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Research on the development of the meat processing industry as a component of Ukraine's food security

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RESEARCH ON THE DEVELOPMENT OF THE MEAT PROCESSING INDUSTRY AS A COMPONENT OF UKRAINE'S FOOD SECURITY

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Abstract: *The meat processing industry is strategically important for ensuring Ukraine's food security, as its products are essential in every person's diet, contributing to proper health. Therefore, it is important to examine its current state both through statistical data and by gathering and analyzing primary marketing information. The collected and analyzed secondary marketing information indicates a decline in beef and veal production in Ukraine, which are considered the most beneficial meats for human health. At the same time, research shows that the import of sausages to Ukraine increased significantly during 2021-2022, with a slight decrease in 2023. This suggests an insufficient level of demand satisfaction for sausage products from domestic producers, which negatively impacts food security in Ukraine. Given the low per capita meat consumption and the importance of this product in supporting the normal functioning of Ukrainians, meat processing enterprises should actively promote increased meat and meat product consumption among the Ukrainian population, offering new products in the market that align with consumer preferences. Moreover, domestic meat processing enterprises should pay considerable attention to the quality parameters of their offered products, increase the use of beef and veal, which are considered healthier, and employ eco-friendly packaging, as many consumers prefer to purchase packaged meat and sausage products.*

Keywords: *food security, meat processing industry, eco-friendly packaging, sausage production and import, product quality.*

JEL classification: D13 E37 F17

INTRODUCTION

The meat processing industry is strategically important for ensuring Ukraine's food security, as its products are essential in every person's diet, supporting overall health. Ukraine has traditionally been a major producer of meat products. In today's environment, this is particularly important, as a stable supply of meat and high-protein products helps sustain the health and vitality of the nation, especially during crises. The meat processing industry provides employment for a significant number of workers, particularly in rural areas where meat processing plants are often the main source of jobs. Additionally, investment in meat processing stimulates the growth of related sectors, such as agriculture, transportation, and logistics, creating an economic multiplier effect.

Domestic meat production and processing help reduce dependency on meat imports, especially given volatile global market prices. This increases economic resilience, lowers foreign exchange expenses, and provides protection from external economic risks. In the context of crises, such as war or global economic upheaval, a country's ability to ensure food security through internal resources becomes critically important. By utilizing domestic raw materials, the meat processing industry can operate relatively independently of external factors, particularly the supply of food products from other countries.

Achieving these goals requires enhanced support for the meat processing industry, including creating favorable conditions for investment, modernizing production, fostering innovation, and ensuring high product quality standards.

MATERIALS AND METHODS

This study involved the use of information from the State Statistics Service of Ukraine, including data on industrial production by types, retail turnover of retail enterprises by product groups, dynamics of per capita food consumption in Ukraine, and foreign trade of specific goods by countries from 2010 to 2021. In the process of writing this work, primary marketing information was collected and analyzed using the survey method.

RESULTS AND DISCUSSION

The meat processing industry holds an important place in Ukraine's economy and food industry. This is confirmed by data on the structure of food production in Ukraine for 2011-2021 (Table 1).

Table 1

Product structure of retail turnover of enterprises in Ukraine

| Periods | All Goods | | Food Products | | Meat | | Meat Products | |
|-------------------|-------------|-----|---------------|------|-------------|-----|---------------|-----|
| | Million UAH | % | Million UAH | % | Million UAH | % | Million UAH | % |
| 2011 | 350059 | 100 | 124905 | 35.7 | 7153 | 2.0 | 8720 | 2.5 |
| 2012 | 405114 | 100 | 150100 | 37.1 | 9165 | 2.3 | 9754 | 2.4 |
| 2013 | 433081 | 100 | 164891 | 38.1 | 10555 | 2.4 | 11409 | 2.6 |
| 2014 ¹ | 438343 | 100 | 170174 | 38.8 | 10217 | 2.3 | 10473 | 2.4 |
| 2015 ¹ | 487558 | 100 | 200236 | 41.1 | 11745 | 2.4 | 12099 | 2.5 |
| 2016 ¹ | 555975 | 100 | 227902 | 41.0 | 12255 | 2.2 | 12864 | 2.3 |
| 2017 ¹ | 586330.1 | 100 | 233204.1 | 39.8 | 12535.7 | 2.1 | 13881.5 | 2.4 |
| 2018 ¹ | 668369.6 | 100 | 289695.9 | 43.3 | 16513.5 | 2.5 | 17359.2 | 2.6 |
| 2019 ¹ | 793479.2 | 100 | 336587.9 | 42.4 | 15627.3 | 2 | 23734.9 | 3 |
| 2020 ¹ | 868283.3 | 100 | 384091.6 | 44.2 | 17457.4 | 2 | 26739.1 | 3.1 |
| 2021 ¹ | 1044516.5 | 100 | 449762.3 | 43.1 | 19442.8 | 1.9 | 30588.3 | 2.9 |

Excluding the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and parts of the zone of the anti-terrorist operation.

According to the official website of the State Statistics Service.

The analysis of Table 1 indicates that during the years 2011-2021, the production volumes of meat and meat products in Ukraine increased in monetary terms; however, the share of these products decreased in 2021.

The Ukrainian market for meat and sausage products is characterized by the following features:

- The market has nearly reached saturation, with intense competition determining the assortment, quality, and regulating pricing policies.

- A certain surplus of sausage products in stores of large retail chains forces producers to release high-quality branded products, seek new niches, and create innovative products.

- There is a dependence of the market on raw materials and fluctuations in raw material prices.

- A characteristic feature is the short shelf life of certain types of finished products (Hurzhiy, N. H., 2014).

In modern conditions, the meat product market is consolidating (Rybachok, N., & Maksym, A.). Large Ukrainian producers are creating vertically integrated structures that encompass the entire cycle of meat product production and sales—from livestock farming to retail sales. To achieve competitive advantages in the meat product market, producers are modernizing their facilities and improving production technology.

Crisis phenomena in animal husbandry have also impacted the operations of meat processing enterprises (Hurzhiy, N. H., 2014), in particular, the utilization of production capacities is only 15-40%.

Among meat products in Ukraine, sausages account for 70%. Over the past 15 years, the market capacity for sausage products has doubled, reaching over 7 billion UAH. Consumers in Ukraine spend an average of 6.7% of their food budget on sausage products. The production volumes of sausage products from 2012 to 2020 are presented in Table 2.

Table 2

Production Volumes of Sausage Products, Thousand Tons

| Periods | Sausage Products | | | | |
|-------------------|--|-------------|--|--------------|---|
| | Cooked sausages, sausages, and salsiccia | Semi-smoked | Cooked-smoked, semi-dry, raw-dried, raw-smoked | Smoked-baked | Liver products and similar products and food products based on them |
| 2012 | 188 | 54.9 | 23.5 | 8.7 | 6.2 |
| 2013 | 190 | 52.1 | 25.6 | 7 | 7 |
| 2014 ¹ | 171 | 47.3 | 24.9 | 5.5 | 6.9 |
| 2015 ¹ | 151 | 42.7 | 21.6 | 3.6 | 7.2 |
| 2016 ¹ | 155 | 40.4 | 23.9 | 3.2 | 6.2 |
| 2017 ¹ | 169 | 42 | 23.9 | 2.9 | 6 |
| 2018 ¹ | 167.5 | 41.1 | 24.1 | 3.4 | 5.6 |
| 2019 ¹ | 158.8 | 40.3 | 24.3 | 3.3 | 5.1 |
| 2020 ¹ | 156.5 | 42 | 24.5 | 3.2 | 5.2 |

Excluding the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and parts of the zone of the anti-terrorist operation.

According to the official website of the State Statistics Service.

The most popular types of sausages among Ukrainian consumers are boiled and semi-smoked sausages. In 2020, they accounted for 66.3% and 17.8% of the total production volume, respectively.

Analyzing the dynamics of the production of major types of meat and meat processing products from 2003 to 2020, it is evident that in 2020, the production of fresh or chilled beef

and veal decreased by 77.69%, frozen beef and veal by 88.05%, and frozen pork by 25.93%. However, the production of fresh or chilled pork increased by 180.54%, and the production of fresh or chilled chicken and chicks rose by 339.69%. This indicates that Ukrainians have significantly reduced their consumption of the most nutritious meats—beef and veal—in recent years.

For the sausage group, significant fluctuations in production volumes were not observed from 2003 to 2020, which cannot be said about the export and import indicators of sausage products, as shown in Figure 1. During 2021-2022, the import of sausage products into Ukraine significantly increased, slightly decreasing in 2023. This indicates an insufficient level of satisfaction for the demand for sausage products from domestic producers, which negatively impacts food security in Ukraine.

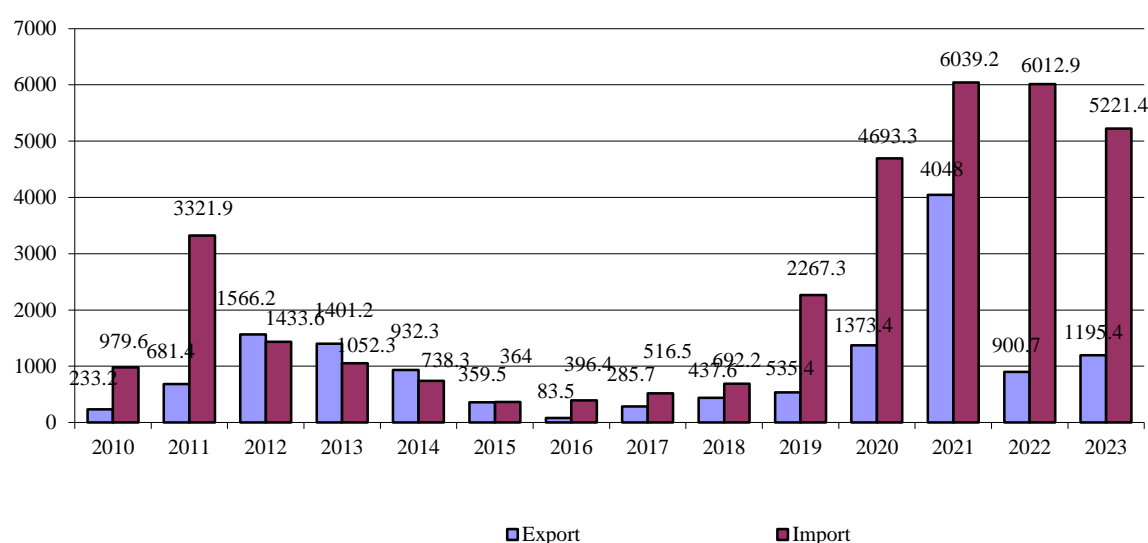


Fig 1. Dynamics of Export and Import Indicators for Sausage Products in Ukraine, tons**

According to the official website of the State Statistics Service.

In 2023, Ukraine sourced sausage products exclusively from European countries, with the largest quantities coming from Poland. Other major importers of sausage into Ukraine include Italy, Spain, and France. (According to the official website of the State Statistics Service).

The main trends in the modern meat processing industry worldwide are the offer of environmentally safe products characterized by minimal content of food additives (Bal-Prylypko, L. V. (2013)). Such products do not negatively impact public health and, therefore, need to be actively promoted in Ukraine from the perspective of sustainable development. Currently, only a small number of meat processing enterprises in Ukraine offer such products.

A notable feature of the modern market for meat products in Ukraine is the significant level of product adulteration, which can occur in the following ways (Kotsiumbas, I. Ya., Kotsiumbas, H. I., Shchebentovska, O. M., & Peleshak, M. I., 2011): the addition of soy protein components, violation of manufacturing recipes, use of mechanically deboned meat, addition of foreign substances, artificial meat flavorings, wheat flour or semolina proteins, and substitution of high-quality raw materials with low-cost additives that are often not disclosed.

Such products can harm people's health; therefore, from the perspective of sustainable development, the government should be more proactive in identifying and preventing their sale in the market.

Recently, many producers have emerged in the "craft" sausage segment. These are small family businesses that produce meat products using traditional folk recipes, focusing on high-quality raw materials and natural ingredients. As a result, the products of such manufacturers are gaining attention and trust from consumers. However, these producers need to promote their products more actively in the market.

Ukraine ranks 85th in the world for meat consumption per capita. In 2007, the average resident of Ukraine consumed 45 kg of meat per year, including 11.4 kg of beef, 15.3 kg of pork, and 17.4 kg of poultry, as well as smaller amounts of lamb and other types of meat. The average resident of Poland consumes 51.2 kg of pork, a German citizen consumes 55.6 kg, a Serbian resident consumes 64.8 kg, and an Austrian consumes 66 kg (Datsko, O. B. (2013)). In 2021, meat and meat product consumption per capita per year was 53 kg, which is 27 kg below the rational norm of 80 kg. Today, nearly one in four families living in Ukraine has been forced into vegetarianism. On the other end, 12-13% of the population consumes over 100 kg of meat products per year, reaching levels comparable to leading countries in this regard.

The dynamics of food consumption per capita in Ukraine is presented in Table 4.

Table 4

Meat and Meat Product Consumption per Capita

| Periods | Average per Month per Person | Average per Year per Person |
|-------------------|-------------------------------------|------------------------------------|
| 2010 | 5.1 | 52 |
| 2011 | 5.1 | 51.2 |
| 2012 | 5.0 | 54.4 |
| 2013 | 5.1 | 56.1 |
| 2014 ¹ | 4.9 | 54.1 |
| 2015 ¹ | 4.6 | 50.9 |
| 2016 ¹ | 4.7 | 51.4 |
| 2017 ¹ | 4.7 | 51.7 |
| 2018 ¹ | 4.9 | 52.8 |
| 2019 ¹ | 5.1 | 53.6 |
| 2020 ¹ | 5.2 | 53.8 |
| 2021 ¹ | 5.1 | 53.0 |

Excluding the part of the area designated for the anti-terrorist operation.

According to the official website of the State Statistics Service.

Given the low level of meat consumption per person and the importance of this product for ensuring the proper vitality of Ukrainians, meat processing enterprises should actively promote increased consumption of meat and meat products among the Ukrainian population, as well as offer new products on the market.

Today, it is difficult to surprise consumers with a wide assortment of sausage products. Over recent years, most producers have tried to expand the range as much as possible, believing this would enhance sales. The product line has also been expanded with items made using recipes developed by individual producers (with an emphasis on smoked products). As a result,

the assortment of sausage products has significantly grown, yet for most producers, sales volumes have not increased.

To determine consumer preferences regarding ready-to-eat sausage products, a consumer survey was conducted. A random sampling method was used for the market research, and 265 individuals of different ages from Lviv and the Lviv region were surveyed via Google Forms. Specifically, the respondents included 92 people aged 36-50 (34.7%), 82 people aged 21-35 (30.9%), 16.6% under 20 years old, 16 people over 65 years old (6%), and 31 people aged 51-65 (11.7%). The majority of respondents were women, as they are primarily responsible for purchasing decisions. Among those surveyed, 179 were women (67.5%) and 86 were men (32.5%).

Table 5 presents the main findings of the study.

Table 5

Study Results on Consumer Preferences for Ready-to-Eat Sausage Products

| | |
|--|--|
| Factors Influencing Consumer Choice of Meat and Sausage Products | The most important factor influencing consumers' choice of meat and sausage products is personal experience, chosen by 74% of respondents. Other significant factors include product composition (46.8%) and price (43.4%). The least important factor is brand recognition, with only 21.5% considering it a priority. |
| Respondents' Attitude Towards Packaged Meat and Sausage Products | The majority of respondents (172 people) purchase packaged products, while 93 people do not. |
| Consumer Preferences Regarding Packaged Meat and Sausage Product Weights | <p>The following percentages of respondents predominantly purchase packaged meat and sausage products in quantities of 201-500 grams:</p> <ul style="list-style-type: none"> • Sausages and frankfurters: 46% • Boiled sausages: 40.8% • Semi-smoked sausages: 35.8% • Dry-cured sausages: 32.6% • Boiled-smoked meat products: 27.26% • Dry-cured meat products: 22.3% <p>The following products are mainly purchased in quantities of up to 200 grams:</p> <ul style="list-style-type: none"> • Pâtés: 27.5% • Rolls: 20.4% • Liver sausages and head cheese: 13.6% |
| Advantages of Packaged Products as Indicated by Respondents | <p>Respondents highlighted the following advantages of packaged products:</p> <p>Convenience in purchase and consumption: 26.04%</p> <p>Protection from external environmental influences: 20.38%</p> <p>Clearly defined shelf life: 13.58%</p> <p>Exact product weight: 9.43%</p> |
| Disadvantages of Packaged Products as Indicated by Respondents | <p>The main disadvantages of packaged products, as noted by respondents, are:</p> <p>Questionable product quality: 21.13%</p> <p>Higher price: 16.6%</p> <p>Weight that does not meet consumer needs: 14.34%</p> |

| | |
|---|--|
| | However, 13.58% of respondents believe that packaged products have no disadvantages. |
| Main Places for Purchasing Meat and Sausage Products | Respondents primarily prefer to buy meat and sausage products in branded stores (66.8%) and supermarkets (65.7%). Significantly fewer respondents purchase these products in neighborhood stores (42.6%). Additionally, 29.4% of respondents buy them at markets, and only 2.6% purchase from food kiosks. |
| Motives Guiding Respondents in Choosing Meat and Sausage Product Purchase Locations | The most important motives for respondents in selecting places to purchase meat and sausage products are confidence in product quality (67.2%), convenience of purchase (49.1%), and a wide selection (31.7%). A lower price is attractive to only 21.1% of respondents. |
| Frequency of Respondents' Meat and Sausage Product Purchases | Meat and sausage products are purchased daily by 2.3% of respondents, every 3-4 days by 27.2%, once a week by 51.7%, once a month by 8.4%, only for celebrations by 6.5%, and 3.8% of respondents chose other options. |
| Influence of Information Sources on Meat and Sausage Product Market Innovations | Respondents most often receive information about new products in the meat and sausage market near the store counter (58.9%) and from relatives and acquaintances (38.9%). The least utilized source for this purpose is manufacturers' websites (8.75%). |

CONCLUSIONS

Considering the importance of meat and meat products for ensuring the normal livelihood of Ukrainians, meat processing enterprises should actively promote the increase of meat and meat product consumption among the population of Ukraine. They should offer innovative products in the market and adapt their offerings to consumer demands. This effort should align with the goal of ensuring food security in Ukraine. At the same time, domestic meat processing enterprises should pay significant attention to the quality parameters of the products they offer and increase the use of raw materials such as beef and veal, which are considered more beneficial for health.

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