7	7.7	0.0053	0.008	0.005
2013	14.9	6.93	14.2	3.3	4.3	0.0053	0.009	0.005
2014	12.8	5.88	13.35	7.7	-28.1	0.0053	0.009	0.005
2015	13.7	6.33	11.89	26.3	-31.3	0.0053	0.009	0.005
2016	14.5	6.2	8.13	20.4	2.9	0.0053	0.009	0.005

started to grow again. Growth of the juice market during the researched period is almost unchanged. The volume of sales of juices grew until 2013. From 2015, it has started to grow again. Growth rates are slower compared to the growth of the flower market and the market for consulting services.

As can be seen from Table 1, since 2003, there has been a steady increase in the volume of sales of consulting services, which reached its peak in 2008, when the increase compared to the previous year was 111%. In 2009, the general increase in the volume of sales of consulting services companies in Ukraine amounted to only 6%, which was caused by the negative impact of the global economic crisis. According to the research company "International Marketing Group Ukraine", the growth of volumes of sales of services of consulting companies of Ukraine at the end of 2010 amounted to about 20%, in 2011 – 23%, but during 2012–2016, there was a slowdown in the growth rates of sales volumes.

### 5.1. Identification of commodity boards of markets

Commodity boundaries of the market are determined by forming a group of interchangeable goods (commodity groups), within which the

consumer in normal conditions can easily switch from consumption of one product to consumption of another (Piatnytska, 2015). Formation of a group of interchangeable goods (commodity groups) is carried out from the list of goods, which according to the indicators of interchange have for the sellers (suppliers, producers), buyers (consumers, users) signs of one (similar) product (product group). Commodity boundaries of the market are defined for a good or a group of goods on the basis of similarity of consumer, physical characteristics, conditions of consumption and sales, price difference, etc. During research, it is necessary to consider that interchangeable goods belong to a group of homogeneous goods (commodity groups), which are considered by the consumer as one and the same product (product group) and which can be standardized or differentiated.

Substitute products included in a certain commodity group are determined by the criterion of interchangeability of commodity products. One of the criteria for interchangeability is cross-elasticity of demand for price, calculated as the ratio of the relative change in the volume of sales of goods X to the relative change in the price of goods Y in a certain period. In the case where the coefficient of elasticity is in the range from 0 to 2, there is a small probability of replacing one product to another, if

$E > 2$  – the goods are easily replaced by one another; if  $E < 0$  – the goods are complementary.

Substitute products were chosen for each market by expert method, For the market for flowers – these are artificial flowers, for the juice market – sweet water, and for the market of consulting services – audit services. Cross-elasticity for consulting and audit services were calculated.

It is obvious that live flowers and artificial flowers, as well as juices and sweet water, can in some cases replace each other. This statement is confirmed by the results of calculations given in Table 2. As it could be seen from Table 2, the cross-elasticity indicator for consulting and audit services is negative. This indicates that these services are complementary. This situation is explained by the fact that consulting services are often offered in conjunction with auditors and vice versa. But in no case audit services can be considered as substitutes for a consulting service.

Thus, summing up the aforementioned, commodity boundaries of the market of flowers are live flowers, which include cut flowers and flowers in pots. The product lines of the juice market are juices, which include juice-based products, natural juices, fruit juices, etc. The commodity boundaries of the consulting services market are consulting services, including consulting, providing recommendations and practical assistance to business entities and public services in the field of public relations and information exchange, devel-

opment of accounting systems, programs of accounting for production costs, procedures control over execution; counseling and providing practical assistance to commercial enterprises and public services in the area of planning, organization, efficiency and control, management information provision; consultations on management issues in the field of agriculture, etc.

## 5.2. Identification of geographical boundaries of markets

The territorial (geographic) market boundaries of a particular product (commodity group) are determined by detection of the minimum territory beyond which, from the consumer's point of view, the acquisition of goods (commodity group) belonging to a group of interchangeable goods (commodity group) is impossible or inappropriate. In doing so, the following criteria should be taken into account:

- physical and technical characteristics of the product (product group);
- technological connections between producers and consumers;
- possibilities for technical, guarantee, subscription service;
- price ratio (in particular the level of price correlation for certain goods (commodity groups) within this market, is acceptable for producers or consumers);

**Table 2.** Cross-elasticity calculation

Source: Compiled and calculated by authors on the basis of MarketinG.vc (2017a), MarketinG.vc (2017b), MarketinG.vc (2017c).

Indexes	Year		Absolute deviation, ths USD	Relative deviation, %	Cross elasticity
	2015	2016			
Volume of demand for live flowers (Q (x)), ths USD	551838.82	602414.15	50575.34	9.16	0.43
Average price for artificial flowers (P (y)), USD	0.53	0.64	0.11	21.43	
Volume of juice demand (Q (x)), ths. USD	724794.6	733866.22	9071.62	1.25	0.11
Average price for sweet water (P (y)), USD	0.34	0.38	0.04	11.11	
Volume of demand for consulting services (Q (x)), ths. USD	456486.16	470618.69	14132.53	3.1	-0.3
Average price for audit services (P (y)), USD	473.31	423.68	-49.62	-10.48	

- possibilities for moving demand for goods (commodity group) between territories that are part of the same geographic market (in particular, the possibility of maintaining the quality level and consumer properties of goods (commodity group) during transportation);
  - level of transport costs, including the peculiarities of transportation of goods (product group).
- 5) Pridneprovskiy – Dnipropetrovsk and Zaporizhzhia regions;
  - 6) Black Sea region – Odesa, Mykolaiv and Kherson regions;
  - 7) Podolskyi – Vinnytsia, Ternopil and Khmelnytsky regions;
  - 8) Precarpathian – Lviv, Ivano-Frankivsk, and Chernivtsi regions;

The zoning process is quite complex and multi-level, and therefore it is the subject of research by many domestic scientists. Popovkin (1993) isolated ten regions, Shabley (2001) identified six regions (Chmyryova & Fediai, 2013). Gureev (1996) developed an approach to dividing the territory of Ukraine into eight regions. But most scientists, including O. Marynich, M. Pistun and others offer a scheme of socio-economic zoning of Ukraine, which includes nine economic districts (Chmyrova & Fediai, 2013). The Institute for Regional Studies of the National Academy of Sciences of Ukraine initiated an approach to zoning, aimed at the Eurointegration orientation of the domestic economy. Therefore, according to the vectors of foreign trade flows, four economic regions can be allocated. The development of regions provides access to foreign markets (Chmyrova & Fediai, 2013).

Applying for the study of territorial boundaries of the market, the approach proposed by the Institute of Regional Studies of the National Academy of Sciences of Ukraine, which distinguishes the central, eastern, southern and western regions, and the approach developed by M. Pistun, divides the territory of Ukraine into nine geographical regions:

- 1) capital (Kyiv) in the Kyiv, Zhytomyr and Chernihiv regions;
- 2) Central – Cherkasy and Kirovohrad regions;
- 3) Northeast – Kharkiv, Poltava, Sumy regions;
- 4) Donetsk – Donetsk and Luhansk regions (not be taken into account in connection with the ATO);

- 9) Northeast – Volyn and Rivne regions.

The geography of the location of flower greenhouses covers the whole territory of Ukraine, as favorable conditions of temperate climate and high soil fertility allow for the cultivation of high quality flowers. Juice production tends to raw material bases, so juice production plants are located in the vast majority in the south and in the center of Ukraine. There is a relationship between the level of economic development of the state and the number of consulting companies operating in its territory. Analyzing the market of consulting services, using economic zoning, according to the definition of the Institute of Regional Studies of the National Academy of Sciences of Ukraine, it should be noted that the overwhelming majority of consulting companies, namely, more than 60% are located in the central region. This is due to the fact that Kyiv as the capital of Ukraine is the center of economic life of the country. However, consulting services are provided throughout Ukraine. Thus, the studied markets can be considered national.

### 5.3. Analysis of the level of competition on markets

Research on the development of competition on markets can be conducted through indicators of the level of market competition. The following indicators were selected and applied in this study:

- Herfindahl-Hirschman Index (HHI);
- Lerner index (L);
- Gini index (G);
- U-index;
- Hannah-Key Index (HKI);
- House Index (Hm);
- Aggregated Competition Index (ACI).

The results of indexes' calculation are illustrated in Table 3.

Herfindahl-Hirschman Index (HHI) (Bikker & Haaf, 2002; Matsumoto et al., 2011) is used to research the level of competition existing within the market. The calculation of the Herfindahl-Hirschman Index clearly shows that markets have a low market concentration. Insignificant dynamics during the investigated period in no way affects the result, but indicates a slight increase in market positions of some economic entities.

Another appropriate indicator used for analyzing competition in the market, is the Hannah-Key Index. Calculations show that for the market of consulting services: at  $b \rightarrow 0$ ,  $HKI \rightarrow n$ ; and for

$b \rightarrow \infty$ ,  $HKI \rightarrow HKI \rightarrow 1/s_{ib}$ . Thus, in this case, the boundaries for the Hannah-Key Index are:  $1/s_{ib} \leq HKI \leq n$ . This means that throughout the period of research, there is a significant impact on small firms in the market. This is indicative of the fact that the juice market and the flower market have the most significant impact on large companies. To assess the degree of market concentration, the important indicator is the U-index. It assesses the impact on the level of market competition in the number of firms in the market and the uniform distribution of market shares. Table 3 shows a change in the U-index over the years. With an increase in the coefficient, the growth of the index is observed. This suggests that the uneven distribution of market shares plays a significant role in the dynamics of market competition. The effect of

**Table 3.** Indicators of the level of development of competition for markets of various types of goods

Source: Compiled and calculated by authors on the basis of Matsumoto et al. (2011), DSSU (2017), MarketinG.vc (2017a), MarketinG.vc (2017b), MarketinG.vc (2017c).

Indicators	Features of the indicator	Indicator value						Result		
		The flower market		The juice market		The consulting services market		The flower market	The juice market	The consulting services market
		May 2016	May 2017	May 2016	May 2017	May 2016	May 2017			
Herfindahl-Hirschman Index (HHI)	Sensitive to the entry of new companies to the market	0.036	0.048	0.012	0.014	0.00225	0.00223	Average level of competition	Average level of competition	High level of competition
Hannah-Key Index (HKI)	Shows the degree of influence of small companies	0.005	0.009	0.003	0.004	0.71	0.72	The impact of big companies is crucial	The impact of big companies is crucial	The influence of small companies prevails
	Shows the degree of influence of large companies	0.92	0.91	0.88	0.87	0.003	0.002			
U-index	Shows the impact of the number of companies	0.002	0.002	0.03	0.03	0.0008	0.0008	The non-uniform distribution of particles is determined	The non-uniform distribution of particles is determined	The determining factor is the number of companies
	Shows the effect of uneven particle distribution	0.000006	0.000004	0.0004	0.0007	0.01	0.01			
House Index (Hm)	Shows a high probability of conspiracy	0.2	0.2	0.06	0.06	0.0009	0.0009	High probability of conspiracy	The probability of conspiracy exists	The probability of conspiracy is insignificant
	Shows a low probability of conspiracy	0.0003	0.0003	0.0001	0.0001	0.0004	0.0004			
Gini index (G)	Reacts on changing market shares	0.068	0.069	0.045	0.046	0.059	0.062	Uneven distribution of particles	Uneven distribution of particles	Distribution of particles with high degree of uniformity
Aggregated Competition Index (ACI)	Determines the state of market competition	2.1	2.2	2.4	2.3	3.9	4.1	Competitive market with signs of monopoly power	Competitive market with signs of monopoly power	Moderately competitive market

**Table 4.** The boundaries of the change of the aggregated index of competition

Source: Developed by the authors.

The boundaries of the index change	Characteristics of the market	Market structure
$0 < ACI < 1.25$	Non-competitive market	Monopoly, oligopoly
$1.25 < ACI < 1.6$	Market with a low level of competition	Oligopoly
$1.6 < ACI < 2.5$	Competitive market with signs of monopoly power	Monopolistic competition
$2.5 < ACI < 100$	Moderately competitive market	Monopolistic competition
$ACI > 100$	Competitive market	Competition

uneven distribution of market shares is increasing and it causes a decline in the level of competition.

To assess the competition on the market, an indicative indicator is the House index. The market for consulting services is an unfavorable environment for conspiracies, which is explained by a significant number of market participants, unlike the market of flowers. House index development is an attempt to interpret the model of the Cournot's oligopoly. This parameter depends on the parameter  $\beta$ , which reflects the presence of collusion in the oligopoly model. The House index reflects the tendency for competition to grow, as the number of firms grows significantly slower with low values of the  $\beta$  parameter.

In order to obtain effective results of a market environment study and a summary analysis based on the classical deterministic method of geometric mean, an aggregate indicator of the level of development of competition on the market is constructed:

$$ACI = \frac{1}{\sqrt[n]{\prod_{i=1}^n k_i}}, \text{ with } 0 \leq k_i \leq 1, \quad (1)$$

where  $ACI$  (aggregate competition index) is an aggregated index of estimation of the level of development of competition on the market. Its lower limit of change is determined by the fact that for the calculation of the complex index in the formula denominator, the normalized indicators of market competition, the values of which are less than one, are chosen.

$$1 \leq ACI \leq \infty,$$

where  $n$  – the number of indicators for assessing the level of development of competition;  $k_i$  – normalized value of the  $i$ -th indicator.

If the level of competition increases, then the value of the index (1) increases. As a result of this analysis, it was found that certain values of the indicator correspond to one or another market structure. The following Table 4 illustrates the limits of the index change. The calculations show that the markets for flowers and juices have higher levels of monopoly power, while the market for consulting services is highly competitive.

## CONCLUSION

As a result of the research, the following conclusions are made:

1. The determinants of the market of search goods in essence are the level of market competition and the effectiveness of interaction between market participants. On the market of experience goods, the level of trust and brand loyalty plays a decisive role, which is determined by the extent to which one or another producer meets certain needs of the consumer. On the credence goods' market, further development depends on the effectiveness of the structure, the main elements of which are the number of market participants, market barriers and vertical differentiation.
2. The necessity of improvement of methodical approaches to the study of the competitive environment is substantiated. It is appropriate to take the experience of the EU in the process of improving the methodological approaches to the analysis of the level of development of competition. In the modern European practice of analyzing the level of development of market competition, the general

economic evaluation of the company's business environment is used. The basis of the analysis is the application of a number of indices: Herfindahl-Hirschman Index (HHI), Hannah-Key Index (HKI), U-index (U), House index (Hm), Gini index (G).

3. The competitive environment on the markets of different types of goods is analyzed. By expert method, it was chosen substitute products for each market. So, for the market of flowers – these are artificial flowers, for the juice market – sweet water, and for the market of consulting services – audit services. Commodity boundaries of the flower market are live flowers, which include flowers on the cut, etc. The product lines of the juice market are juices, which include juice-based products, natural juices, fruit juices, etc. The consulting services market includes consulting services, including consulting, providing recommendations and practical assistance to business entities and public services in the field of public relations and information exchange, development of accounting systems, programs of accounting for production costs, procedures control over execution; counseling and providing practical assistance to commercial enterprises and public services in the area of planning, organization, efficiency and control, management information provision; consultations on management issues in the field of agriculture, etc. It was found that all three markets are national. The complex indicator of estimation of the level of development of competition is proposed and tested. It is clear that all three markets have signs of monopoly power. According to their structure, they can be attributed to the markets of monopolistic competition.
4. The peculiarities of competition on the markets were analyzed for various types of goods: the flower market, the juice market and the market of consulting services. For all these markets, a common feature is the high degree of product differentiation. In the course of the research, the factors that influence the competition were identified, as well as the main trends of its development and the weak and strong points in the structure of markets were analyzed. There were substantiated theoretical and methodical approaches to the estimation of the competitive environment on the markets of the various types of goods.

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