



Anastasiia Kyrychenko*

PhD in Economic Sciences, Associate Professor

National University of Life and Environmental Sciences of Ukraine

03041, 15 Heroiv Oborony Str., Kyiv, Ukraine

<https://orcid.org/0000-0002-5647-7698>

Modelling of a consumer basket in food retail trade taking into account nutritional criteria

Abstract. Current global challenges in the field of nutrition, in particular the shortage of nutrient-rich foods and the growth in consumption of ultra-processed foods, pose serious risks to public health and require a review of the structure of the consumer basket. The aim of the article was to model the impact of excise taxation on the structure of food products sold in retail trade, taking into account nutritional criteria. To achieve this goal, methods of economic and mathematical modelling, price elasticity of demand analysis, a systematic approach and comparative analysis of official statistical data from Ukraine and international sources were used. The results of the study showed a significant deviation of the actual consumption structure from the recommended norms: excessive consumption of foods high in sugar, salt and trans fats is combined with insufficient consumption of fresh vegetables, fruits, dairy products and protein sources. In 2024, consumption of foods with high nutritional value in Ukraine was only 36% of the recommended level, with dairy products and fish showing the greatest deficit. Plant-based foods are consumed at one-third below the norm, and fat intake covers only half of the requirement. At the same time, the share of junk food exceeds the acceptable level by more than ten times and continues to grow. The forecast for 2025-2029 shows a gradual recovery in consumption in Ukraine after the shocks of the war, but even in the long term, the indicators will not reach the recommended levels. The economic-mathematical model showed a double effect of excise taxes on unhealthy food products: a decrease in demand for ultra-processed foods and an increase in budget revenues for healthy eating programmes. Modelling has proven that even a moderate price increase stimulates the replacement of such products with healthier alternatives. The proposed approach makes it possible to quantitatively assess the effects of regulation and determine the balance between fiscal interests and health protection. The practical significance of the study lies in the possibility of using the results to justify state policy in the field of food market regulation aimed at forming healthy eating habits among the population

Keywords: consumer food preferences; product format; excise tax; dietary quality of the diet; junk food; economic and mathematical modelling

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*Corresponding author



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INTRODUCTION

In the context of contemporary challenges to the food system and growing threats to public health, particularly due to the spread of unbalanced diets and excessive consumption of unhealthy foods, it is important to study the structure of food consumption in the retail sector. Given the trend towards an increase in the share of ultra-processed foods in the population's diet, particularly in Ukraine, there is an urgent need to develop state regulation tools to correct consumer habits and shape healthy retail offerings.

The problem of forming a healthy consumer basket in the retail food trade is becoming increasingly relevant in the context of global challenges to the food system. The spread of unbalanced diets and the growth in consumption of ultra-processed, or so-called "junk" foods, are leading to increased risks to public health, which requires the introduction of effective state regulation mechanisms. An important area in this field is the study of European experience in healthy eating, which can serve as a basis for adapting Ukrainian practices. A study by N.H. Bosetska *et al.* (2022) offers a comprehensive analysis of healthy eating strategies and practices in European countries. They emphasised the need for a holistic approach that combines educational, social and economic measures to shape rational eating habits. These findings are a valuable foundation for understanding the mechanisms of consumer behaviour change, which directly correlates with the topic of modelling the structure of the consumer basket in retail trade. This line of research was continued by T.V. Brovenko *et al.* (2023), who examined in detail the political strategies, regulatory measures and practical initiatives aimed at promoting healthy eating at the national level. The authors emphasise the role of public policy in shaping healthy trade offerings, which coincides with the goal of modelling the impact of excise taxation in the Ukrainian context.

The importance of a balanced diet as a factor in the prevention of chronic diseases was emphasised by M.P. Gulich & O.D. Petrenko (2023) in their study. They analyse the experience of the WHO and national programmes in Ukraine, which demonstrate the importance

of combining educational measures and regulatory mechanisms to change the eating habits of the population. This approach reflects the idea of the author's research on state intervention in the form of tax instruments to shape healthy demand.

Modern methods of food analysis are necessary for an accurate study of consumer trends. The work of Z.A. Burova *et al.* (2023) systematises the methodology for determining the energy value and nutrient composition of products, which allows for the construction of adequate economic and mathematical models of consumption. This is directly related to the authors' goal of creating a model that takes into account nutritional criteria when analysing the structure of the consumer basket. Attention should also be paid to the study by O.L. Plakida *et al.* (2023), which examines the impact of socio-economic factors on the population's nutrition and its role in maintaining health. Taking these factors into account is important for a comprehensive understanding of consumer behaviour and the effectiveness of regulatory measures, in particular excise taxation. In addition, the issue of food security, which is directly related to the balance of the food basket, is examined in detail in the work of N.I. Trishkina & I.V. Buznitska (2025). The authors emphasised that the availability and quality of products are basic conditions for forming a healthy diet, which serves as the foundation for further analysis of trade offers and consumer patterns.

Thus, the above-mentioned research establishes the understanding that scientifically-backed modelling of the consumer basket is necessary for effective state regulation, taking into account nutritional requirements and behavioural factors. The author's research was aimed at solving this problem by developing an economic-mathematical model of the impact of excise taxation on demand in the segment of harmful products in retail trade, which opens up prospects for improving public health and forming a balanced trade offer in Ukraine. Particular attention is paid to the role of retail trade as a channel for shaping consumer behaviour and implementing tax policy at the end-buyer level.

The introduction of such a tax has the potential not only to reduce the consumption of “junk food”, but also to increase tax revenues, which can be used to support healthy eating and the prevention of chronic diseases.

The aim of the study was to assess the consumer structure in retail trade, taking into account nutritional criteria, and to develop an economic-mathematical model of the impact of excise taxation on the segment of harmful products in Ukraine. In accordance with the set goal, the following tasks were solved: to analyse the structure of food consumption in the retail trade in Ukraine, taking into account nutritional criteria, and to identify the main imbalances between actual consumption and recommended healthy eating standards; to develop an economic and mathematical model of the impact of excise taxation on demand in the unhealthy products segment, taking into account price elasticity and consumer behaviour; to propose recommendations on the use of excise policy as a tool for state regulation of food retail trade with the aim of improving consumption patterns, reducing negative health effects on the population and increasing tax revenues.

MATERIALS AND METHODS

The methodological basis of the study was a combination of a structural-functional approach, economic-mathematical modelling and the concept of nutrition science, adapted to the conditions of food retail trade. The study was conducted in several stages, using the methods described below. The structural-functional approach was used to identify the key elements of the modern consumer basket, as well as to establish relationships between food categories, their nutritional value, frequency of consumption, and retail sales channels. Comparative typological analysis played an important methodological role in the study, which was used to systematise food categories, taking into account both economic and nutritional criteria. Economic criteria included sales volume dynamics. Nutritional criteria included protein, fat and carbohydrate content, as well as the level of food processing (natural and ultra-processed). This combination of criteria made it possible to carry out a more

comprehensive classification of product groups and identify imbalances between actual and recommended diets. At the first stage, products were classified according to their origin (plant or animal), degree of technological processing (natural, processed, ultra-processed products), functional purpose in the diet (main source of proteins, fats, carbohydrates, micronutrients, vitamins) and food density. Comparisons were made between product groups, which made it possible to identify imbalances in consumption and potential risks to nutritional balance. The source of typical nutritional value parameters was the national food standards of the Ministry of Health of Ukraine (Order of the Ministry of Health of Ukraine No. z1206-17, 2017), supplemented by nutrition studies (Burova *et al.*, 2023; Plakida *et al.*, 2023; Trishkina & Buznitska, 2025). The results of the typology formed the basis for further aggregation of products into classification blocks when modelling the consumer basket, and also made it possible to identify groups of goods with the highest potential in terms of ensuring a balanced diet.

The time series analysis was conducted based on statistical data (Food – Ukraine (consumer), n.d.; Food – Worldwide (consumer), n.d.) for 2018-2024, including data from the Statista platform and thematic industry publications. Changes in the consumption structure of the main categories of food products, particularly in the retail sector (online and offline), and their impact on the components of the consumer basket were analysed. Based on the author's typology for assessing structural imbalances between the actual food diet of the world's population and the recommended nutritional guidelines, the study used a method of comparative analysis of the actual consumption of major food groups globally for 2018-2024. The author's study included only products consumed through organised market channels, without taking into account goods of own production or non-market exchange. This approach made it possible to assess the effectiveness of trade supply as a key factor in shaping consumer habits. The regulatory framework was based on the generalised recommendations of international nutrition institutions

(World Health Organization, 2020), on the basis of which a comparative model of the consumer basket was constructed by category: protein, fat and plant products, as well as a group of ultra-processed products, conditionally classified as junk food. The assessment was carried out both statically (as of 2024) and dynamically (2018-2024), with subsequent extrapolation modelling for the period 2025-2029. Comparisons with recommended standards were made in physical units (kg per person per year), which made it possible to identify deviations from the actual diet and the degree of deficiency or excess consumption in each category. The method identified persistent structural trends, in particular a deficit in the consumption of nutritionally valuable products and a parallel increase in the consumption of ultra-processed foods, indicating a global shift towards a low-nutrient but high-calorie diet. The results obtained formed the basis for further national analysis and comparative conclusions on the effectiveness of trade policy in the context of creating a healthy food environment.

In the context of the study, the use of economic and mathematical modelling as an instrumental method aimed at quantitatively reflecting the impact of excise taxation on the structure of demand in the segment of food products with low nutritional value played a special role. The modelling methodology was based on the use of parameters of goods pre-classified by degree of harmfulness (confectionery, semi-finished products, spreads and sweeteners), the determination of price elasticity of demand, and the assessment of changes in consumption depending on price changes due to the introduction of excise tax. The model took into account baseline consumption volumes, population size, average retail prices, the amount of excise tax, as well as the potential effect on tax revenues and the indexed change in consumer health. The calculations were based on statistical data from Statista (Food – Ukraine (consumer), n.d.; Food – Worldwide (consumer), n.d.) and the authors' calculations for 2024, which allows for a relevant forecast assessment. The developed approach involves the use of classical functional demand equations, taking into account negative elasticity, as well as

assessing the effect of fiscal intervention under different tax scenarios. Below are methodological approaches to modelling a consumer basket of food products, taking into account nutritional criteria. The purpose of the modelling was to compare actual food consumption (based on retail data) with recommended consumption standards based on nutritional principles. This approach made it possible to assess the balance of the consumer basket, identify shortages or surpluses of individual product groups, and determine areas for correction in trade supply and consumer preferences.

Actual consumption (in kg/year per person) was determined based on statistical data from Statista (Food – Ukraine (consumer), n.d.; Food – Worldwide (consumer), n.d.) on the volume of food sales in retail trade divided by the population. Recommended consumption levels were calculated in accordance with: recommendations World Health Organization (2020); national food standards of Ukraine (Order of the Ministry of Health of Ukraine No. z1206-17, 2017); average daily norms for a hypothetical adult population with moderate physical activity (based on the combination of data from the above sources – national and international – for the purpose of standardisation (e.g. in kilograms per person per year). Methodological assumptions: average standards are applied to the entire population without distinction by age, gender or lifestyle; calculations are made in kilograms per person per year – this ensures comparability with retail trade data; food products are grouped according to their nutritional value.

Key variables of the model of excise tax impact on consumption of harmful products and fiscal revenues in the context of retail trade in Ukraine:

Q_0 – basic consumption of unhealthy food (in kg/person/year);

P_0 – current price per unit of goods;

t – excise tax rate (UAH/kg or % of cost);

$P_1 = P_0 + t$ – new price including excise tax;

ε – price elasticity of demand (negative value);

Q_1 – new consumption volume after the introduction of excise tax;

N – number of consumers (population of Ukraine);

R – state tax revenues from excise tax.

Basic equations of the model of the impact of excise tax on the consumption of harmful products and fiscal revenues in the retail trade in Ukraine:

1. Assessment of changes in consumption:

$$Q_1 = Q_0 * (1 + \varepsilon \frac{t}{p_0}). \quad (1)$$

If elasticity $\varepsilon = -0.8$ (price elasticity of demand -0.8 is an empirically based benchmark widely used to model the impact of excise taxes on harmful products) and the price increases by 20%, consumption will fall by approximately 16%.

2. Calculation of total consumption:

$$S_1 = Q_1 * N. \quad (2)$$

3. Calculation of tax revenue:

$$R = t * S_1 = t * Q_1 * N. \quad (3)$$

4. Assessment of changes in health (optional, using indices):

$$\Delta Z = \alpha * (Q_0 - Q_1), \quad (4)$$

where α – the coefficient of influence of 1 kg of unhealthy food on the spread of non-communicable diseases or the increase in treatment costs.

This approach facilitates the transition from the diagnostic to the intervention stage of the study, ensuring the validity of management conclusions regarding the feasibility of introducing product excise taxes as an element of public policy aimed at correcting consumer behaviour and reducing social costs for the treatment of non-communicable diseases associated with excessive consumption of unhealthy products. The study included an analysis of the relationship between the transformation of consumer demand and the development of entrepreneurship in the food and agricultural sectors. Methodologically, this was achieved by extrapolating changes in the structure of the consumer basket to the business models of retailers and agricultural producers. In particular, the impact of excise policy on the range, logistics and margins of retail chains was assessed, and the risks and opportunities for companies producing both low-quality and healthy products were identified. Particular attention was

paid to the impact of changes in the structure of demand on agricultural production – the growing demand for vegetables, cereals, protein crops and the corresponding prospects for the agricultural business.

The bibliographic method made it possible to generalise and systematise existing approaches to the formation of the consumer basket from the perspective of nutrition, as well as state regulation, in particular in the field of excise taxation of harmful food products. The experience of EU countries (Slovakia, Hungary, Poland) and other countries (South Africa, Great Britain, Mexico, UAE, Saudi Arabia) in establishing minimum healthy diets, introducing fiscal instruments to limit the consumption of products of low nutritional value, and organising retail trade offerings. This comprehensive analysis created a theoretical basis for the development of original models for assessing the impact of tax mechanisms on consumption patterns and the formation of a balanced retail offering. The method of logical generalisation was applied at the final stage to formulate conclusions regarding the possibilities of integrating a nutrition-based approach into state policy on the formation of the consumer basket, as well as the potential for using the research results in the practice of food retailers.

RESULTS AND DISCUSSION

Food retail in Ukraine has undergone significant transformations in three key periods: pre-COVID (2018-2019), COVID (2020-2022) and the period of full-scale Russian invasion (since 2022). The Ukrainian market is showing higher recovery rates compared to global indicators, which is due to post-crisis economic recovery, increased demand and growth in per capita retail trade revenues. The main factors driving the sector's development are the significant share of household spending on food, growth in consumption of local products, especially in the meat, fish, fruit and vegetable segments, as well as changes in consumer preferences. The projected further growth in per capita retail food trade revenues indicates a strengthening of Ukrainians' purchasing power, despite the difficult demographic situation (Ilchuk *et al.*, 2023). At the same time, there is a structural restructuring

of forms of product promotion: the share of e-commerce in food products is growing, especially in large cities, and wholesale trade chains are being restored, which play an important role in ensuring the physical availability of products in frontline and rural areas (Ilchuk *et al.*, 2025). Thus, an analysis of the dynamics of food retail trade in Ukraine shows its high sensitivity to socio-economic shocks and, at the same time, its ability to recover quickly. Against the backdrop of growing per capita trade revenues and changing consumer preferences, the qualitative composition of the consumer basket is becoming particularly important. In this context, there is a need for a more in-depth analysis not only from an economic point of view, but also from a nutritional point of view, i.e. taking into account the impact of consumed products on the health of the population.

Below is the author's classification of food products from a nutritional point of view, based on their functional role in the human diet. The main principle of grouping is not culinary or commercial purpose, but nutritional value and nutrient content: the presence of complete protein, fibre, essential fatty acids, vitamins and minerals, or, conversely, an excess of simple sugars, trans fats and additives. Four main categories have been identified: foods with high nutritional value – primarily sources of complete protein (of animal origin) and micronutrients necessary for the body to function; plant-based foods – the basis of the diet – vegetables, fruits, nuts, and grains, which should make up the largest share of daily consumption; sources of fats – mainly of plant origin, which are important for metabolism but require control over quantity and quality; junk food (unsuitable for regular consumption) – products with low nutritional value, excessive calorie content, high sugar, salt, artificial additives or trans fats, which are not recommended for regular consumption.

The first three categories of food products cover the main components of a balanced diet. Foods with high nutritional value are primarily meat, fish, eggs and dairy products, which provide the body with complete protein, essential amino acids, B vitamins, iron, calcium and other vital micronutrients. Plant-based foods – vegetables, fruits, nuts, grains and legumes – form

the basis of a healthy diet, are the main source of fibre, natural antioxidants, vitamins and complex carbohydrates, and should predominate in the daily diet. Sources of fat, mainly of plant origin, are important for energy balance, absorption of fat-soluble vitamins and normal functioning of the hormonal system, but require moderate consumption and attention to their quality, in particular to the content of saturated fats and trans fats.

The last group was identified based on an analysis of scientific sources on nutrition. The study by S. Pettigrew *et al.* (2017) compares the terms “junk food”, “discretionary” and “snack food”. The authors conclude that “junk food” is the most understandable and meaningful term for consumers, as it clearly signals low nutritional value and potential health risks. In turn, M. Hadjikakou & P. Baker (2017) point out that “junk food” is more of a slang or journalistic term, but acknowledge its widespread use and ease of understanding compared to more technical concepts such as EDNP (energy-dense, nutrient-poor) or discretionary foods. This highlights the practical advantage of “junk food” in communicating with the public. Researchers C. Finardi & G. Tognon (2014) note that despite the lack of a single scientific definition of junk food, the term is widely used in research, as well as in political and educational strategies aimed at reducing the consumption of unhealthy foods. Finally, C.A. Monteiro *et al.* (2019) propose the concept of ultra-processed foods (UPFs), which largely overlaps with the meaning of “junk food” and has a clear scientific rationale for health risks, including obesity, cardiovascular disease and metabolic disorders. Thus, despite some terminological ambiguity in scientific discourse, it is “junk food” that is the most appropriate term in the author's analysis – due to its clarity for a wide audience, its established use in the public sphere and its consistency with current ideas about the harmfulness of food. Table 1 provides a brief description of each group, the food products included in each of them, and the recommended consumption rate, which is consistent with data from the World Health Organization (2021) and current scientific publications in the field of nutrition (Burova *et al.*, 2023; Plakida *et al.*, 2023; Trishkina & Buznitska, 2025).

Table 1. Grouping of food products in the consumer basket, taking into account nutritional criteria and recommended frequency of consumption

Food group	Products included in the group	Nutritional value	Approximate norm, kg/person/year
Foods with high nutritional value	Meat	Sources of complete protein, calcium, vitamin B12, omega-3, iron	60
	Fish and seafood		15
	Dairy products and eggs		200 (dairy products) + 20 (eggs) = 220
	Total for the group		295
Plant-based foods – the basis of the diet	Vegetables	Sources of fibre, vitamins, antioxidants, folic acid, potassium	115
	Fruits and nuts		50 (fruit) + 5 (nuts) = 55
	Bread and cereal products		140
	Total for the group		310
Sources of fat	Oils and fats	Sources of unsaturated fatty acids, vitamin E, energy	13
Junk food (not suitable for regular consumption)	Confectionery and snacks	High calorie content, excess sugar, salt, trans fats, colourings; low biological value	It is better to avoid completely
	Spreads and sweeteners		
	Semi-finished products		

Source: author's own development

This approach allows grouping to be used as a basis for modelling a healthy consumer basket. An assessment of the consumption structure of food products sold worldwide in 2018-2024 reveals key imbalances between the actual diet of the population and the recommended norms based on nutrition science. The author's research analyses the consumption of goods sold in retail trade, excluding products that may be consumed from own cultivation or non-market sources. This approach makes it possible to assess the effectiveness of supply

in the organised trade system, which forms the basis of the affordable range for most consumers. 2024 is the last year for which complete actual statistics are available, while data from 2025 onwards are forecasts. At the same time, the dynamics of previous years make it possible to trace consistent trends in changing food practices that are critical to the formation of a healthy trade offer. The calculation of the consumption of food products sold by author groups in comparison with the indicative norms in the world is shown in Figure 1.

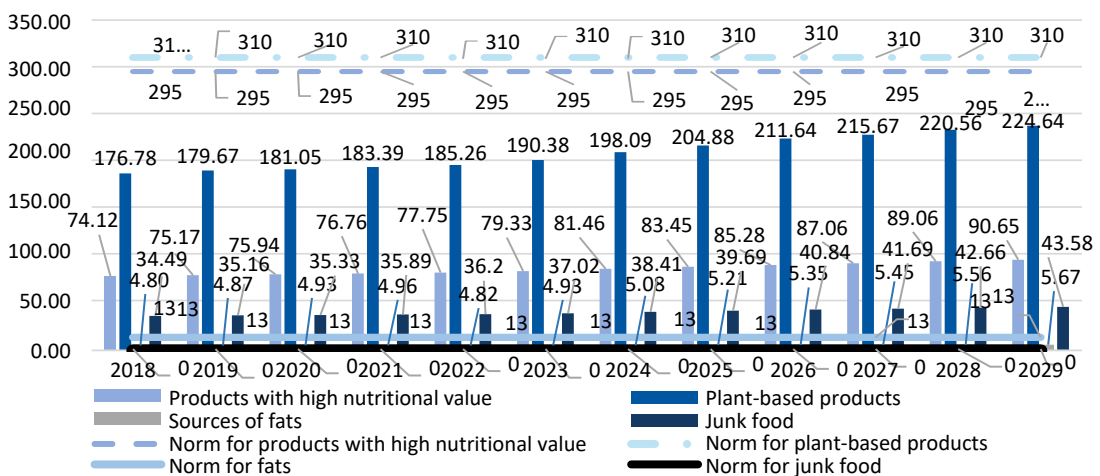


Figure 1. Calculation of the consumption of retail food products by author's groups in comparison with indicative norms in the world, kg per person

Note: 2025-2029 forecast data

Source: developed and constructed by the author using materials from Food – Worldwide (consumer) (n.d.)

Figure 1 shows that actual consumption of the main groups of nutritionally valuable products (protein, plant, fat) in 2024 significantly deviates from the recommended norms, ranging from -32% to -75% depending on the category. The largest gap is observed in the consumption of dairy products, fish and meat. At the same time, the consumption of junk food, which includes confectionery, semi-finished products and sweeteners, exceeds the recommended norm (0 kg) by more than 38 kg per person per year, indicating an undesirable trend of replacing a balanced diet with high-calorie but low-nutritional products.

The dynamics for 2018-2024 show a gradual increase in consumption in all categories: meat consumption increased from 19.08 to 20.65 kg (+8.2%), vegetables from 64.12 to 72.35 kg (+12.8%), but dairy products only from 50.94 to 56.21 kg (+10.3%), i.e. there is still a significant lag. On the other hand, junk food increased from 34.49 to 38.41 kg (+11.4%) (Food – Worldwide (consumer), n.d.). Despite the positive dynamics, the growth rate of consumption of healthy products sold is significantly lower than the growth rate of consumption of ultra-processed products. This poses risks to global public health, in particular the spread of chronic non-communicable diseases. An analysis of the structure of the global consumer basket for 2024 and a dynamic analysis for 2018-2024 reveal a systematic failure to comply with nutritional standards. The recorded deficit in the consumption of foods with high nutritional value is accompanied by excessive and growing consumption of junk food. These results confirm the need to review the retail trade offer and strengthen communication on the formation of healthy eating habits.

According to Statista's forecast data (Food – Worldwide (consumer), n.d.), a gradual increase in consumption is expected in almost all product groups in 2025-2029. The fastest growth rates are predicted for plant-based products and junk food, while the growth rates for nutrient-rich products (especially meat and fish) remain moderate. The forecast indicates positive dynamics in all categories: meat will grow from 20.65 (2024) to 22.82 kg (+10.5%), vegetables – from 72.35 to 82.56 kg (+14.1%), and fruit from 37.22 to 41.89 kg (+12.5%). However, even in 2029, the figures will

still be significantly below normal, with a deficit of over 200 kg in the high nutritional value group, over 85 kg in the basic plant group, and over 7 kg in the fat group. The largest growth in the forecast is for junk food: from 38.41 kg in 2024 to 43.58 kg in 2029 (+13.5%), which is more than the expected growth in the meat, fish or milk categories. The structure of the diet remains unbalanced, even despite improvements in absolute terms. The continued dominance of junk food poses serious risks to future public health.

In 2025-2029, a gradual increase in the consumption of food products in all product groups is expected. The most intensive growth will be in the consumption of plant products (in particular vegetables and cereals), but even with optimistic growth rates, actual consumption in 2029 will not reach the recommended nutritional standards. The projected shortfall in the category of foods with high nutritional value will be over 69%, in sources of fat – over 56%, and in the plant group – over 27%. At the same time, the level of junk food consumption not only remains consistently high, but continues to grow. This confirms the global trend of replacing a balanced diet with high-calorie but low-nutrient foods, which is a challenge for the development of nutrition-oriented retail trade.

In the context of these global trends, the analysis of the structure of food products sold in Ukraine is particularly relevant. As in the rest of the world, the domestic market shows certain imbalances between actual consumption and nutritionally sound standards. However, the specific consumer behaviour of Ukrainian households, economic constraints, the peculiarities of the retail offer, and the impact of martial law form unique national characteristics for analysis (Fig. 2).

Analysis of the data in Figure 2 shows that actual consumption lags significantly behind the recommended norms for all key groups. In particular, products with high nutritional value in 2018-2029 cover on average only 35-45% of the norm (295 kg per person per year). The lowest values were recorded in 2022 (92.91 kg), which is associated with the consequences of the war, logistical disruptions and a decline in household incomes. A similar situation can be observed with regard to plant products: actual

volumes are on average half the norm (310 kg). In the crisis year of 2022, their sales amounted to only 168.18 kg, or about 54% of the norm, after which a gradual upward trend began. The consumption of fat sources in the calculation period ranges from 4.0 to 5.7 kg, while the norm is 13 kg. This means that Ukrainian consumers receive less high-quality fats, compensating for the deficit with cheaper products rich in trans fats and oils of questionable quality. On the other hand, junk food consumption remains consistently high, ranging from 33.7 to 45.6 kg per person per year. In the absence of established normative

requirements, this signals negative changes in the structure of nutrition: excessive consumption of low-quality calories coupled with a shortage of healthy products. Thus, the Ukrainian food basket is characterised by significant imbalances between actual and rationally recommended consumption: an excessive proportion of “empty” calories and a significant deficit of nutrients. This creates risks of deterioration in the health of the population in the medium and long term and highlights the need for government policy aimed at increasing the availability and attractiveness of foods with high nutritional value.

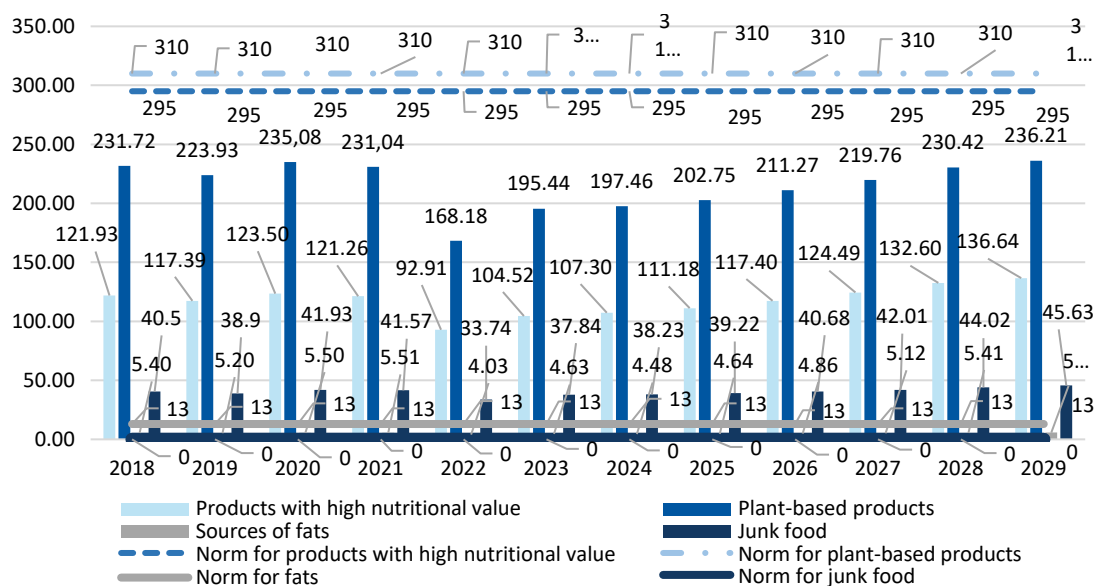


Figure 1. Calculation of the consumption of retail food products by author's groups in comparison with indicative norms in Ukraine, kg per person

Note: 2025-2029 forecast data

Source: developed and constructed by the author using materials from Food – Ukraine (consumer) (n.d.)

Assessment of the dynamics of food sales in Ukraine for 2018-2024. (Food – Ukraine (consumer), n.d.). allows to identify both common features with global trends and differences that require separate consideration from the perspective of national food security, public health and retail trade efficiency. An assessment of the structure of food consumption in Ukraine for 2018-2024 reveals persistent imbalances between the actual diet of the population and recommended nutritional guidelines, similar to global trends but with their own specific

characteristics. In 2024, the consumption of foods with high nutritional value (meat, fish, dairy products and eggs) will be only 107.3 kg per person, compared to the recommended norm of 295 kg, i.e. the deficit will reach 187.7 kg or -63.6%. The largest gap is in the category of dairy products and eggs (62.5 kg against the norm of 220 kg, -71.6%), as well as in the consumption of fish and seafood – only 4.48 kg against the required 15 kg (-70.1%). The actual consumption of plant products, which form the basis of the diet, in 2024 is 197.5 kg, which is 112.5 kg less than the

norm of 310 kg (-36.3%). The largest decline is observed in the consumption of bread and cereals, which remains at 72 kg against the recommended norm of 140 kg. Fats (oils and fats) are consumed at a level of 4.48 kg against the norm of 13 kg, which means a deficit of more than 65%. At the same time, the consumption of junk food, which is not recommended for regular consumption, will be 38.23 kg per person in 2024. This is less than in 2018 (40.50 kg), but after a decline in 2022 (33.74 kg), growth is observed again. The junk food structure is dominated by confectionery and snacks (17.93 kg) and semi-finished products (15.29 kg).

The dynamics for 2018-2024 showed that after a decline in consumption in 2022 due to the full-scale war, a gradual recovery in consumption volumes has been observed in all categories since 2023: meat consumption increased from 33.74 kg in 2022 to 40.34 kg in 2024 (+19.5% in two years), and vegetable consumption from 74.02 to 85.42 kg (+15.4%); at the same time, the level of consumption of nutrient-rich products is still significantly lower than the recommended levels, which poses risks to public health. According to Statista's forecast (Food – Ukraine (consumer), n.d.), by 2029, consumption is expected to grow gradually in almost all groups: products with high nutritional value will increase to 136.64 kg (+27% by 2024), but this is still only 46% of the recommended norm; plant-based products will increase to 236.21 kg (+19.6% by 2024), but the gap between consumption and the recommended norm will remain at over 23%; consumption of junk food is also projected to increase to 45.63 kg in 2029, which exceeds the recommended limit of 0 kg per person per year by more than 10 times.

Ukraine reflects the global problem of an unbalanced diet but faces additional risks caused by war, economic instability, and a limited retail supply. Despite a certain recovery in consumption volumes after 2022, the consumption structure remains unhealthy, with low levels of nutritionally valuable products and excessive consumption of junk food. The forecast for 2025-2029 shows positive dynamics in absolute terms, but even in the most optimistic scenarios, there will still be a significant lag behind the norms. The situation requires a review

of trade policy, the activation of healthy eating programmes and increased availability of quality food in Ukrainian retail. Thus, the modelling of the consumer basket in the retail food trade, taking into account nutritional criteria, made it possible to identify critical deviations of the actual diet of the population, both globally and in Ukraine, from the recommended standards. The imbalance in food supply, the dominance of ultra-processed products, and the shortage of nutrient-rich food groups create long-term risks to public health.

The results obtained indicate the need to: adapt trade policy to sustainable nutrition goals; develop a retail product range focused on nutritional adequacy; strengthen communication and educational campaigns on healthy eating; monitor structural shifts in consumption based on regular modelling of the consumer basket. A model approach based on comparing actual consumption with the normative nutritional structure can serve as an effective tool for assessing the quality of trade offerings and as a benchmark for reforming retail trade in the interests of public health. A summary of the results of modelling the consumer basket in food retail, taking into account nutritional criteria in the global and Ukrainian context, revealed profound imbalances between actual consumption and recommended healthy eating standards. A significant lag in sales of products with high nutritional value against the backdrop of consistently high and growing consumption of ultra-processed goods classified as "junk food" indicates a negative structural trend in consumer practices. This trend poses a serious threat to public health, as it contributes to the spread of chronic non-communicable diseases and increases the economic burden on the healthcare system.

In this context, it is becoming relevant to move from the diagnostic stage of research to the stage of instrumental intervention by developing an economic-mathematical model of the impact of excise taxation on demand in the segment of harmful products in the retail trade structure. Such a model allows not only to quantitatively assess the potential effect of the introduction of excise duty (reduction in consumption, change in price elasticity, growth in tax revenues), but also to formulate scientifically

sound recommendations for state policy in the field of rationalising food consumption. Thus, the logic of the study moves from an actual assessment of the consumption structure to modelling scenarios of its change under the influence of fiscal instruments, in particular, targeted excise taxation of certain categories of food products. This opens up the prospect of forming a nutrition-oriented trade offer through

mechanisms of state regulation, economic incentives for healthy food choices, and restrictions on the availability of harmful products through taxation. The analysis of international experience made it possible to compile Table 2, which presents countries that have already introduced such a tax and obtained results available for analysis, as well as those that have only recently implemented it.

Table 2. Effect of introducing excise taxes on junk food in countries around the world

Country	Type of tax	Results
South Africa	Tax on sweetened beverages since April 2018 (rate is 2.1 South African cents per gram of sugar exceeding 4 grams per 100 millilitres of beverage)	29% reduction in sweetened beverage purchases, 51% reduction in beverage calorie content, incentives for manufacturers to reduce sugar content
Slovakia	Tax on sweetened beverages since 2025 (0.15 euros per litre of beverage)	Expected revenue of €80 million in 2025, then €110 million/year
United Kingdom	Special tax on sweetened beverages, known as the 'sugar tax' from 2018 (two differentiated rates: 8 g/100 ml or more – 24 pence per litre; from 5 to 7.9 g/100 ml – 18 pence per litre. Less than 5 g/100 ml – not taxed)	A nearly twofold reduction in sugar consumption among children, and approximately 11 grams per day among adults
Mexico	Tax on sugary drinks since 2014 (1 Mexican peso per litre of sugary drinks (approximately 10% of the price))	Reducing demand by 6% in the first year, up to 12% by the end of the year
Hungary	Tax on unhealthy products, covering sweet and salty products, including beverages since 2011 (sweet beverages – 0.02 euros per litre; sweets, candies, chocolate – €0.40 per kilogram; salty snacks – separate rate based on salt content; energy drinks – higher rate due to caffeine and sugar)	Reduction in consumption of sweetened beverages by 19-22% and processed foods by 3-4% after the tax was introduced
United Arab Emirates	Consumer (excise) tax on sweet drinks and energy drinks since 2020 (50% on sweet drinks, 100% on energy drinks)	Reduction in consumption of sweetened and energy drinks by 20-40% after the excise tax was introduced
Saudi Arabia	Tax on sweet drinks since 2017 (50% on sweet drinks)	30-35% reduction in consumption of sugary drinks after the tax was introduced
Poland	Tax on sweet drinks from 2021 (0.50 zloty per litre basic tax; 0.05 zloty for each gram of sugar above 5 g/100 ml; additionally: 0.10 zloty/l for drinks containing caffeine or taurine)	Sales of such drinks fell by 10-20%, especially among young people

Source: grouped by the author according to A. Bíró (2015), M.A. Colchero *et al.* (2016), N. Stacey *et al.* (2019), P. Scarborough *et al.* (2020), Z. Berezhvai *et al.* (2024), A. Al Jawaldeh *et al.* (2024), Reuters (2024), M. Sajdakowska *et al.* (2024)

An analysis of Table 2 shows that the introduction of excise taxation has had lasting positive effects in most countries: a 6-20% reduction in the consumption of ultra-processed foods and sugary drinks, a reduction in the sugar content

of recipes, and a significant increase in budget revenues. At the same time, in structural terms, there is a redistribution of demand in favour of healthier alternatives, confirming the effectiveness of fiscal instruments in transforming food

practices. These empirical results provide a basis for moving towards the construction of an economic-mathematical model of the impact of excise tax on “junk food” in Ukraine, which will allow: assessing projected changes in demand depending on the level of tax burden; model fiscal policy options taking into account the price elasticity of demand; determine the expected effect in terms of reducing the consumption of products with low nutritional value; assess the potential of tax revenues and the possibilities for their reinvestment in preventive health programmes. The application of such a model creates a scientifically sound basis for making management decisions in the field of state reg-

ulation of retail food circulation with the aim of improving the consumer structure and reducing social costs of combating the consequences of an unbalanced diet. Table 3 shows a fragment of the calculation of the consumption of food products sold in Ukraine according to the author's classification, limited to only one group – junk food. The choice of this particular group is due to its high socio-economic significance: products in this category (confectionery, snacks, spreads, sweeteners, semi-finished products) are high in calories, low in nutritional value and are a key factor in the excessive consumption of sugar, salt and fats, which affects both public health and nutrition policy.

Table 3. Fragment of the calculation of consumption of food products sold in the author's group of junk food in Ukraine, kg per person

Indicator	Year						
	2018	2019	2020	2021	2022	2023	2024
Junk food in total of them:	40.50	38.90	41.93	41.57	33.74	37.84	38.23
confectionery and snacks	17.55	16.96	18.79	18.83	15.61	17.97	17.93
spreads and sweeteners	7.20	6.79	7.10	6.89	4.53	4.90	5.01
semi-finished products	15.75	15.15	16.04	15.85	13.60	14.97	15.29

Source: author's calculations based on materials by Food – Ukraine (consumer) (n.d.)

Trends in total junk food consumption: after growing to 41.93-41.57 kg per person in 2020-2021, there was a sharp decline to 33.74 kg in 2022, which may have been due to economic factors related to the full-scale invasion. In 2023-2024, the indicator recovered slightly to 37.84-38.23 kg. Confectionery and snacks show a similar trend: a decline in 2022 to 15.61 kg and a partial recovery in subsequent years. Spreads and sweeteners have the lowest consumption among the subgroups, with a minimum in 2022 (4.53 kg) and a gradual increase in 2023-2024. Semi-finished products consistently account for a significant share of junk food consumption, but there will be a decline in 2022 (13.60 kg), followed by a recovery to 15.29 kg in 2024. The junk food group shows cyclical fluctuations in consumption related to economic, social and political factors. The sharp decline in 2022 indicates the sensitivity of consumer patterns to external influences, while the partial

recovery in 2023-2024 indicates a return of demand for these products.

Based on the 2024 data presented in the calculation fragment in Table 3, a model was applied. The prices given in the model are the average retail prices per 1 kg of the corresponding product in Ukraine as of 2024. They are selected to realistically reflect the weighted average retail cost across the country; not to distort the effect of the tax: prices that are too low or too high could overestimate or underestimate the impact of the excise tax; to be suitable for calculation at both the macro and household levels. Taking into account the calculations of consumption of food products sold by the author's group of junk food in Ukraine and the author's model, calculations were made using formulas 1-4 of changes in demand for food products with low nutritional value and an assessment of tax revenues under the influence of excise tax (Table 4).

Table 4. Model calculations of changes in demand for low-nutritional-value foods and assessment of tax revenues under the influence of excise taxation

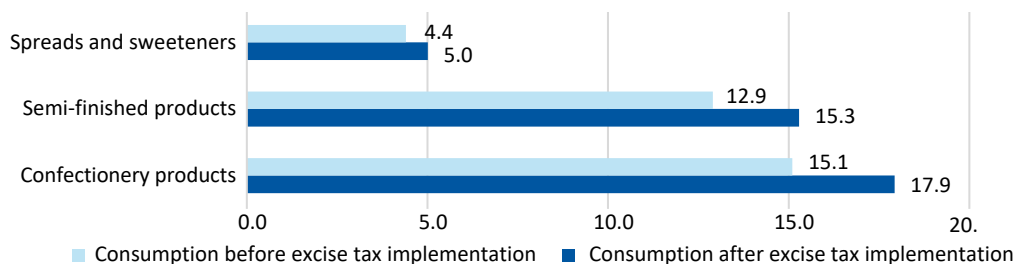
Category	Model indicators							
	Q_0 , kg	P_0 UAH	t , UAH	ε	P_1 , UAH	Q_1 kg	S_1	R, billion UAH
Confectionery products	18	120	24	-0.8	144	15.1	0.54	13.06
Semi-finished products	15	95	19	-0.7	114	12.9	0.46	8.82
Spreads and sweeteners	5	60	12	-0.6	72	4.4	0.16	1.90
Total	-	-	-	-	-	-	-	23.78

Note: Q_0 – base consumption of unhealthy food (in kg/person/year); P_0 – current price per unit of goods; t – xcise tax rate (UAH/kg or % of cost); $P_1 = P_0 + t$ – new price including excise tax; ε – price elasticity of demand (negative value); Q_1 – new consumption volume after the introduction of excise tax; R – state tax revenues from excise tax

Source: author's calculations based on data Food – Ukraine (consumer) (n.d)

Model calculations show that the introduction of excise duty on junk food will lead to a decrease in the consumption of confectionery products by $\approx 16\%$, semi-finished products by $\approx 14\%$, spreads and sweeteners by $\approx 12\%$. The largest tax revenues are expected from confectionery products ($\approx$ UAH 13 billion), with total revenues amounting to $\approx$ UAH 23.8 billion per year. The results demonstrate the effectiveness of excise regulation in simultaneously reducing the consumption of products with low nutritional value and filling the budget.

The funds obtained can be used to subsidise healthy foods (vegetables, fish, milk), educational programmes on nutrition, and medical infrastructure. The final modelling indicators in Table 4 reflect the expected reduction in demand and the amount of fiscal revenue as a result of the introduction of excise duties on certain categories of harmful products. At the same time, for a better understanding of the comparative effectiveness of the tax in different product groups, it is advisable to present the results in graphical form (Fig. 3).

**Figure 3.** Modelling changes in junk food consumption following the introduction of excise duty in Ukraine, kg per person per year

Source: calculated and constructed by the author based on the results of own research

Figure 3 shows the decrease in individual consumption of unhealthy foods (in kilograms per person per year) in the three product categories studied – confectionery, semi-finished products and spreads/sweeteners – under the influence of the proposed excise tax. This graphical interpretation allows to visually assess the scale of expected changes in consumer behaviour and compare the sensitivity of demand in different market

segments to fiscal intervention. In particular, it can be seen that the largest reduction in consumption in absolute terms is expected in the confectionery category, which is consistent with both the level of initial consumption and the elasticity of demand. Thus, Figure 3 complements Table 4 by providing a structured visual assessment of the effectiveness of excise regulation in terms of its impact on the volume of harmful food consumption.

It can be concluded that the introduction of food excise taxes on “junk food” is a well-founded and tested approach that could become a powerful tool of public policy in Ukraine. It combines changing consumer habits, improving public health, and filling the budget during the difficult times of war. In this context, the construction of an economic-mathematical model of the impact of excise taxation on demand in

the unhealthy food segment made it possible not only to assess the potential fiscal and social effects (decrease in sales, increase in budget revenues, change in price elasticity), but also to develop a number of practical recommendations. These recommendations are aimed at both shaping public policy in the food sector and transforming the business strategies of retail and agro-processing enterprises (Table 5).

Table 5. Recommendations based on the results of modelling the impact of excise taxation

Direction	Recommendations
State policy	Use part of excise revenues to subsidise the production of foods with high nutritional value (vegetables, fruits, protein products). Launch information campaigns on healthy eating. Provide tax breaks and credit support to producers of healthy foods.
Business strategies of enterprises	Adjust the product range by reducing the share of unhealthy products and expanding functional and healthy alternatives. Develop new product lines based on local agricultural raw materials. Use nutrition trends as a marketing advantage.

Source: author's own development

Thus, the modelling results showed that excise taxation can serve not only as a tool for regulating consumer practices, but also as a multiplier for the development of entrepreneurship and the agricultural sector. For retailers, this means rethinking their product range policy; for producers, it means adapting to the growing demand for nutrient-rich products; and for the state, it means creating conditions that combine fiscal interests with public health priorities. Within the analysis of the consumer basket and its transformations, the development of functional products that can be an alternative to ultra-processed goods is of particular importance. In particular, L. Kaprelyants *et al.* (2019) explore the potential of functional products in the context of the Ukrainian market. The authors show that expanding the production of functional food products (enriched with nutrients and bioactive components) is advisable given the existing dietary imbalances and consumption trends. They justify the need for technological and regulatory conditions for the development of this segment and emphasise that functional products can be an effective response to the challenges of an unbalanced diet. This is consistent with the approach of this study: excise policy can create an incentive for businesses to switch to the production of functionally enriched products. Thus, tax

regulation can serve as a comprehensive tool, not only reducing the consumption of harmful products, but also promoting the development of healthy alternatives with high nutritional value.

Changes in the structure of the food basket, caused by both regulatory measures (excise policy) and public nutrition trends, have direct consequences for entrepreneurship in the food trade sector. For retailers, the key consequences include: a reduction in the range of ultra-processed goods subject to excise duties; the need to review logistics and contractual relationships with suppliers; and a shift in margins towards products with higher nutritional value (fresh vegetables, dairy and protein products). For food industry enterprises, there are mixed effects. Junk food manufacturers face the risk of declining demand, falling profitability and the need to adapt their product range. At the same time, new market niches are opening up for manufacturers of healthy products: the development of functional products, local fermented products and organic products. The article by P. Hrynko *et al.* (2021) proves that innovative business models in trade are focused not only on technology but also on consumer values, in particular health and food quality. This correlates with consumer basket modelling, as such models are able to take into account the shortage of healthy products

and the excessive consumption of ultra-processed foods. Therefore, the consumer basket should be considered as part of an innovative trade strategy that combines financial interests with the formation of healthy eating habits.

The agricultural sector responds directly to structural changes in demand. Demand for vegetables, legumes, cereals and protein crops is expected to grow, which may encourage agribusinesses to expand the range of crops they grow, revising pricing policies, investing in the production of functional and healthy products based on traditional agricultural enterprises, and integrating nutritional approaches into the processing of agricultural raw materials. Thus, the transformation of the consumer basket has a multiplier effect – from retail chains to primary production, forming a new business ecosystem in the food and agricultural economy.

The results of the study also correlate with the conclusions of Z. Berezvai *et al.* (2024), who analysed the long-term impact of the tax on harmful products in Hungary. The authors concluded that the initial effect of the tax on reducing consumption is offset over time by rising incomes and insufficient awareness of the consequences of excessive consumption. The conclusions of the Hungarian researchers confirm the importance of modelling both short-term and long-term effects in the context of socio-economic transformations, which is also one of the key analytical lines of the author's research. A comparison of the results of the study with the approaches outlined by T. Csákvári *et al.* (2023) demonstrates a common understanding that the effectiveness of tax regulation in the food sector directly depends on the flexibility of pricing policy and the willingness of consumers to change their eating habits. The Hungarian authors argue that a sustained decline in consumption is observed only in the sweet drinks category, while other market segments show partial or temporary adaptation. Both studies emphasise the need to support tax measures with additional instruments of influence, such as supply-side reform and public awareness campaigns.

A similar idea regarding the relationship between tax incentives and producer behaviour can be found in the work of P. Scarborough *et al.* (2020), which analyses the impact of the tax

on sweetened beverages in the United Kingdom. The authors found that under pressure from fiscal constraints, most companies chose to reformulate their products, reducing sugar content to avoid additional burdens. This confirms the importance of including manufacturers as active players in the regulatory model system, which is one of the conceptual foundations of the authors' approach. A broader view of the cultural adaptation of fiscal interventions is provided by the analysis of A. Al Jawaldeh *et al.* (2024), which focuses on the experience of Saudi Arabia and the UAE. The study proves that with the right communication strategy, taxes on harmful products find broad public support, especially if they are accompanied by the targeted use of the collected funds for public health needs. This approach can be adapted to Ukrainian conditions as part of a long-term strategy to reduce social costs for the treatment of food-related diseases.

At the same time, the results obtained in the study by C.M. Dahl *et al.* (2023), which analysed the short-term effect of the tax on saturated fats in Denmark, caution against an overly narrow approach to tax decisions. The researchers found undesirable consequences – a shift in demand to other fatty products or purchases abroad. This confirms the importance of developing a systematic, balanced set of tools that includes monitoring consumer behaviour, demand elasticity and marginal substitution effects. Recent studies show that the effectiveness of tax measures on unhealthy foods largely depends on the broader context of their implementation, including socio-economic conditions, public awareness, and the quality of accompanying policies. A.M. Thow *et al.* (2022), in a comprehensive review of European experience with sweetened beverage taxation, emphasise that the success of such measures is determined not only by the taxation mechanism itself, but also by the transparency of tax revenue use, sustained political support, and effective information campaigns. The authors note that tax interventions integrated into public health financing strategies have a more lasting impact on consumer behaviour and contribute to reducing the consumption of harmful products.

The role of socio-economic and ethnic factors in shaping food behaviour is particularly

emphasised in a systematic review by K. Backholer *et al.* (2020), who investigated the impact of unhealthy food advertising on children. It was found that children of different social status and ethnic origin are exposed to uneven influence of marketing campaigns, which shapes different consumption patterns and risks of obesity. The authors emphasise that it is important for tax and regulatory measures to take these inequalities into account in order to avoid exacerbating them and to ensure fair access to healthy food, especially for vulnerable groups of the population. A significant document summarising the factors for implementing tax policy in the field of healthy eating is the review World Health Organization (2021). It emphasises that the success of fiscal measures depends on adaptation to the local context, the inclusion of budgetary support instruments and regular monitoring of results. It is important to integrate tax measures into comprehensive public health strategies that combine educational campaigns, advertising regulation and support for the production of healthy products. Such a systematic approach ensures maximum positive impact on the eating habits of the population and contributes to a sustainable reduction in social costs associated with diseases caused by poor nutrition. Thus, the results of the study are confirmed by numerous international studies that reveal the multifaceted nature of the impact of fiscal regulation on the food market. This gives grounds to assert the relevance of the proposed models and the advisability of their further testing in Ukrainian conditions, with the possibility of localising the best international practices.

CONCLUSIONS

The study provides grounds for asserting that, under current conditions, the retail trade in food products in Ukraine exhibits significant structural imbalances, characterised by an increase in the consumption of products of low nutritional value, so-called junk food, against the backdrop of a shortage of nutritionally valuable goods. An assessment of the structure of food consumption worldwide (2018-2024) reveals critical imbalances between actual diets and recommended norms, with particular attention to the growth in junk food consumption,

which exceeds the norm by more than 38 kg per person per year. Ukraine also has a significant shortage of nutrient-rich products – in 2024, consumption of products with high nutritional value will be only 1073 kg per person, compared to the norm of 295 kg, while junk food consumption remains consistently high and is growing. These data highlight the need to adapt the commercial offer and shape healthy eating habits among consumers. The results of the study demonstrated systemic deviations from nutritionally sound norms both globally and in Ukraine, with junk food dominating and a shortage of foods with high nutritional value. This determines the priorities for health policy and retail development.

According to the study, the developed economic-mathematical model of the impact of excise taxation on the consumption of low-nutritional-value foods demonstrates the ability to predict a decrease in demand for junk food within the range of 12-16%, depending on the product category and price elasticity of demand. The model allows for the assessment of both changes in consumption volumes and potential additional tax revenues, which on average could amount to approximately 23.8 billion hryvnia per year. The results obtained demonstrate the effectiveness of excise regulation as a public policy tool that can simultaneously contribute to reducing harmful food consumption, improving public health and filling the budget. At the same time, the proposed model provides flexibility for adjusting tax rates to take into account social goals and market characteristics, which is important in the context of forming a balanced and sustainable trade offer in Ukraine.

An analysis of other countries' experiences shows the effectiveness of excise taxes in combating excessive consumption of ultra-processed foods and sugary drinks, confirming the feasibility of introducing similar fiscal instruments in Ukraine. The proposed model approach allows not only to assess quantitative changes in demand, but also to form scientifically based recommendations for state policy aimed at transforming the trade offer towards improving the quality of nutrition of the population. The results of the study show that changing the structure of consumer demand is of strategic

importance not only for public health, but also for the development of entrepreneurship. For retailers and food companies, this means the need to adapt their assortment policy and logistics solutions, and for junk food producers, it means the risk of losing market share. On the other hand, agricultural enterprises gain new opportunities related to the growing demand for vegetables, grains, protein crops, and products with high nutritional value. This determines the need to integrate nutritional guidelines into the development strategies of agricultural and food businesses. Further research prospects include assessing e-commerce in food products in Ukraine and worldwide, which opens up new opportunities for introducing healthy

eating practices and influencing consumption patterns through digital sales channels. It is also advisable to develop a model that takes into account the socio-demographic differentiation of consumers, regional characteristics, and a comprehensive combination of fiscal and non-fiscal instruments to promote healthy eating.

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Анастасія Кириченко

Кандидат економічних наук, доцент

Національний університет біоресурсів і природокористування України

03041, вул. Героїв Оборони, 15, м. Київ, Україна

<https://orcid.org/0000-0002-5647-7698>

Моделювання споживчого кошика в роздрібній торгівлі харчовими товарами з урахуванням нутріціологічних критеріїв

Анотація. Сучасні глобальні виклики у сфері харчування, зокрема дефіцит нутрієнтно цінних продуктів і зростання споживання ультрапереробленої їжі, формують серйозні ризики для здоров'я населення та потребують перегляду структури споживчого кошика. Метою статті було моделювання впливу акцизного оподаткування на структуру реалізованих у роздрібній торгівлі харчових товарів з урахуванням нутріціологічних критеріїв. Для досягнення поставленої мети використано методи економіко-математичного моделювання, аналізу еластичності попиту за ціною, системного підходу та порівняльного аналізу офіційних статистичних даних України й міжнародних джерел. Результати дослідження засвідчили істотне відхилення фактичної структури споживання від рекомендованих норм: надмірне споживання продуктів з високим вмістом цукру, солі та трансжирів поєднується з недостатнім споживанням свіжих овочів, фруктів, молочної продукції та білкових джерел. У 2024 р. в Україні споживання продуктів з високою харчовою цінністю становило лише 36 % від рекомендованого рівня, тоді як молочні продукти й риба виявили найбільший дефіцит. Рослинні продукти споживаються на третину менше норми, а обсяги жирів покривають лише половину потреби. Водночас частка сміттєвої їжі перевищує допустимий рівень більш ніж у десять разів і продовжує зростати. Прогноз на 2025-2029 рр. демонструє поступове відновлення обсягів споживання в Україні після шоків війни, однак навіть у довгостроковій перспективі показники не досягнуть рекомендованих рівнів. Економіко-математична модель показала подвійний ефект акцизів на шкідливі харчові товари: зменшення попиту на ультраперероблену їжу та зростання бюджетних надходжень для програм здорового харчування. Моделювання довело, що навіть помірне підвищення цін стимулює заміну таких продуктів кориснішими альтернативами. Запропонований підхід дає змогу кількісно оцінити ефекти регулювання й визначити баланс між фіскальними інтересами та охороною здоров'я. Практичне значення дослідження полягає у можливості використання результатів для обґрунтування державної політики у сфері регулювання ринку харчових товарів, спрямованої на формування здорових харчових звичок населення

Ключові слова: харчові уподобання споживачів; формат реалізації продуктів; акцизний податок; дієтологічна якість раціону; сміттєва їжа; економіко-математичне моделювання