
Changes in Food Consumption of Polish Households in the 21st Century

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Abstract:

Purpose: The main aim of the paper is to present the directions of changes in consumer's behaviour and their consequences for food consumption in Poland.

Design/Methodology/Approach: The paper is based on the results of econometric analysis and Target Group Index research, gathered a wide range of information. Taking into consideration complexity research it is necessary to use various methods, including both qualitative and quantitative aspect, especially econometric discrimination methods of finite sets, and one-source studies (TGI).

Findings: The results of research touched the satisfaction of nutritional needs in Poland in 2003-2019 were presented. The findings of the presented study point to the fact that the consumption behaviour of Poles is significantly differentiated by their level of income. In the case of households with low incomes, the demand for food is relatively high, while the situation in households with relatively high incomes is different. The latter exhibit low consumption sensitivity in relation to the increase in their income. There is also a considerable differentiation in terms of shaping the consumption of food products depending on product categories. In relation to absolutely basic products, the author observed a relatively small buyers' response to a change in their income, which could be regarded as an increase in consumption. However, the demand for products with a higher degree of food processing is still at a relatively high level.

Practical Implications: The paper provides the results of research that help food producers and marketers to determine pricing policies and supply planning in relation to food consumer's demand.

Originality/Value: The paper presents a new methodological approach for estimating the level of saturation of food needs based on the results of econometric analysis and Target Group Index research.

Keywords: Food consumption, nutritional needs, income elasticity, factors for consumption, TGI.

JEL Classification: M31, L11.

Paper type: Research study.

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1. Introduction

The approach to the economics of consumption, as a subdiscipline of economics, stems from the essence of the concept and the function fulfilled by it in the economic system. The scope of consumption includes both the direct act of satisfying individual needs, as well as human behaviour in the process of production, exchange and consumption of goods and services. In the macroeconomic approach, consumption is treated as a stage of social reproduction, responsible for the finalisation of the whole reproduction process. This multifaceted approach to consumption indicates its special place in economic sciences. At the same time, it should be noted that previously (in the period of so-called school of classic economics, i.e., at the turn of the eighteenth and the nineteenth century, as well as pre-classic approaches, including mercantilism, Physiocracy and Marxist economics), consumption was pushed to the margins of the theory of economics (Bywalec, 2010).

In the 1970s, consumption gained a permanent position in economic sciences. Particular contribution in this regard came from Pohorille (1971), Hodoly (1975), Zielińska (1978) and other scientists. Changes in the level and structure of consumption are connected with numerous causative factors, both of economic as well as social origin (Dąbrowska *et al.*, 2015). Within the first and the second decade of the 21st century, the level of satisfaction of nutritional needs in Poland is growing. At the same time, within the analysed period important diversification of household consumption patterns is still visible. The first subject concern the determinants of food consumption deals with consumer behaviour and contemporary trends in the food market.

There are a lot of views in literature on consumer behaviour in economic theory as well as the determinants of these behaviours and trends in food consumption. In light of the transformation, we should recognise consumption as a process involving popularisation of products available in global markets. This situation is conducive to unification of consumption models and consumer behaviour. Among factors affecting globalisation of consumption, we can distinguish those which are conducive to the process, as well as those which hinder its development (Mazurek-Łopacińska, 2003). The presented paper focuses on identifying directions of changes in the behaviour patterns of food consumers and their consequences for modelling food market.

2. Research Objectives and Methodology

The main aim of the paper is to present the directions of changes in consumers behaviour and their consequences for food consumption in Poland in the first and second decade of the 21st century. There are different approaches to the study of consumption. In presented paper there was applied an interdisciplinary approach which resulted from the need to not only seek a common denominator in the interpretation of the mechanism of consumption, but also to develop tools adequate

to this study area. The paper is based on the results of econometric analysis and Target Group Index research. The interdisciplinary approach to food consumption created sound grounds for formulating paradigms of its development. Relatively new approach, also methodological and empirical, was applied to the estimating the level of satisfaction of nutritional needs in Poland in 2003-2019.

As far as the method of presenting research results is concerned, it follows the pattern ensuring the comparability of data. All materials were arranged according to the criterion of the value of income elasticity factors for food consumption. Presented factors constitute average values, obtained in the profile of quintile groups in the studied households. At present, Central Statistical Office GUS makes available the information on the diversity of income, expenses and consumption according to quintile groups exclusively for the total of households in Poland, employees and pensioners, while for the remaining social groups, i.e., farmers, the self-employed or people living on unearned income, this data is not provided (Central Statistical Office, 2004-2020).

For this reason, presented research results, starting from the year 2003, are of narrowed character due to limited accessibility of data. What is more, when it comes to the subject-related scope of the analysis, the present study concentrates on product categories without taking into account subsequent items included in them. Nutritional products, exclusive of stimulants, were the only categories taken into account, which constituted the subject of analyses in the previous years. Data concerning the income and consumption is presented according to its division into five quintile groups with demographical and social characteristics of the people forming a given household as well as the level of monthly income and expenses taken into account. Such division makes it possible to compare the distribution of income in the profile of the wealth level (starting from the poorest 20% - first quintile group, and finishing with 20% of the wealthiest households) taking into account two already mentioned household types, i.e., employees and pensioners.

Complementary the Target Group Index method was used (TGI, 2009). In this paper it has been concentrated mainly on analysis cyclical study TGI, determining standard tool to defining target groups, products and services. Furthermore it is a reach source of information concerns of consumers' behaviour changes on food market. The first part of research realized with face-to-face method includes detailed questions concerning readings of press, general questions of listening to the radio and watching TV rating and spacious gathering of questions concerning of person's profile. The second part of research - questionnaire filled individually by respondents, contains detailed questions relating consumption over 320 categories of products and services, over 4000 of brands and also 160 questions relating to live styles. The most important feature and simultaneously advantage of research is its one - source data completing is connected with gathering the full information relating brands' consumption and media perception from the same participants of research.

3. Determinants of Changes in Food Consumption

Changes in the food consumption in the last twenty years of 21st century are determined by:

- Contemporary consumer trends,
- Level of food needs satisfaction,
- Purchasing behaviour.

Contemporary consumer trends: Of particular importance in shaping the behaviour of modern consumers is a new approach emphasising care for personal health, and on this basis creating a lifestyle trend known as wellness. There are various elements at play which have a direct and indirect impact on the physical and mental health of the consumer. A trend is defined as a process of change, which is perceived from a psychological, economic or sociological perspective, and may be short-term or long-term, as well as regional or global (Vejlgaard, 2008). In the long-term perspective, trends can significantly affect the purchasing behaviour of consumers, which in turn leads to changes in consumption patterns. Trends change over time and are characterised by coexistence and divergence. New trends in consumer behaviour emerge on the basis of economic, social and cultural transformations. In recent years, the dynamic development of the following trends on food market due to the processes mentioned have become worthy of note:

- Deconsumption
- Eco-consumption
- Virtualisation

Deconsumption is defined as the deliberate and intentional limitation of the volume of consumption of products and services to more modest levels from the point of view of the individual (Zalega, 2012). Within the deconsumption trend, four dimensions are distinguishable, limiting consumption due to greater financial uncertainty in the situation of households, limiting the larger amount of goods consumed in favour of smaller quantities of higher quality, reducing material consumption in favour of service consumption, and limiting consumption for ideological reasons. A very closely related concept to deconsumption is eco-consumption, also called ecological or sustainable consumption.

Eco-consumption consists in the deliberate attempt by individuals to minimize the negative effects resulting from the consumption of consumer and investment goods and services, through rationalization and exploitation of production factors, i.e., resources, and reducing the amount of post-production and post-consumer waste (Nowalska, 2007). There are numerous examples of such ecological consumption, such as: the trend towards so-called "healthy food", switching to reusable shopping

bags instead of plastic carrier bags, choosing transport and tourism that is perceived not to degrade the natural environment, and so on (Grzeża and Kieźel, 2017).

Virtualisation as a trend is associated with the use of electronic means of communication, mainly the internet, in the process of purchasing consumer products. The growing interest among consumers in the trend of virtualisation of consumption is related to the development of modern information and communication technologies. Virtualisation of consumption is becoming more and more important in our social lives, as evidenced by the constantly growing number of internet users, the increasing amount of time spent on using television, computers and the internet, the growing popularity of online purchases of goods and services or group purchases.

Level of food needs satisfaction: In the presented study the level of satisfaction of nutritional needs have been determined basing on the results of food consumption elasticity in the household perspective. Econometric methods are of quantitative character and they make it possible to conduct analyses on a wide spectrum basing on assessment indicators. The indicators consist of parameters estimated basing on different demand models as well as income elasticity factors determining the force of reaction of demand to the change in consumers' income level. The econometric model the most frequently used for estimating the parameters of food consumption function is the log-hyperbolic model in which the estimated A parameter sets the asymptote, constituting in economic interpretation the level of consumption saturation provided that the income is growing without any limits.

Pioneering significance have works by Zielińska (1978). These works were based on empirical analysis of the workers' budgets. Saturation level was determined for 10 nutrition groups as well as comparative analysis was performed for the dynamics of changes in the years 1966-1976. As far as the food market is concerned, the regularities, formulated by Keynes and Engel, referring to the specific expenditure trends consisting in a change in the general relations in consumption expenditure and savings as well as the change in the structure of expenditure have been confirmed many times. Studies verifying the above-mentioned Engel's law are of interest to many scientists, and this tendency has been reflected in numerous Polish and foreign scientific publications (Deaton, 1998; Kehlbacher, 2012; Kwasek, 2015; Szwacka-Mokrzycka, 2018; 2021; Klonaris, 2001; Kwasek, 2008). The presented methodology constituted the basis for further studies created basing on the data from household budgets (Szwacka-Salmonowicz, 2003; Kwasek, 2008; 2012; 2015).

The evaluated elasticity factors constituted factual basis for performing quality and quantity assessment of consumption structure expressed in a qualitative and quantitative way as well as for the assessment of the pace of the consumption of different nutrient groups approaching the saturation level. The evaluated elasticity factors were used for determining the hierarchy of nutritional needs in different household types in Poland. As far as the way of results' presentation is concerned, it

is maintained in a way guarantying possibility of data comparing. The whole material was ordered in tables according to a criterion of coefficients of income elasticity of food consumption. Coefficients presented in particular tables are average values, calculated according to quintiles in six types of households. Taking into account the criterion of coefficients' value they were divided into three categories: high, medium, and low.

There was an assumption that high coefficients of elasticity are in the range from 1.0 and above and their response to fulfilling needs for luxurious goods. On the other hand, medium coefficients of elasticity are in the range from 0.5 to 1.0 and response to fulfilling needs for necessities. Low coefficients of elasticity are from 0.0 to 0.5 and describe a level of fulfilling needs for absolutely basic products. Complementary to the econometric methods, the Target Group Index method was used to determine the level of satisfaction of nutritional needs. There were selected two branches for research: dairy products and edible fats. There were used the following criteria:

- level of the branch development with taking into account diversification of a level of concentration of production and assets according to different branches;
- level of market saturation by particular product category;
- level of processing of a product taking into account the division into:
 - traditional offers (of a low level of processing),
 - offers of new generation (of a high level of processing).

Basing on the above mentioned criteria it should be stated that the dairy industry and the industry of edible fats are characterized by the relatively high level of concentration, where about 70% of the Polish market is controlled by the five largest firms. In the group of dairy products there were selected the following groups for research: yoghurts and dairy desserts. As far as the level of needs saturation is concerned, yoghurts, dairy drinks and desserts are placed in the first group of luxurious products with high coefficients of income elasticity of demand (1.0 and more than 1.0). In the branch of edible fats there were selected margarine for frying, spreading on bread and oil and olive. It should be stressed here that this category is characterized by the relatively highest level of market saturation in the analysed period.

Purchasing behaviour. The main factor contributing to changes in consumer behaviour in 2000-2020 is the change in the family model and the fast pace of consumer life, combining on-line shopping with traditional shopping (Dejnaka, 2017; Roland Berger Report, 2017). The following directions of changes in purchasing behaviour are characteristic for the first and second decades of the 21st century:

- a new family model - an increase in single-person households and female economic activity. A model focused on both traditional and online shopping. Professional activity of women is connected with taking care of one's health and the quality of consumed meals;
- the fast pace of life - changes in shopping behaviour towards increased interest in the discount sales and convenience network - proximity to the place of residence;
- changing eating habits towards buying and consuming healthy, organic, and unprocessed food. An increased interest in supermarket own-brand labels, consumers increasingly choose products under the brand of retail chains. Own-brand supermarket labels are positioned as a combination of good price and innovation Applying especially to ready-meal dishes such as soups, vegetarian dishes, salads, the reason for buying own label products is not only the low price and innovation, but also the perceived 'value' they provide Simply put, these are quick and healthy meals, vegetarian products, lactose-free milk, pate without meat;
- Purchasing virtualisation - the development of online shopping as a result of the development of digitisation, smartphones and e-commerce - this especially applies to young consumers;
- Increased interest among consumers in personalised shopping.

4. Research Results and Discussion

4.1 The Level of Market Saturation in the Light of Econometric Analysis

The conducted analysis of food needs allows to distinguishing three basic directions of changes. It concerns the level of needs saturation, qualitative transformations, and substitution process within analysed food groups and particular categories. Performing assessment of the level of food needs saturation in 2019 compared to 2003, it should be noticed that there was significant decrease in coefficients of income elasticity of expenditures and food consumption but the essence of the hierarchy stayed the same. Distinct decline in elasticity of consumption took place in 2019 compared to 2003, although the scale of this decrease is differentiated. The relatively most significant decline of coefficients in the analysed period took place in the group of consumption responding to fulfilling needs of lower order.

The same direction of changes was noticed in the level of coefficients of income elasticity of food consumption for groups of products. The relatively most significant decrease in coefficients of consumption took place in the case of inferior goods and necessities in 2019 compared to 2003. The observed relationship expresses progressing transformations in food needs in two analysed periods. It also proves increasing saturation of food needs over the period of the first and second decade of 21st century (Table 1). It should be stated that the decrease in consumption elasticity factors took place in each of the analysed groups, while the scope of this

decrease is diversified. Relatively most important decrease of factors in the analysed period took place in the consumption group corresponding to satisfying absolutely basic products (Szwacka-Mokrzycka *et al.*, 2021). When we follow the prioritization of food consumption according to high elasticity factors in the year 2019, it is observed the similar tendency as in 2015. It has been confirmed the positioning of product categories in second group (with elasticity factors between 0.5 to 1.0).

In 2019 there were situated fish in total, yoghurts and dairy products, confectionery, cheese, juices, cakes and bakery and fruit in total (Table 1). It is observed the tendency of relatively decrease of income elasticity factors in 2019 in relation to 2015 for juices in total, fruit in total, meat in total, vegetables in total. At the same time the tendency of increase income elasticity factors for fish in total, yoghurts and dairy products, cheese (by about 1.5-3 times) is noticed. It is worth to mention that the decrease of income elasticity factors touched mainly food products situated in group III with elasticity factors below 0.5. The relatively highest decrease, by about three times, is observed in elasticity factors for meet (from 0.13 in 2015 to 0.04 in 2019). On the base of conducted analysis we can confirm the continuation of the tendency of substitution processes within nutritional products groups in 2019. At the same time it is worth to underline the relatively high and increasing in 2019 elasticity factors for fish, yoghurts and dairy products. It shows relatively low level of satisfiing needs for these products.

Table 1. Food consumption elasticity factors for households in total in 2003-2019

Food Product	2003	2009	2015	2019
Bread and cereals	0,0261	0,0151	0,0588	0,0416
Cakes and bakery products	0,5564	0,4331	0,4301	0,5082
Meat (in total)	0,1989	0,1739	0,1542	0,0526
Fish (in total)	0,5167	0,4420	0,5036	0,9096
Milk	0,0239	0,0009	0,0479	0,0324
Yoghurts and dairy products	0,6679	0,5039	0,2295	0,7334
Cheese (in total)	0,4020	-0,387	0,4293	0,6696
Oils and other vegetable fats	0,1175	0,1077	0,1171	0,2175
Animal fats	0,2933	0,3190	0,4646	0,8375
Fruit (in total)	0,4405	0,4160	0,5359	0,4341
Vegetables (in total)	0,0984	0,0921	0,1569	0,0697
Confectionery	0,4501	0,4037	0,3019	0,6697
Juices (in total)	0,9723	0,5608	0,5332	0,6137

Source: Szwacka-Mokrzycka 2018; 2021.

4.2 The Level of Market Saturation in the Light of Target Group Index research

4.2.1 Dairy market

Significant changes have taken place in the Polish market for the last twenty years in the aspect of creation of the differentiated product offer. There exists access to a very wide assortment of some products, starting from traditional milk through processed products of a high proportion of added value. The analysis of tendencies

in consumption of products selected to research indicates dynamic development of “new generation” categories on the Polish market, so dairy drinks and desserts.

The market of desserts is characterized by a relatively low level of saturation. The category of “dairy desserts” noticed considerable increase in the period 2001-2020, from 21.50% in 2001 to 28.60% in 2020. At the same time it should be noticed that the described market was characterized by significant fluctuations over time. In the years, 2001-2005, there was increase of consumption of dairy desserts and repeated its decline in the period 2007-2008 to 27.36%. In 2020, the level of dairy desserts consumption was above the average of the first and second decades of the 21th century (Table 2).

Table 2. *Tendencies of dairy desserts consumption in the period 2001-2020 (%)*

2001-2020	2001	2002	2003	2004	2005	2006	2007	2008	2018	2019	2020
24.21	21,50	25,20	25,70	29,50	30,20	x	23,91	24,14	27,36	28,89	28,60

Note: x-data not available

Source: Own elaboration based on TGI, Kantar Polska.

The yoghurt market is characterized by the relatively highest level of saturation among the researched product categories – 66.77% of consumers declared their consumption in the period 2001-2020 (Table 3).

Table 3. *Tendencies of yoghurt consumption in the period 2001-2020 (%)*

2001-2020	2001	2002	2003	2004	2005	2006	2007	2008	2018	2019	2020
66.77	80.10	81.00	x	73.70	71.43	76.79	76.89	78.06	64.16	64.18	66.26

Note: x-data not available

Source: Own elaboration based on TGI, Kantar Polska.

At the same time it should be noticed that the described market was characterized by significant fluctuations over time. The period 2001-2008 brought considerable increase in consumption of yoghurts from 80% in 2001 to 78% in 2008, whereas decline to the level 64-66%, from 2018 was noticed.

4.2.2 Edible fats market

In the years 2001-2008, a high level of growth characterized both the segment of margarine for spreading on bread as well as margarine for roasting/frying. In the second analysed period, 2018-2020, consumption of margarines decreased significantly whereas a high rate of growth characterized production and consumption of refined oils. The increasing tendency in oils production resulted from a necessity of adjustment of supply to raising demand for these products represented both by households as well as producers of compound food commodities. Last years brought distinct decrease in the development rate of the described sector because of a high level of market saturation with these products. Detailed analysis of the edible fats market indicates that an average consumption of

margarines for spreading on bread was on the level of 54.06% in the period 2001-2020. This market is characterized with some fluctuations over time. A significant breakdown in consumption of margarines took place in the period 2018-2020 to 41.39% (Table 4).

Table 4. *Tendencies of margarine for spreading on bread consumption in the period 2001-2020 (%)*

2001-2020	2001	2002	2003	2004	2005	2006	2007	2008	2018	2019	2020
54.06	62.00	62.00	x	68.36	67.63	66.96	67.85	66.48	48.36	43.70	41.39

Note: x-data not available

Source: Own elaboration based on TGI, Kantar Polska.

The market of margarines for roasting/frying is characterized by a lower level of penetration than margarines for spreading on bread. Nearly 50% of consumers declared their consumption in the period 2001-2020. At the same time, significant fluctuations on this market over time should be noticed, rapid growth of consumption of margarines for roasting/frying took place in the period 2001-2002 to nearly 72%, whereas the next period 2004-2020 brought considerable decrease compared to the previous period, from 65.92% in 2004 to 42.93% in 2020 (Table 5). This indicates a change in nutritional preferences on the vegetable fat market.

Table 5. *Tendencies of margarine for roasting/frying consumption in the period 1998-2008 (%)*

2001-2020	2001	2002	2003	2004	2005	2006	2007	2008	2018	2019	2020
49.95	71.00	71.80	x	65.92	65.59	69.04	68.19	x	47.66	47.42	42.93

Note: x-data not available

Source: Own elaboration based on TGI, Kantar Polska.

The relatively highest level of penetration on the market of edible fats took place on the market of oil and olive (Table 6). In the period 2001-2020, on average 85.18% of consumers declared their consumption. Moreover, this market is characterized with a high level of stability and immutability over time. The high level of oil and olive market penetration indicates a change in nutritional preferences of Poles, expressed in a gradual departure from margarine consumption in favour of oil and olive.

Table 6. *Tendencies of oil and olive consumption in the period 2001-2020 (%)*

2001-2020	2001	2002	2003	2004	2005	2006	2007	2008	2018	2019	2020
85.18	96.40	96.40	x	96.05	96.03	96.59	96.91	97.10	90.28	90.62	80.64

Note: x-data not available

Source: Own elaboration based on TGI, Kantar Polska.

5. Conclusions

The study concerns many aspects and includes basic concepts related to the consumer behaviour and its determinants, contemporary consumer trends in food consumption, changes in food consumption, as well as the level of satisfaction of nutritional needs in Poland in the first and second decade of 21th century. At present, the methods which are most frequently applied to examine the rate of development of food consumption and changes occurring with regard to its structure are those which belong to the category of econometric analyses.

The studies to date, carried out for many years, have focused on the substantive analysis of the development processes of food consumption, and they were mainly related to the assessment of the adequacy of various econometric models to describe the empirical processes of food consumption development in Poland.

What is essential in the area under discussion is the assessment of the level of satisfaction of the food needs of Polish households made on the basis of quantitative econometric methods. Based on the econometric research, the regularity of the increasing level of satisfying food needs depending on the increase in the household income has been confirmed. It is possible to observe significant differences in the consumption of the examined products between the correspondent quintile groups.

There is also a considerable differentiation in terms of shaping the consumption of food products depending on product categories. In relation to absolutely basic products, the author observed a relatively small buyers' response to a change in their income, which could be regarded as an increase in consumption. However, the demand for products with a higher degree of food processing is still at a relatively high level. Changes in nutritional needs demonstrates that quality changes result to a large extent from the intensification of substitution processes between food products groups.

The conducted analysis of changes in food consumption demonstrates that quality changes result to a large extent from the intensification of substitution processes between food products groups. Quality changes in consumption result in particular from transitions in consumer's consciousness. They are expressed in the changes of consumption habits, and as a result in the transformation of the preference scheme.

Changes in the consumption model are also promoted by consumer education stimulating the shaping of models based on food consumption rationalization. This conclusion has been confirmed by the results of TGI research based on chosen categories: dairy and edible fats. The assessment of the saturation of food needs in Poland on the basis of the income elasticity of consumption constituted a continuation of research conducted in the 90s of the past century.

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