

## Statistical Analysis of Milk Products Consumers' Behaviour

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*At the turn of the economy changes (Lithuania rapidly integrating western civilization) new, individual customers' behaviour model is forming. Referring to scientific research methods, we can understand and forecast customer behaviour, to clarify relation of cause and effect and, having identified customer needs, to produce such product which would meet the needs of current customers and would attract new ones. Understanding of customer and his purchasing process helps to make specific decisions in organising sales, to understand and forecast the priorities of the customer in purchasing process and along with this to increase business opportunities. Because customer behaviour is a constituent of human behaviour, it is difficult to forecast. Therefore enterprises have periodically to carry out the analysis of customer behaviour, allowing understating customer deeds and forecast their future behaviour.*

*In the paper the level of milk and its product consumption in Lithuania and consumption tendencies are highlighted. When carrying this research the methods of complex statistic information collection were used: respondents survey, official statistics data analysis, direct observation of passives, the interview of an informal character. Collected information is analysed and interpreted, causal relations of statistic research structure elements are presented. When carrying out this research, the representative selective analysis (when by special techniques from general set its part which makes sample, and later with the help of statistical methods it is reasonably applied to entire citizens population), was used. By this method it is defined whether provided services have satisfied expectations and met needs. Only fully satisfied customers can become loyal customers of enterprises.*

**Keywords:** *consumers' behaviour, statistical analysis, methodology, methods, survey, milk production and milk products.*

### Introduction

Customers behaviour is defined as human being activity focused on the purchasing, consuming and using of the products and services, by making decisions before and after purchasing (Engel, Blakwell, Miniard, 1995; Solomon, 1999; Pranulis, Pajuodis, Urbonavičius, Virvilaitė, 1999; Urbanskienė, Clotey, Jakštys, 2000; Stankevičienė, 2004).

Customers behaviour researches in the West countries started in the 50-s of the 20<sup>th</sup> century. In 1960 on the basis

of J.F.Andreason, A.Nicosia, J.F.Engel, R.D.Blackwell scientific works the customers' behaviour became an individual study field. To enforce and develop customer behaviour analysis it was sought to adopt from the sociology, social psychology, anthropology and other sciences everything that at least related with the customers' behaviour.

The customers' behaviour analysis has strong socio-cultural base. Due to this reason this research is unique and important. In literature many and versatile customer behaviour researches are published. This problem is analysed by psychology scientists: Myers –Briggs, 1992; Mowen, 1987; Zablocki, Kanter, 1976. It is also analysed with respect to management sciences by Engel, Brakwell, 1978; Mowen, 1987; Berkowitz, 1992; Solomon, 1994; Schiffman 1997; and social sciences by Bordieu, 1999; Biwas, Olsen, Carlet, 1992.

Management, and especially marketing researchers pay the most attention to the customer decision making (Grass, Wallace, 1974, Rook, 1987) information understanding and reform (Waldrop, 1993; Solomon, 1999, 2000), to the advertising (Bronson, 1980, Rowley, 1981), price (Biswas, Pullig, Krishnan, 2000) and other marketing problems.

Researches of various authors reveal the peculiarities of different countries, cultures customers' behaviour. What decisions do different customers make? It is the question, which interests customer behaviour scientists, firms' managers, advertisers and many other representatives of interested institutions. In Lithuania economic changes have caused the formation of the model of individual customer behaviour.

The problem analysed in the paper is **actual**: in changing environment it is difficult to understand and forecast customer actions, and having defined customer behaviour strategy (Svetikas, 1997) the possibility opens to define customer behaviour tendencies and consistent patterns, to make qualitative decisions, in expanding market, to maximally meet customer needs.

Customer needs and expectations are met in various ways, applied individually or complexly. One of the key suitable methods is the observation of needs meeting by using surveys. By this method it is defined whether provided services satisfied expectations and met needs. Only fully satisfied customers can become devoted customers of the enterprises as some authors state (Gargasas, 2001; Gudonavičienė, 1999; Stankevičienė, 2002; Torsten et al (1998).

**The problem** is that Lithuania enterprises attention to the customers is very limited. Such approach is not due to

inefficiency, but simply the most part of the managers still does not understand customer importance. Recently in all industries very high internal and foreign competition exists. Under competition conditions each enterprise is required to take some marketing actions, helping to attract customer attention. Therefore for Lithuania enterprises it is also important to know customer behaviour peculiarities. Modern marketing is based on the idea that customer understanding, knowledge and meeting of their needs is "key" to success. Therefore customer behaviour studies in the market economy countries become more and more significant (Urbanskienė, 1998).

One of the most important aims of the enterprise focused on customer is maximal meeting of customer needs. However, it is not enough, in order to compete successfully, to establish and keep loyalty – an enterprise can maintain achieved level of customer's satisfaction only continually improving and developing new, better meeting needs, services, because customer satisfaction is dynamic and changing in time.

To assess customer satisfaction is very complicated due to the inconsistency of different values, which cannot be more objectively compared. Customer satisfaction can be assessed both with respect to the aspect of aggregate value and needs meeting level aspect. There is no united approach how to define customer satisfaction and how to improve it.

Definition of satisfaction criteria and their measurement are a methodological problem. Qualitative parameters are still not developed and difficultly generalized, therefore now final assessment depends on subjective assessments and impression. In addition, people wishes have a fast changing tendency.

During the recent years economic situation in Lithuania has significantly changed. Now, in order to sell its products an enterprise has to know the situation in the market very well. Variability is the characteristics of market situation, therefore the enterprise should have as much information about business environment changes as possible (Jucevičius (1998)), about customer attitudes and behaviour changes (Stankevičienė, 2004), to identify new opportunities in the market.

The authors of the paper by reviewing customer behaviour theories in various aspects and customer behaviour models, try to expand this problem with respect to statistics science, i.e. to clarify the causal relationship of statistical research structural elements.

**Research object** – milk and milk products consumers and their behaviour.

**Aim of the paper** – to study milk product consumers' behaviour features.

**Research methods.** The research methods based on hypothesis testing were used for customer behaviour research. When preparing this paper, methods of scientific literature analysis and generalization, comparative analysis, interview of informal character, survey, passive direct observation, in order to know customer opinion and approach to milk products, data systematisation and statistical analysis were used.

When writing this paper, foreign authors' literature, materials of international conferences statements, management literature was studied. Data of Lithuania Statistics

Department, Lithuania milkmen association "Pieno centras", Lithuania Agriculture chamber informative publications were applied.

Knowledge received during the customer behaviour research allows maximization of sales volumes, because the most important to the enterprise is the knowledge about the customers and their purchasing process.

The social cross-sectional analysis was applied, because during the survey data about the huge number of people were collected and these data are compared because they are not impacted by time changes.

### The methodology of research

The research was carried out in accordance with the following elements of research program structure [1]:

#### 1. Methodological part of the program:

- Problem formulation, definition of the analysis subject and objective – problem analysed in the paper is related with the interests of entire regions, large social groups. Research object – Kaunas city citizens; research subject – choice to use milk products.
- Determination of the research goal (*it focuses on the final research result*) and tasks (*they formulate questions the answer to which should be received about the meeting of the research goals*). Research goal is to define behaviour of the consumers purchasing milk products. Research tasks: identification of the main milk product buyer, determination of the decision to buy milk products time, clarification of the customers opinion about the products, identification of the factors determining customers' behaviour.
- Refinement of initial conceptions and their interpretation – the statement of quintessential conceptions, expressing the archetypal aspects of the analysed problem, and their interpretation. First, analysis of literature on the subject of matter, statement of the concepts' essence, definition of their features and interrelations, then selection of the direct indicators of each defined characteristics – shift to specific methods and technical procedures, with the help of which these features can be defined (e.g. frequency of milk products purchasing, depending on the income level).
- A priori, systematic analysis of the research object – i.e. decomposition of the research problem and its specification, allowing formulation of general and individual hypotheses of the research.
- Setting of the works hypotheses – i.e. the assumption about the structure of social objects, possible ways of social problems solving. If initial hypotheses are refused on the basis of the empirical data, then the secondary hypotheses are set. Primary hypotheses are used for the more grounded hypotheses formulation (e.g., level of milk products consumption of respondents, having average and little income, is higher than the respondents having large income).

#### 2. Procedural part of the program:

- Principled (strategic) plan (Kox, 2003; Kardelis, 1997) of research. According to the knowledge level the four variants of research strategy are

classified:

The formulation (exploratory) plan used in this research is used in the paper, because the knowledge about the research object is the most general, therefore we can not set any hypotheses. The paper starts from the scientific literature analysis, conversation with competent persons – specialists, working in this or similar field;

- descriptive – when the knowledge about the object is sufficient for the descriptive hypotheses setting;
  - analytical – experimental plan – when the level of the knowledge about the investigated field is sufficiently high;
  - repeated – comparative – provides data comparability in the significant time period.
- Substation of the observation units' selection system – formation of research contingent (i.e. research set), in order that research results were representative. The research object – Kaunas city citizens, i.e., their number is higher than 500 and in order to carry out the research the respondents' selection method is applied. The random selection allowing the researcher to save money and gain time is used in the paper. In this case the respondents living or working the most proximately to the researcher were selected.

The following statistical methods were used in the paper (Bitinas, 1974; Čekanavičius, 2002):

- correlation analysis – to define cohesion of relation between two variables (i.e. level of private household income and expenses for milk products) the correlation coefficient was calculated;
- regression analysis – to state that milk products are goods of prime necessity and to clarify how the expenses for milk products increase (decrease), when income changes by one litas, the regression coefficient was calculated.

### Characteristics of the research sample

When carrying out the research the representative selective method was used.

Milk product consumers have adopted this research in two ways:

- as a novelty and interesting process, possible to give benefit;
- as useless time waste and research which will no give any positive benefit.

### Survey procedure

There were 25 questions in questionnaire. The questionnaire was distributed individually to each customer; the date of questionnaire return was agreed in advance. To keep confidentiality of the respondents' answers and to give more confidence to the anonymity of the questionnaire the place, where all questionnaires should be placed, was indicated in advance.

The individual questioning was selected, because in this case respondents can allot their time for answering the questions, they are not influenced by the environment and

investigator. However, in this case, the level of questionnaires return is reduced.

In the questionnaire survey the open and close questions were selected.

- Open questions, when a respondent has an opportunity to express his opinion, having not found suitable answer among the given, respondents have the possibility independently formulate his answer, which reflects his style, privacy, language;
- In close questions possible variants of answers are given.

When compiling the questionnaire it was sought that each question were specific and would give needed amount of information. At the beginning of the questionnaire the simpler questions are given, only later more sophisticated.

Analysis of scientific literature, intended for various volume selection aspects, shows that in the practice of social research this problem is solved on individual researcher discretion (Kardelis, 1998). Respondents selection issue directly relates with representativeness problem, which is defined as the capability of selected and analysed elements to reflect characteristics of the entire totality. Therefore the key question, which must be solved, is what error is acceptable and what are the selection methods.

Using V.I. Paniotto suggested formula (formula 1), intended only for one-level selection for the determination of the respondents number (Bitinas, 1974):

$$n = \frac{1}{\Delta^2 + \frac{1}{N}}, \quad (1)$$

standard or normal selection error  $\Delta$  is 0.05 with possibility 0.954, where  $N$  – size of entirety,  $n$  – necessary number of surveyed respondents.

Having decided that such error is acceptable, it is needed to choose the method of respondents' selection. In this case most suitable is the group selection method. Such selection is suitable, when research is carried out in a wide geographic zone, while other methods require specific information.

To receive representativeness of quantitative research results, sample size is calculated according to V. I. Paniotto recommended formula (1):

$$n = \frac{1}{0.05^2 + \frac{1}{50000}} = 397$$

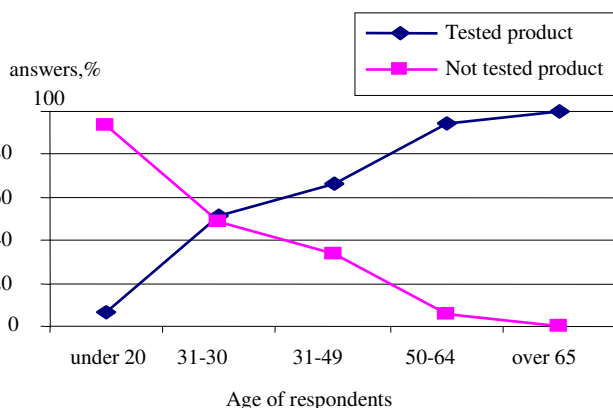
The size of the sample defined according to this formula shows that having questioned 397 respondents, it will be possible to make conclusions under 5% error with possibility 0.954.

In this work the assumption that for research 400 respondents are enough. 400 questionnaires were distributed. 362 of them returned back, having verified 7 questionnaires were rejected as damaged. The results show that 90.5% of the questionnaires were returned back. Taking into account number of damaged questionnaires, the analysis was carried out on the basis of 355 respondents' answers.

### Results of research

It was found that persons have formed some stereotypes; therefore the advertising impact on some groups is little. As we see in fig. 1, data of research prove the statement, that older people more often choose known goods,

and more rarely are willing to choose new, still unknown (Bartosevičienė, 2004; Sodomon, 1986).

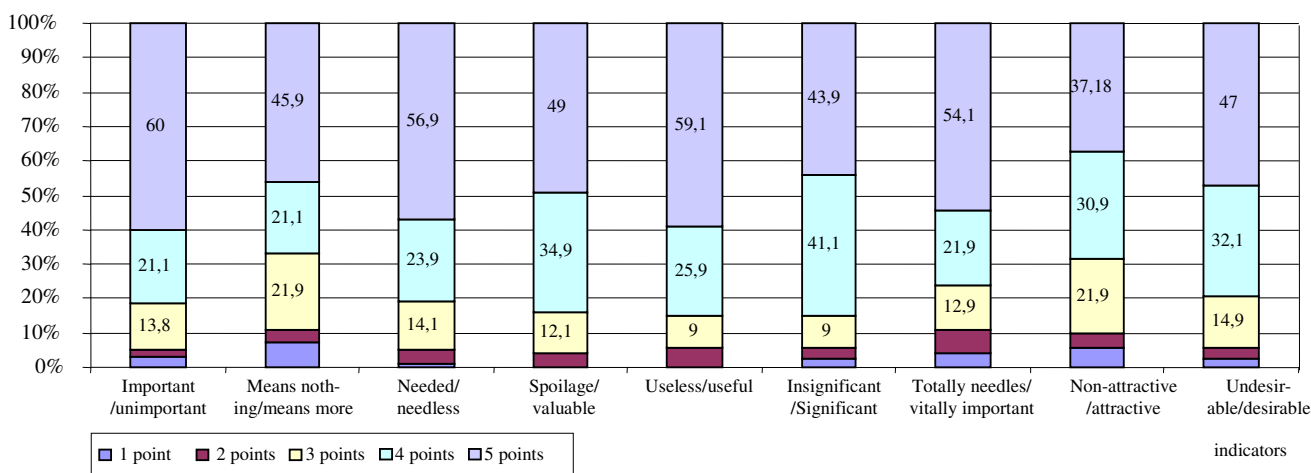


**Figure 1.** Novelty of milk products customers, depending on age

Milk products consumers' decision making stage "making decision to buy and purchasing" reveal: do you precisely know what products you will buy, how long you consider before purchasing milk products and what milk products features determine your choice to buy.

56 % of the respondents precisely know what products they will buy, 40% - often know what products they will buy and only 3% of consumers do not decide about the purchasing of the specific milk products. In addition, time of the decision to buy milk products is short. In that way respondents' answers were distributed: 60% give a short consideration before purchasing milk product, supposedly short -

Answers



**Figure 2.** Customer attitude to milk products

There are few respondents with negative attitude to milk products. Milk products for these customers are unnecessary, not wanted, unimportant etc. Considering these customers, it is recommended to apply the attitude of changing strategy (Svetikas, 1997). To change customer approach with respect to the good, the good must fully meet customer needs, and sometimes to invoke new needs (Iljin, 1998; Torsten, 1999).. To change customer approach it is suggested:

- If the product is already used, to try to show that product can be suitable for another purpose about which customer may not think. E.g.: milk products as health source, milk drinks as febrifuge etc.

32%, supposedly long 5% and only 2% of the respondents answered that they consider long before buying milk products. The main indicators, determining customer decision to buy milk product are product quality (49%) and price (27%). As already mentioned, research results once again have proved that decision to buy product is influenced by enterprise producing the product (13%). New product in market would determine only 7% of respondents' decision to buy. Actually, the packing of the milk product has no influence (4%). For this question the duplicating question was asked: what do you prefer – milk product quality or packing. Even 77% of respondents say that most important is product quality, and the packing is unimportant, 20% think that good appearance is the guarantee of high quality and only 3% would prefer packing. Having analysed the research results, it has become clear that milk products are important for most of customers, thus, of customers' approach to milk products is positive (fig. 2).

Referring to the results of the passive direct observation, the conclusion that the approach of customers to milk products is positive was also made. According to the results of informal nature interview, we can say that customers are well disposed with respect to milk products. During the informal nature interview customers said that milk products for them are:

- Life-support source
- Energy source
- Very important in their life
- Life necessity
- Valuable food product

- To stimulate value expression – this is the expression of the main customer values, life style and ideology. E.g. if the positive approach to coffee drinking ritual exists, then the approach to this ritual using the cream also will be positive. Here lies the awareness to uphold the image or be fashionable. Advertising could refer to this approach: it is fashionable to drink coffee with cream, now all drink coffee with cream etc.
- To stimulate knowledge function. Most customers fell the need to know the products, which they use, therefore it is recommended to give maximal information to the customer about the consumed prod-

ucts, emphasizing their positive features.

- To form new needs and, of course, propose new products. When advertising to remember that the product has more or is better, expressing important features of the product.

The answer to the question how the customer behaves when he bought bad milk product will help to assess milk product consumers deciding to purchase stage “response after the purchase”. Purchased good customer compares with his expectations and is satisfied or dissatisfied. Dissatisfaction with purchased product can form a negative opinion about that product or its manufacturer, also the ap-

proach of customer to milk product can change in a negative direction.

As respondents’ answers show, customers mostly do not take any actions and simply throw out the product (34%). Another part of customers take actions: do not buy anymore in that shop (23%), tell friends about that shop(19%). 19% of customers bring back product to the shop, requiring replacing purchased product, significantly less of respondents require returning of money (4%). And totally few – only 1% call to the customer rights defence office and bear complaint against the manufacturer. research data (table 1) allow stating that customers mostly take personal actions 42%, social 24%, or do not take actions 34%.

Table 1

**Actions in case of dissatisfaction**

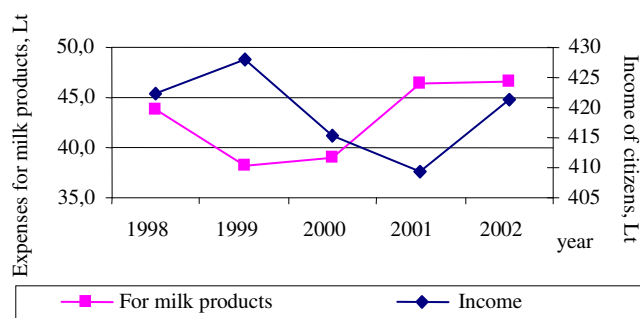
Actions in case of dissatisfaction		Question: how will you behave having bought milk product the expiry date of which is valid, but product is bad?	
		Variants of answers	answers %
Does not takes actions		Throw out the product	34
Takes actions	Personal actions	I do not buy in that shop more, because I don’t trust	42
		Tell my friends about the shop and goods	
	Social actions	Take back to the shop and require to replace it	24
		Take back to the shop and require to return money	
		Call to quality inspection/office of customer rights and appeal manufacturer	

Dependency of milk products demand on the customer income is analysed in two directions:

- demand change in 1998-2002, depending on income change, analyzing statistical data;
- demand change, starting from the least income up to higher income receiving households, referring to the data of questionnaires.

Income of Lithuania citizens in 1998-2002 changed unevenly, in 1998-1999 increased, in 2000-2001 decreased, and in 2002 increased again, but did not reach the level of 1998.

Having analysed the expenses for milk products depending on the citizens income (fig. 3, table 2), we can state that the growth of income does not influence the expenses for milk products. In 1999 and in 2002 the income of the population increased, however in the first case expenses for milk products decreased, while in the second one –increased very little.

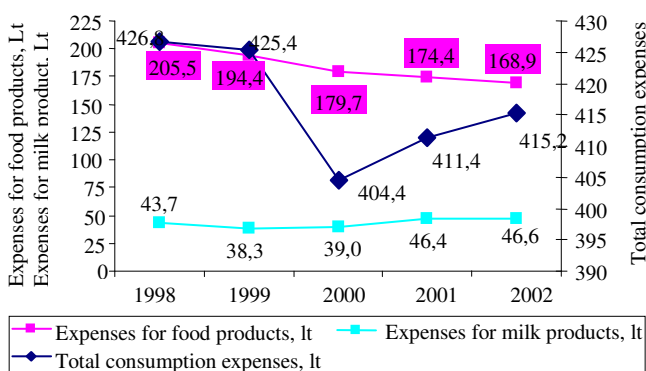


**Figure 3.** Change of milk products demand and population income

**Table 2**  
**Income of population and their expenses for milk products in years 1998-2002**

Year	Income		Expenses	
	Lt	%, in comparison with previous year	Lt	%, in comparison with previous year
1998	422.5	-	43.7	-
1999	428.0	101.30	38.3	87.6
2000	415.4	97.06	39.0	101.8
2001	409.5	98.58	46.4	119.0
2002	421.3	102.88	46.6	100.4

The same consistent pattern is typical to the demand of milk products as to other food products: when income and consuming expenses per capita increase, less and less money is allotted for food products purchasing (fig. 4). Expenses for food since 1998 reduce, although in 2000-2002 expenses for milk products although little, increase.



**Figure 4.** Change of the population expenses in 1998-2002

According to the data of the questionnaire almost half of the respondents (48%) spend 11-30 lt for milk products per week. 32% of respondents spend for milk product up to

10 lt per week. Respondents expenses for milk products are given (fig. 5):

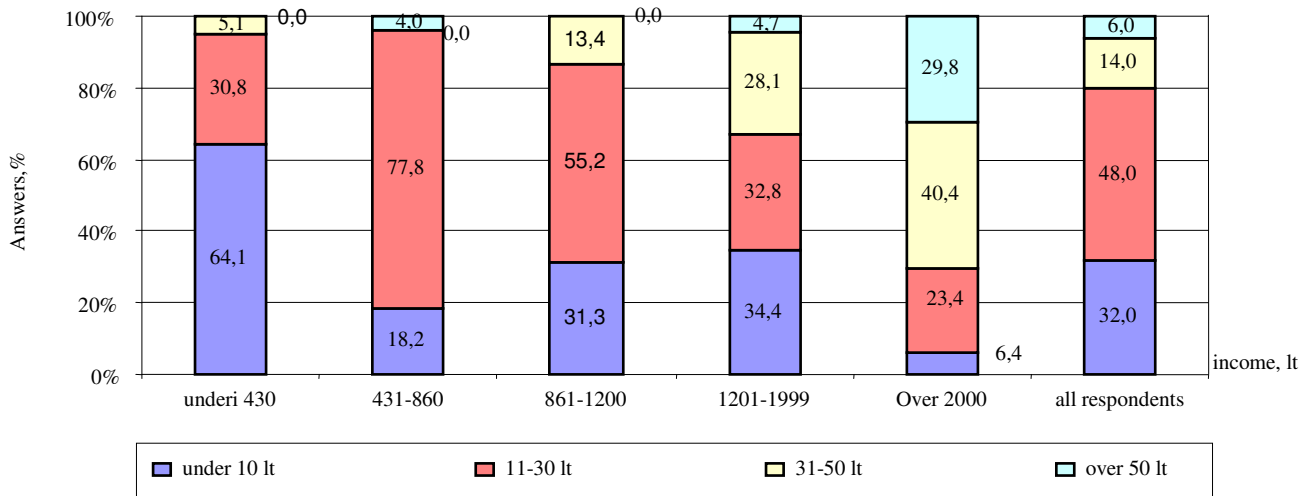


Figure 5. Expenses for milk products per week

To assess the relation of the respondents income and expenses for milk products, the nonparametric factor – Pirson correlation coefficient  $K_{Pirsono}$  (Aivazian, 2001; Uberla, 1971) was used. Having analysed the interaction of the respondents income and expenses for milk products, we can say that the relation between these phenomena is significant.

$$k_{Pirsono} = \sqrt{\frac{\varphi^2}{1 + \varphi^2}}; \quad (2)$$

where  $\varphi^2$  - mutual contingency coefficient calculated as follows:

$$\varphi^2 = \sum z_i - 1 \quad (3)$$

$$z_1 = \frac{\left( \frac{f_{11}^2}{m_1} + \frac{f_{12}^2}{m_2} + \frac{f_{13}^3}{m_3} + \frac{f_{14}^4}{m_4} \right)}{n_1} \quad (4)$$

$$\varphi^2 = \sum z_i - 1 = 1,343 - 1 = 0,343$$

$$k_{Pirsono} = \sqrt{\frac{\varphi^2}{1 + \varphi^2}} = \sqrt{\frac{0,343}{1 + 0,343}} = 0,505 \geq 0,5$$

Null hypothesis is verified:

$$m \cdot \varphi^2 = 355 \cdot 0,343 \approx 122$$

$$f = (5-1) \cdot (4-1) = 12$$

from Pirson ( $\chi^2$  - of distribution) table [2] we find that when the level  $\alpha=0,01$ , with  $f=12$ , critical limit is  $\chi^2_{\alpha} = 26,2$  because  $m \cdot \varphi^2 \approx 122 > 26,2$ , having verified null hypothesis we can say that  $k_{Pirsono}$  is statistically significant.  $k_{Pirsono}$  statistically proved hypothesis that the relation of the customer income and expenses for milk products is very tight.

To define the relation of two variables (population in-

come and expenses for milk products) cohesion, the correlation coefficient  $r_{xy}$  (see formula 5) was calculated [3]. Because  $m=355 > 100$ , then correlation coefficient is treated as different from null [2].

$$r_{xy} = \frac{\sum_{i=1}^m (x_i - \bar{x}) \cdot (y_i - \bar{y})}{\sqrt{\sum_{i=1}^m (x_i - \bar{x})^2 \cdot \sum_{i=1}^m (y_i - \bar{y})^2}} \quad (5)$$

$r_{xy} = 0,48$  - relation between population income and expenses for milk products is average.

Having calculated regression coefficient b (see formula 6) [3], we can state that the direct functional relation between respondent income and expenses for milk products exists.

$$b = r \cdot \frac{\sigma_y}{\sigma_x} = r \cdot \frac{\sqrt{\sum (x_i - \bar{x})^2}}{\sqrt{\sum (y_i - \bar{y})^2}} \quad (6)$$

$r$  - regression coefficient.

Having calculated elasticity coefficient E (formula 7) [3], we can say that the milk products are goods of the primary necessity, because  $E = 0,52 < 1$ .

$$E = b \cdot \frac{\bar{X}}{\bar{Y}}, \quad (7)$$

were:  $\bar{X}, \bar{Y}$  - averages; b - regression equation coefficient.

To identify customers purchasing strategy it is necessary to know how milk products consumers will behave after the increase of their income. A number of respondents, thinking that their income increased would buy milk products at the same level is equal to the number of respondents, which think that they would buy more (by 40%) (fig. 6). Almost an equal number of respondents answered that they would buy the same amount but a more expensive

product (8%) and would buy more and more expensive (12%). Respondents' answers have diverged only having analysed how customers receiving different income would behave. It become clear that the customers having lower income would buy more, and having higher income would

buy the same amount of milk products as now.

Having analysed interaction of the respondents income and forecasted behaviour having received more income, we can say that relations between these phenomena are seen.

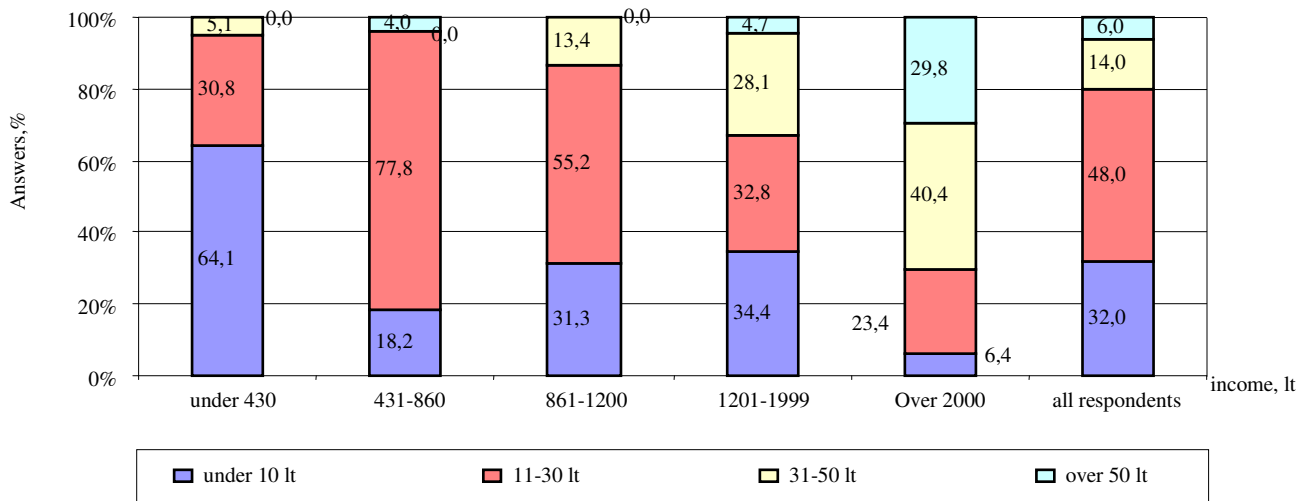


Figure 6. Expenses for milk products, when respondents income changes

For the calculation of the coefficient  $k_{Pirsono}$  we will use formulas 2, 3, 4.

$$\varphi^2 = \sum z_i - 1 = 1,189 - 1 = 0,189$$

For calculation of the parameters  $z_i$  table 3 was made.

$$k_{Pirsono} = \sqrt{\frac{\varphi^2}{1 + \varphi^2}} = \sqrt{\frac{0,189}{1 + 0,189}} = 0,398 \leq 0,5$$

Table 3

Calculation of  $z_i$ , depending on the income and customer behaviour

Running number	Income of respondents Lt	Customer behaviour				Total (2-6)	$z_i$
		Would buy the same amount as now	Would buy more	Would buy the same amount, but more costly	Would buy more and more costly		
	1	2	3	4	5	6	7
1	Up to 430	3	56	3	16	78	0.302
2	431 – 860	4	63	11	21	99	0.354
3	861 – 1200	36	20	10	1	67	0.156
4	1201 – 1999	55	2	3	4	64	0.205
5	Over 2000	44	1	1	1	47	0.172
6	Total	142	142	28	43	355	1.189

Null hypothesis is verified:

$$m \cdot \varphi^2 = 355 \cdot 0.189 \approx 67$$

$$f = (5-1) \cdot (4-1) = 12$$

From the  $\chi^2$  distribution table we find that when  $\alpha=0.01$ , with given  $f=12$ , critical margin is  $\chi^2_{\alpha} = 26.2$

Since  $m \cdot \varphi^2 \approx 67 > 26.2$ , having verified null hypothesis we can state that  $k_{Pirsono}$  is statistically significant.

## Conclusions

Referring to the situation in the Lithuania milk products market, trends of milk products consumers' behaviour and results of empiric research, the following conclusions are made and proposals are given:

1. Data of research prove the statement that older people choose known goods and are less disposed to novelties.
2. Most of the external information is received by the respondents due to advertising or their friends and acquaintances given information. Therefore it is proposed to focus marketing actions on advertising and purchasing promotion in sales places.
3. Customer exactly know in advance what products they will buy, therefore the time of decision making at the product purchasing place is short. It is recommended to pay more attention to advance opinion formation.
4. Milk products are important to customers.
5. The most part of respondents spend 11-30 Lt for milk products per week. This proves the statement

that expenses for milk products of respondents receiving less income are less than those of respondents receiving larger income.

6. When the income of the citizens receiving small and average salaries increases, the expenses for milk products of these citizens increase. Non-parameter indicator  $k_{Pirsono}$  has statistically proved the hypothesis that the relation of customer income and expenses for milk products is very close.
7. Having found that the bought milk products are rotten the milk product consumers take personal actions (do not buy at that shop, tell friends about that shop and good) or do not take any actions (throw out the product). Only in exceptional cases customers use social actions (call quality inspection/customer rights defence office and bear complaint against the manufacturer).
8. According to the statistical data, customers' expenses for food products reduce, and the part of milk products in the expenses for food products increases very little during two recent years.
9. Referring to survey results, consumption of milk products has tendency to take two directions:
  - Milk products as healthy nutrition elements;
  - Milk products as traditional food products

Therefore it is recommended: while carrying out the advertising campaign it is expedient to emphasize that the milk products are usual, they are a traditional part of daily food allowance, having curative features. The idea of healthy food has become popular in the world, therefore, it is proposed to produce dietetic milk products.

## References

1. Bartosevičienė, V. The Tendencies of Milk and Milk Products Consumption / V. Bartosevičienė, V. Čiulevičienė, V. Laukytė Staniuvienė // Science and studies of accounting and finances: Problems and perspectives. The Papers of International Scientific Conference Nr.1(4) Akademijska, 2004.
2. Bitinas, B. Statistiniai metodai pedagogikoje ir psichologijoje. Kaunas: Šviesa, 1974.
3. Čekanavičius, V. Statistika ir jos taikymai. I, II dalys / V. Čekanavičius, G. Murauskas // Vilnius: TEV, 2002. 239 p., 270 p.
4. Gargasas, A. Pieno produktų paklausos Lietuvos rinkoje kitimo veiksniai / A. Gargasas, V. Končiūtė // Inžinerinė ekonomika. ISSN 1392-2785. Nr.6 (26). Kaunas: Technologija, 2001. 83p.
5. Gudonavičienė, R. Vartotojo poreikių patenkinimas mažmeninėje prekyboje // Inžinerinė ekonomika. ISSN 1392-2785. –Nr.3 (14). Kaunas: Technologija, 1999. 72p.
6. Juzevičius, R. Strateginis organizacijų vystymas. Kaunas: Pasaulio lietuvių kultūros, mokslo ir švietimo centras, 1998. 456p.
7. Kardelis, K. Imties tūrio parinkimo socialiniuose tyrimuose metodologiniai aspektai // Socialiniai mokslai. Ekonomika. ISSN 1392-0758. Nr.4(17). Kaunas: Technologija, 1998. 86p.
8. Kardelis, K. Mokslinių tyrimų metodologija ir metodai. Kaunas: Technologija, 1997. 208p.
9. Krikščiukaitienė, I. Pienas. / I. Krikščiukaitienė, D. Mikelionytė, R. Vasiliauskaitė. // Lietuvos žemės ūkis. ekonominė apžvalga. Vilnius, 2003. P.95-103.
10. Lietuvos Respublikos žemės ūkio rūmų informacinis leidinys'' Rinka Nr. 11 (40)'' . ISSN 1392-5865. 2002.
11. Luobikienė, I. Sociologija: bendrieji pagrindai ir tyrimų metodika. Kaunas: Technologija, 2000. 188p.
12. Rinkotyra. Žemės ūkio ir maisto produktai. Vilnius: LAEI, Nr.2 (16). 2002.
13. Solomon, M.R. Consumer behavior. New York: John Wiley and sons, 1986, 705p.
14. Stankevičienė, J. Vartotojų elgsenos ypatumai Lietuvoje: vartojimo prekių kontekstas: daktaro disertacija, 2004.
15. Svetikas, A. Vartotojų kooperacijos strategija ateičiai // Socialiniai mokslai. Ekonomika. ISSN 1392-0758. Nr.4(13). Kaunas: Technologija, 1997. 95p.
16. Uberla, K. Faktoren analyse. Springer-Verlag Berlin Heidelberg, New York 1971. P.399.
17. Urbanskiene, R. Rinkos tyrimai ir analizė / R. Urbanskiene, R. Vaitkienė, B. Clottey. Kaunas: Technologija, 1998. 199p.
18. Айвазян, С.А. Теория вероятностей и прикладная статистика. Том 1. / С.А. Айвазян, В.С. Мхитарян / Москва: Unity, 2001. 656с.
19. Кох, Рю. Стратегия. СПб: Питер, 2003. 320 с.
20. Ильин, В.И. Поведение потребителей. Сыктывкар, 1998. 83с. Prieiga per internetą <http://xpress1.newmail.ru/theor/cb/book.htm>
21. Торстен, Х.Т. Влияние компетенции потребителя на успех маркетинга отношений // Проблемы теории и практики управления. 1999 <http://www.ptpu.ru>
22. Энджел Дж.Ф. Поведение потребителей. / Дж.Ф. Энджел, Р.Д. Блокуэлл, Пол.У. Миниард. Санкт Петербург: Питер, 1999. 759с.
23. Myers-Briggs. Personality Types. San Jose Mercury News, 23 September, 1992.
24. Berkowitz, E.N. Marketing. / E.N. Berkowitz, R.A. Kerin, S.W. Harley. Boston: Allyn Bacon, 1992.
25. Biwas, A. et al. Consumer evaluation of reference price advertisements: effects of other brands prices and semantic cues. // Journal of Public Policy & Marketing, 18/1:52-65, 2000.
26. Biwas, A. Comparison of Print Advertisements from the United States and France. / A. Biwas, J.E. Olsen, V.A. Carlet // Journal of Advertising 21, 1992.
27. Bronson, G. King Leer: Sexual Pitches in Ads Become More Explicit and More Pervasive. / The Wald Street Journal, 1980.
28. Engel, J.F. Consumer behavior. / J.F. Engel, R.D. Blackwell. // New York: The Dryden Press, 1978.
29. Grass, R.C. Advertising Communication: Print Vs. TV/ R.C. Grass, W.H. Wallace // Journal of Advertising Research 14:19-23, 1974.
30. Mowen, J.C. Consumer behavior. New York: Macmillan Publishing Company, 1987.
31. Rook, D.W. The Buying Impulse // Journal of Research 14:189-199, 1987.
32. Rowley, C. Sex in Advertising. // Scan, 29:12-15, 1981.
33. Schiffman, L.G. Consumer behavior. // L.G. Schiffman, L.L. Kanuk. London: Prentice Hall, 1997.
34. Solomon, M.R. Buying, Having and Being. London: Prentice Hall, 1994. 274 p.
35. Solomon, M.R. Consumer Behavior: Buying, Having and Being. Prentice Hall, 1997
36. Waldrop, J. And Now, a Break from Our Sponsor. // American Demographics, 16, 18, 1993.
37. Zablocki, B.D. The Differentiation of Life –Styles. // B.D. Zablocki, M. Kanter. Annual, 1976.

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## Pieno produktų vartotojų elgsenos statistinis tyrimas

Santrauka

Ekonomikos pokyčių (Lietuvoje sparčiai integruojantis į vakarietišką civilizaciją) sandūroje formuojasi naujas, savitas vartotojų elgsenos modelis. Remiantis mokslinio tyrimo metodais, galima suprasti ir numatyti vartotojo elgseną, išsiaiškinti priežastis ir pasekmės ryšius ir, išsiaiškinus vartotojų poreikius, gaminti tokį produktą, kuris patenkintų jau esamų vartotojų poreikius ir pritrauktų naujų klientų. Vartotojo ir jo pirkimo proceso supratimas padeda priimti konkrečius sprendimus organizuojant pardavimus, padeda suprasti ir nuspėti vartotojo teikiamas pirmenybes perkant, ir kartu padidinti verslo galimybes. Kadangi vartotojo elgsenys yra sudedamoji žmogaus elgesio dalis, ir ją sunku prognozuoti, todėl įmonės turi tam tikrais periodais atlikti vartotojų elgsenos tyrimus, leidžiančius suprasti

vartotojų poelgius bei numatyti jų ateities elgseną.

Šio darbo **tikslas** – identifikuoti pieno produktų vartotojų elgsenos strategiją. Tyrimo **objektas** – pieno produktų vartotojai ir jų elgsena.

Straipsnyje panaudoti šie statistiniai metodai:

- koreliacinė analizė – siekiant nustatyti ryšio tarp dviejų kintamųjų glaudumą (t.y. namų ūkio pajamų lygio ir išlaidų pieno produktams;
- regresinė analizė – siekiant konstatuoti, ar pieno produktai yra pirmo būtinumo prekė, ir sužinoti, kiek padidės (sumažės) išlaidos pieno produktams, pajamoms pakitus vienu litu; apskaičiuotas regresijos koeficientas.

Atliekant tyrimą pasinaudota reprezentatyviu atrankiniu metodu.

#### Tyrimo rezultatai

Šiame darbe daryta prielaida, jog tyrimui pakanka 400 respondentų. Išdalyta 400 anketų. Sugrįžo 362 anketos, 7 anketos atmestos kaip sugadintos, vadinasi sugrąžinta 90,5% anketų.

Pieno produktų vartotojų sprendimo pirkti priėmimo etapą „sprendimo pirkti priėmimas ir pirkimas“ padės atskleisti pateikti klausimai: ar tiksliai žinote, kuriuos produktus pirksite, kiek svarstote prieš pirkdami pieno produktus ir kokios pieno produktų savybės lemia pasirinkimą pirkti.

56 % respondentų tiksliai žino, kuriuos pieno produktus pirsks, 40% - dažniausiai žino, kuriuos pieno produktus, ir tik 3% vartotojų nėra apsisprendę dėl konkrečių pieno produktų pirkimo. Be to, apsisprendimo pirkti pieno produktus laikas yra trumpas. Būtent taip ir pasiskirstė respondentų atsakymai į šį klausimą: trumpai svarsto prieš pirkdami pieno produktą 60%, ko gero, trumpai 32%, ko gero, ilgai 5% ir tik 2% respondentų atsakė, jog, prieš pirkdami pieno produktus, svarsto ilgai. Pagrindiniai rodikliai, lemiantys vartotojo apsisprendimą pirkti pieno produktą, yra produkto kokybė (49%) ir kaina (27%). Kaip jau minėta, tyrimo rezultatai dar kartą patvirtino, jog apsisprendimą pirkti veikia produktą gaminanti įmonė (13%). Naujas produktas rinkoje lemtų tik 7% respondentų apsisprendimą pirkti. Praktiškai visiškai neturi įtakos pieno produkto pakuotė (4%). Šiam klausimui buvo pateiktas dubliuojantis klausimas: Kam teikiate pirmenybę: pieno produkto kokybei ar pakuotei? Net 77% respondentų teigia, jog svarbiausia, kad produktas būtų kokybiškas, o pakuotė nesvarbi, 20% mano, jog gera išvaizda – aukštos kokybės garantas, ir tik 3% pirmumą teiktų produktų pakuotei.

Išanalizavus tyrimo rezultatus, paaiškėjo, kad daugumai vartotojų pieno produktai yra svarbūs, vadinasi, vartotojų požiūris į pieno produktus yra teigiamas.

Tačiau esama respondentų, kurių požiūris į pieno produktus yra neigiamas. Šiems vartotojams pieno produktai nereikalingi, nepageidaujami, nereikšmingi, niekam tikę ir t.t. Šiems vartotojams rekomenduotina taikyti požiūrio keitimo strategiją. Siekiant pakeisti vartotojų požiūrius į prekę, ji turi visiškai atitikti vartotojo poreikius, o kai kada ir sužadinti naujus jo poreikius. Siekiant pakeisti vartotojo požiūrį, siūloma:

- jei produktas jau vartotas, bandyti parodyti, jog produktas gali tiktai kitam tikslui, apie kurį vartotojas gal ir nepagalvojo. Pvz.: pieno produktai – kaip sveikatos šaltinis, pieno gėrimai – kaip gaivusis gėrimas ir t.t.;
- stimuliuoti vertės išreiškimą – tai vartotojo pagrindinių vertybių, gyvenimo stiliaus ir pasaulėžiūros išraiška. Pvz.: jei yra teigiamas požiūris į kavos gėrimo ritualą, tai požiūris į šį ritualą geriant su įvairaus riebumo grietinėlę taip pat bus teigiamas. Čia taip pat įeina suvokimas „puoselėti savo įvaizdį“ ar „būti madingam“. Reklama galėtų remtis šiuo požiūriu: „madinga gerti kavą su grietinėle“, „dabar visi geria kavą su grietinėle“ ir pan;
- stimuliuoti žinių funkciją. Dažniausiai vartotojai jaučia poreikį žinoti apie produktus, kuriuos jie vartoja, todėl rekomenduotina suteikti kuo išsamesnės informacijos vartotojui apie jų vartojamus produktus, iškeliant teigiamas savybes;
- suformuoti naujus poreikius ir, žinoma, siūlyti naujus produktus. Reklamuojantis nuolat primintina, jog produktas turi „daugiau“ ar yra „geresnis“, išreiškia svarbias produkto savybes.

Pieno produktų vartotojų sprendimo pirkti priėmimo etapą „reakcija po pirkimo“ padės įvertinti atsakymai į klausimą, kaip elgiasi vartotojai, aptikę, jog nusipirkta pieno produktas sugedęs. Nupirktą prekę vartotojas

lygina su savo lūkesčiais ir tampa ja patenkintas arba nepatenkintas. Nepatenkintas išigyta preke, vartotojas gali susiformuoti apie tą prekę ir ją gaminusią įmonę neigiamą nuomonę, taip pat gali pasikeisti vartotojo požiūris į pieno produktus neigiama kryptimi.

Kaip rodo respondentų atsakymai, dažniausiai vartotojai nesiima jokių veiksmų ir paprasčiausiai išmeta produktą (34%). Kita dalis vartotojų imasi veiksmų: nebeperka toje parduotuvėje (23%), papasakoja draugams apie tą parduotuvę (19%). 19% vartotojų neša produktą į parduotuvę, reikalaudami pakeisti pirktą produktą, žymiai mažiau respondentų reikalauja grąžinti pinigus (4%). Ir visiškai nedaug (tik 1%) skambina vartotojų teisių gynimo tarnybai ir apskundžia gamintoją. Tyrimo duomenys leidžia teigti, jog vartotojai dažniau imasi asmeninių veiksmų – 42% – nei visuomeninių – 24% – ar nesiima jokių 34%.

Siekiant įvertinti respondentų gaunamų pajamų ir išlaidų pieno produktams ryšį, naudotas neparametrinis rodiklis – Pirsono koreliacijos koeficientas  $k_{\text{Pirson}}$ .

Siekiant identifikuoti vartotojų pirkimo strategiją, būtina sužinoti, kaip elgtųsi pieno produktų vartotojai, padidėjus jų piniginių pajamoms. Respondentų, manančių, jog, padidėjus pajamoms, pieno produktų pirkimų tiek, kiek dabar, yra lygiai tiek pat kaip ir respondentų, kurie mano, jog pirkimų daugiau (po 40%). Beveik po lygiai apklaustųjų atsakė, jog pirkimų tiek pat, tik brangesnių (8%) ir pirkimų daugiau ir brangesnių (12%). Respondentų atsakymai išsiskyrė, tik išanalizavus, kaip elgtųsi vartotojai, gaunantys skirtingas pajamas. Paaiškėjo, jog mažesnes pajamas gaunantys vartotojai pirkimų daugiau prekių, o didesnes pajamas turintys respondentai pirkimų tiek pieno produktų, kiek perka dabar.

Remiantis situacija Lietuvos pieno produktų rinkoje, pieno produktų vartotojų elgsenos tendencijomis bei empirinio pieno produktų vartotojų elgsenos tyrimo rezultatais, padarytos šios **išvados** ir pateikti pasiūlymai:

- a) Tyrimo duomenys patvirtina teiginį jog vyresnio amžiaus žmonės daugiau renkasi žinomas prekes ir mažiau linkę naujoves;
- b) Daugiausia išorinės informacijos respondentai gauna reklamos dėka, arba šią informaciją suteikia draugai ir pažįstami. Todėl siūloma sutelkti marketingo veiksmus į reklamą bei pirkimo skatinimą pardavimo vietose;
- c) Vartotojai iš anksto tiksliai žino, kuriuos produktus pirsks, todėl produkto pirkimo vietoje sprendimo pirkti priėmimo laikas yra trumpas, nereikalauja nuodugnių apmąstymų. Taigi rekomenduojama skirti daugiau dėmesio išankstinės nuomonės formavimui;
- d) Vartotojams pieno produktai turi svarbią reikšmę;
- e) Didžiausia dalis respondentų pieno produktams per savaitę išleidžia 11 – 30 Lt. Patvirtina teiginį, kad mažesnes pajamas gaunančių respondentų išlaidos pieno produktams mažesnės už didesnes pajamas gaunančių respondentų;
- f) Mažus ir vidutinius atlyginimus gaunančių gyventojų pajamoms didėjant, jų išlaidos pieno produktams didėtų. Neparametrinis rodiklis  $k_{\text{Pirson}}$  statistiškai patvirtino hipotezę, jog ryšys tarp vartotojų pajamų ir išlaidų pieno produktams yra labai glaudus.
- g) Pieno produktų vartotojai, aptikę, jog nupirkta pieno produktas sugedęs, imasi asmeninių veiksmų (toje parduotuvėje daugiau nebeperka, papasakoja draugams, apie tą parduotuvę ir prekę) arba nesiima jokių veiksmų (produktą išmeta). Tik išskirtiniais atvejais vartotojai naudojasi visuomeniniais veiksmais (skambina kokybės inspekcijai (vartotojų teisių gynimo tarnybai) ir apskundžia gamintoją);

Remiantis apklausos rezultatais, pieno produktų vartojimas turi tendenciją įgauti dvi kryptis:

1. Pieno produktai kaip sveikos mitybos elementas;
2. Pieno produktai kaip tradiciniai maisto produktai.

Taigi vykdant reklaminę kampaniją, rekomenduojama akcentuoti, jog pieno produktai – įprasta, tradicinė kasdieninio maisto raciono dalis, turinti gydomųjų savybių. Be to, pasaulyje populiarėjant sveiko maisto idėjoms, siūloma gaminti dietinius pieno produktus.

Raktažodžiai: vartotojų elgsena, statistiniai tyrimai, metodologija, metodai, apklausa, pieno gamyba ir pieno produktai.

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