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## Features of assessing the satisfaction of the population with food consumption

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### ABSTRACT

Meeting the population's demand for diverse needs is considered to be a priority. In this regard, the issues of assessing the satisfaction of the population with food consumption based on their desires and interests were covered in this article, the results and features of which were researched through the personal research of the authors of the article. Through this, proposals and recommendations have been developed aimed at effectively assessing the satisfaction of the country's population with food consumption. Also, based on a number of studies that studied the socio-economic importance of food consumption and the issues of food assessment, and the results of assessing the satisfaction of the population with food consumption based on the state of food products are analyzed and based on the dependence of the population on the attitude of the product as a consumer.

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## 1. Introduction

An increase in global population, unfavorable climate, a decrease in agricultural labor, and shrinkage of agricultural land are creating crisis situations in food systems. In this regard, it is considered as the main task to make the food system sustainable in order to ensure food safety and healthy nutrition to future generations. Mental health issues (depression, schizophrenia and stress) in the food sector as a growing problem in today's society negatively affect many aspects of everyday life, including eating behavior. In these situations, eating

behaviors are typical for unhealthy choices such as emotional eating and increasing unhealthy food diversity. To avoid these problems, changing the composition of the food, eating between certain times and traditional dietary strategies aimed at limiting the diet are manifested in the form of the main factors affecting eating behavior, creating short-term results.

In our country, an important emphasis is placed on meeting the needs of the population in relation to food by determining its demand for consumption. Thus, it is important to ensure the safety of the population for these products. In this regard, a

number of regulatory legal acts have been adopted in our country. In particular, the decree of the President of the Republic of Uzbekistan PD-36 of February 16, 2024 "On additional measures to ensure food safety in the Republic" was also adopted [1]. As a result, the needs of the population for food were met, their indicators of consumption of products were determined, and on this basis, the satisfaction of the population for food was studied.

## 2. Materials and methods

In this article, the methods of observation such as analysis, synthesis, comparative analysis, logical analysis, systematic analysis and questionnaire were effectively used to assess the satisfaction of the population with food consumption.

The socio-economic importance of food consumption and the issues of food assessment are reflected in a number of studies.

Food adequacy is an important part of food safety assessment. This makes it a need to conduct a survey of food consumption at the household level. While adequate food intake does not guarantee a person's nutritional status, insufficient food intake does not indicate some deficiency. However, such research will shed light on possible problems. A survey study was conducted in rural areas of Odisha, India to study the impact of economic and non-economic determinants on average food consumption in households [2].

In other studies, methods for assessing food consumption and nutrient intake at the household and individual levels, their strengths and weaknesses are comprehensively looked through. In it, at the household level, it offers a detailed description of the available methods and ways for interpreting data for epidemiological purposes, including methods for assessing the distribution of food consumption and nutrient consumption when data is collected at the household level [3].

A person's eating behavior comes from the need to provide energy requirements and the desire to have fun. The body's signals rely on the ability to sense internal sensations, controlling different behaviors. Some studies in this regard justify the connection with a violation of unhealthy eating habits [4].

Human behavior will also depend on the need for food. Other studies on this forecast food consumption issues between high levels of anger among young people [5].

The population's need for food is met through consumer goods. In other studies on this, the long-term effect on privilege to this good in the context of temporary shortages of consumer goods has been studied [6].

In another study, it is argued that the results obtained represent a link between the economic impact of COVID-19 and the consumption of food [7]. Through this, a comparison of the economic

status of low-skilled employees at the individual and household levels based on the results of the study shows a decrease in the level of monthly wages during the pandemic.

Covering all phases of food consumption, another study provides a comprehensive framework for future research on sustainable food consumption [8]. Based on it, it will be possible to use indicators that support the development of effective sustainability measures in the field of food consumption.

Through an effective food system, consumption stability can be achieved. Other research that has been conducted has focused on contributing to the diverse debate by developing change conditions for the transition of the food system to consumer sustainability [9].

Another study noted that changes were made to the volume of food products recommended for inclusion in the consumption basket of the main socio-demographic groups of the population, taking into account the distribution of regions into 10 zones formed on the basis of factors affecting the characteristics of food consumption [10]. In turn, they were influenced by climate, national traditions, local characteristics, economic conditions, the standard of living, income, the features of food production in the regions of the country allow to organize a healthy diet with optimal costs. The satisfaction of the population's food intake is among the problems that exist. Another study in this regard justifies that the problem of an increase in the need for food among the population at all stages of development of the economy is in a dominant position [11].

## 3. Results and discussion

To assess the satisfaction of the population with food consumption, the condition of food products is analyzed because on the balance sheets of basic food products, information about the resources and volume of usage of products in the reporting period is presented, which will be available in the form of an aggregate table. Information about the resources and use of basic agricultural products is formed on the basis of data from the State Statistical Report and combines data from production statistics, prices, data from social and demographic statistics, one-time observations, calculations and indicators of assessments. The balance reflects the movement of the product from the moment of production to the last use. Accounting balances are drawn up by statistical bodies in a physical form for a calendar year. The balances make it possible to determine the volume of consumption of the main types of food of the population, analyze the situation in the food market, assess the need for food imports, assessing the level of satisfaction of the population with food needs of the Republic's food resources. The balance data obtained over time

makes it possible to identify trends in the composition of the diet of the population.

The analysis carried out is based on unique data at the local level, as well as rich questionnaire-survey data on eating habits and health results at the individual level. It reflects an interesting case for a

different reason. In this regard, a questionnaire-survey was conducted among 200 residents who live in the different areas of the region and are voluntarily selected. Based on the results of the survey, they were analyzed (Table 1).

**Table 1.** Results of assessment of population satisfaction with food consumption.

Nº	Population composition	Age range of the population	Number of respondents and the basis of satisfaction	Level of satisfaction
1	Male	$16 \leq M \leq 30$	34 people - fast eating	average
2	Male	$31 \leq M \leq 60$	62 people - rational eating	good
3	Female	$14 \leq F \leq 25$	26 people - improper eating	average
4	Female	$26 \leq F \leq 55$	78 people - rational eating	high

Based on this table, a questionnaire survey of the composition of the population for food consumption was carried out between women and men, and the results of the assessment of their satisfaction were analyzed. According to the table, the composition of men was selected between  $16 \leq M \leq 30$  and  $31 \leq M \leq 60$ , while the composition of women was selected between  $14 \leq F \leq 25$  and  $26 \leq F \leq 55$ . The basis of their satisfaction is fast eating, rational eating and improper eating.

In fact, the success of food in the market depends on the reaction of the population to the product. However, research is also underway to determine this effect. In today's economic conditions, the population is exposed to various products. The task of any manufacturer in this regard is determined by attracting their attention to their products. However, attracting the population is considered a complex issue. For the development of new types of products aimed at determining the wishes of the population, special studies are also carried out based on assessing their impression of the emotional properties of the product.

There is such a basic approach as assessing the benefits and acceptability of emotional assessment of the population. Based on it, a person who prefers a particular product is not considered a customer. These assessment methods are diverse and some approaches can be applied for both types cited. That is, in this it will have an emotional assessment of the composition of the population and specific aspects of the brand. Therefore, there will be differences between marketing studies that assess the effectiveness of advertising.

In our studies, the study of privileges was carried out by selecting the most preferred sample by members of the population group. A pair comparison test and preference rating were also conducted for several samples. In the study of their acceptability, the population assessed using the homogeneity or desirability scale. A study of receptivity was conducted in a single sample. This does not require comparison with another product. The decision of the population group will depend only on the

emotional characteristics of the sample and the impression of the product formed on them. It turns out that they feel an unpleasant impression much stronger than pleasant. Basically, a number of conditions related to research on the acceptance of the population should also be taken into account. Here, the accuracy of the assessment of taste characteristics plays a secondary role because in emotional assessment, the average case does not rely on vague and ambiguous assessments given by the population group. Therefore, the product evaluated by the average population will not have to correctly describe the taste characteristics.

According to our studies, the indicators that characterize the sample for evaluation were divided into the following groups:

position indicators. This describes the position of the data on the number axis. Examples of these indicators are the minimum and maximum elements of the sample (the first and last members of the variation series), the upper and lower quartiles (which limit the zone in which 50% of the central elements of the sample fall). Information about the average species is provided through the selection average and sample median;

spread indicators. It describes the degree of spread of data relative to its center. These primarily include the sample spread, standard deviation, sample range, interquartile range (the difference between the upper and lower quartiles), and the coefficient of kurtosis. These reflect the proximity of the bulk of the data clusters around the center;

indicators of asymmetry. This group of indicators answers the question about the symmetry of the data distribution around its center. This includes the asymmetry coefficient, the position of the sample median relative to the sample mean and sample quartiles, and the histogram;

indicators describing the law of distribution. These indicators provide information about the law of data distribution. These include histograms, empirical distribution function graphs, and frequency tables.

Today, the problem of an increase in the satisfaction of the population's need for food is widely discussed. In this regard, there are the main restrictions that prevent the effective operation and development of the food market, which include:

- absence of a separate institution regulating the food market;
- underdeveloped infrastructure of food market regulation;
- high distribution costs due to a large number of intermediaries;
- low level of wages of agricultural workers;
- lack of food supply to the population.

However, despite the above studies, some studies have not sufficiently considered the problems of food market development, taking into account the specific environment of the region. Solving this problem requires additional substantiation of information on the level of satisfaction of the population with food products and conducting in-depth research. In this regard, the growth of imports will prevent the full development of the domestic market for a long time. This has a negative impact on the food security of countries.

The food problem in the world is that until now it is not possible to fully provide the population with vital food products in accordance with physiological standards. Inefficient use of these resources is explained by insufficient development of the material and technical base, limited land resources, unfavorable natural and climatic conditions, and limited opportunities to import imported products. Most of these problems are characteristic of developing countries. The main direction of solving the problem of food supply to these countries will be to improve the quality of agriculture and agro-industrial complexes. In the process of studying the options for the development of these regions, the category of "green revolution" appeared, which includes the introduction of methods of agrotechnology based on the use of high-yielding grain crops and fertilizers, that is, the popularization of the achievements of the scientific and technical revolution.

In our country, there is a positive trend of growth in the production of food products and their quality. This is related to the trend of real income growth of the population. This situation is of strategic importance for our country, it provides the country's population with the necessary quantity and quality of food products. In this regard, the quality of local food products is increasing. Therefore, the demand for imported food products is decreasing due to the cases of sale of low-quality and counterfeit goods.

First, the transition to more sustainable food consumption is seen as an important solution to prevent rapid growth in food demand and to mitigate the impact of climate change on the food system. Therefore, research on these issues should be

conducted in the future. In particular, population acceptance assessment research is important in the food industry. In this regard, the number of users of the services of catering establishments is constantly increasing. Every day, the quality of food produced by cafes, restaurants and bars affects the health of the population, as well as their well-being and mood. Therefore, acceptability assessment should be considered as the main research method in the field of food industry.

Considering the acceptability of the population as an expression of the attitude of the population to the product, this situation depends on the conditions, economic conditions of consumption, the influence of competitive products, prejudices and other factors. In this regard, verbal and graphic scales are used to assess the satisfaction of the population with food consumption through acceptability. The most commonly used scale consists of 9 points in total. Consumer preferences of the population can be determined based on pleasant or unpleasant impressions of the product. As a result of various studies, the ideal number of categories is 9 in total. This scale is distinguished by ease of use. If we take the desired average level as 0, then the verbal scale can be converted into graphs. Scale with schematic images of human faces can also be used for this assessment. This evaluation is influenced by environmental conditions and the order of acceptability does not change.

According to various researchers, this scale works reliably and consistently regardless of region and group size. A potential problem with all scales is category specificity as the population avoids strong judgments and overestimates. Therefore, the use of the average element reduces the measurement efficiency. However, for some population groups, this effect is considered reliable for the sample being tested. Sometimes a shortened scale of 7 or 5 items is used. This compliance information is used for a variety of purposes. The results of this scale can be substituted for a paired preference test or rating since this evaluation data is rich in information content, it is considered easier to conduct other simple tests on its basis.

When assessing the wishes of the population, mainly survey methods are also used. It uses a small number of participants when conducting survey methods. However, they make it possible to clarify the existing interactions and explore opportunities in depth. In this case, a common form of working with the population is a focus group discussion. As a rule, about a group of 10 people is included in the focus group. They sit around a round table and discuss the product or any problem under the guidance of an expert moderator. His task is to ensure the active participation of the focus group members in the discussion and to focus the discussion on the issues of product impressions, concept, reaction to advertising, promotion, etc. will consist of focusing.

Similar methods are used in sociological services, marketing and advertising agencies, and mass media. The special importance of these methods is that they allow studying various aspects of evaluation at the initial stages of new product development. This allows you to avoid unexpected expenses in the future. In contrast to the use of similar methods in marketing, the main focus is on the perception of the product concept. When using the emotional evaluation of the population, issues related to product features, functionality, and appearance are also considered. In this case, there is a similarity between the work of the company's working group and the marketing department.

The cited studies have several advantages. First, it is characterized by a deep study of the problem of working as an interactive moderator. That is, as a result of the discussion, the preferences of the population, their feelings and motivations related to the tested product will be clarified. During the discussion, problems that were not planned before the start of the test suddenly appear and are successfully resolved. Secondly, the interaction between group members is formed. Often, the opinions of each member will cause problems or thoughts in the minds of others that they did not expect in a face-to-face interview or survey. This type of research also has a serious impact on the operation of the smart market. By organizing a smart market in the region, achieving savings in terms of time and money, forming a single database on sales, creating a quick information search system for products, preparing quick reports for organizations, statistics on customers it will be possible to monitor the data dynamics, ensure the transparency of the managed system, increase the efficiency and accuracy of the stock exchange, and ensure the remote operation of the users of the programmed system [12-14].

Food quality assessment methods are also used to assess the population's satisfaction with food consumption. This is reflected in the scoring system. Its content is that the most important quality marks of the product are evaluated with certain points, depending on the importance of this or that mark. The most important indicator is the taste and smell of the product, in addition, 40-50 percent of the total points are allocated to their color. In particular, the following evaluation methods are widely used in science:

- laboratory methods. It uses physical, physicochemical, chemical, biochemical and microbiological methods to determine the nutritional value, chemical composition and harmlessness of food. The advantage of this method is determined by the accuracy of the results and their ability to be reflected in quantitative indicators.

- chemical and biochemical methods. They are used to determine the quantity and quality of substances in the chemical composition of products.

Through this method, sugar, acids, proteins, vitamins, minerals and other constituents are determined. These methods are often used to control the quality of food in terms of its naturalness, quality and compliance with standards in commercial activities.

#### 4. Conclusion

Food consumption by the population is an important indicator of the population's standard of living and its well-being. Therefore, the collection and analysis of statistical data on the level of consumption of food products serves as a source of assessment of the quality of products in the country, especially population acceptance is the most important information of interest to marketers and product manufacturers. In this regard, there will be many methods that will allow to evaluate the impression of the product and determine the preferences of the population. Product acceptance depends on its packaging and preparation and many other factors. Evaluation of population response allows interpretation of study results.

In tests aimed at evaluating the opinion of the population, a sample of a food product is shown. Additional information is also analyzed to assess their attention. They judge the preference or desirability of a sample based solely on emotional cues. This information is important for product developers because it allows to determine the appropriateness of the product, but high product acceptance does not guarantee market success. The purchase of a product depends on many factors such as nutritional value, product concept, price, positioning, advertising, packaging, etc. However, positive customer impressions based on the emotional characteristics of the product will bring success in the market.

This study presents a study of attitudes towards food consumption in the control of the population's processes towards food products. The results extend previous research connected with food intake. Reducing the risk of eating disorders is essential to improving mental health outcomes. This is related to changes in the mood of the population. However, assessing the population's food needs is a way to determine whether readily available foods are effectively meeting their nutritional needs. This assessment is based on timely and quality data to target, plan, monitor and evaluate effective nutrition promotion programs. It also provides reliable information for analyzing country-level data on nutrition and making decisions to achieve better nutrition.

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