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Comprehensive assessment of consumer properties on bakery products with functional additives sold in Murmansk

O A Sokolova¹, K V Alloyarov¹ and T A Baranova²

¹ Murmansk State Technical University, Murmansk, Russia

² Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

sokolova.aa@mail.ru

Abstract. Due to the economic recession resulting from low labor efficiency, a reduction in the number of the employable population and sanctions, constantly sending shock waves throughout the world community, Russian consumers have enhanced their consumption of staple foods, bakery products included. Overall production of bakery goods with a three-day shelf life has decreased, since neither minimum income consumers, that is, most of the population, nor retirement-age people can afford them. Conversely, production of shelf-stable low-moisture bakery goods has been increasing. (Crumb moistness is a regulated physicochemical parameter.) Bakery products are everyday goods. Being critical to the food sovereignty and security of the country, they are considered strategic goods. In view of this, the marketing activities of bakery goods manufacturers must accommodate state interests and be consistent with welfare policies. It is of particular importance today as the socio-economic and demographic conditions in Russia remain dire. According to the State Committee on Statistics of the Russian Federation (Goskomstat), about 40% of the country's population have income that is less than the minimum subsistence level, while the annual natural population decline amounted to 218,000 people. The current situation requires that the population be provided with affordable, high-quality bakery products and the interests of manufactures (i.e., profit-making) and society at large be factored in and balanced out. These challenges are met both abroad and somewhat in Russia by applying a concept of enlightened, socially responsible and ethical marketing on a large scale.

1. Materials and methods

To further substantiate this concept, market research was conducted in Murmansk from March to April 2018, aiming to explore the merchandizing and competitive prices of bakery products. The research involved customer interviews in various points of sales in Murmansk. The output of the interviews was then supplemented by the observations of the interviewers, i.e., the authors of this paper. In every single case, the interviews to gather information were carried out with the approval and on behalf of the management of the point of sale.

The characteristics of mixed-flour breads competing in the market of Murmansk have been investigated. The range of breads available has been determined. There have been identified the primary bread manufacturers — OOO Khlebopek (Khlebopek LLC) and OOO Viktoria (Viktoria LLC), their product assortments, baking procedures, and marketing schemes [1].



Bread is a staple food and a source of B vitamins which are of critical importance to the people living in the polar (Arctic) regions since they exert a normalizing effect on the nervous and cardiovascular systems, increase intestinal activity, boost immunity, contribute to energy exchange [2].

2. Research methods and objects

The objects of the study were samples of mixed-flour breads sold in Murmansk. The samples were acquired in Yabloko, Evros, Moya Semya and Dixy retail outlets. The product assortment was determined over the research period, the obtained data was then systematically analyzed from March to April 2018 [3].

The output from the given research was to be used in devising a method to produce bakery products with functional additives competitive in the Murmansk market.

Table 1. Items of mixed-flour breads with additives sold in the Murmansk market

Bread item	Category	Weight, g	Types of flour used	Functional additives	Energy content, kcal	Price, RUB	Use of bread molds	Packaging
OOO VIKTORIA								
'Darnitskiy'	rye	700	2	-	206	29.99	yes	yes
'Orlovskiy'	rye	500	2	-	207	28.99	yes	yes
'Mariinskiy'	rye	500	2	+	245	34.99	no	yes
'Borodinskiy Zavarnoy'	rye	400	2	-	208	28.99	yes	yes
'Sovital' multigrain	first	300	1	+	251	33.99	yes	yes
'Grechishniy'	top	300	1	+	239	37.99	yes	yes
'Zolotoye Zyornyshko'	top	300	2	+	232	42.99	yes	yes
'Viktoria'	rye	250	2	+	231	29.99	no	yes
'S Otrubyami'	first	400	1	+	245	29.99	no	yes
'Stolichniy'	rye	350	2	-	210	26.99	yes	yes
'Bogorodskiy' yeast-free	rye	500	2	+	217	25.99	yes	yes
OOO KHLEBOPEK								
'Mariinskiy'	rye	500	2	-	245	34.99	no	yes
'Appetitniy'	rye	500	2	-	245	34.99	no	yes
'Borodinskiy'	rye	400	2	-	208	27.99	yes	yes
'Darnitskiy'	rye	700	2	-	206	36.99	yes	yes
'Imandra'	rye	400	2	-	206	49.99	yes	yes
'Sergeevskiy' sourdough	first	300	2	+	251	33.99	no	yes
'Solodoviy'	first	300	2	+	251	34.00	yes	yes

‘Kumuzhinskiy’	rye	250	2	-	251	29.99	no	yes
‘Prostoy’	rye-wheat	700	3	-	206	34.00	no	yes
‘Pomorskiy’	rye-wheat	700	2	-	206	36.00	yes	yes
‘Murmasnkiy’	rye-wheat	700	2	-	206	35.99	yes	yes
‘Darnitskiy’ fortified with vitamins	rye	700	2	+	206	36.99	yes	yes
‘Mnogozerno-voy’	first	300	2	+	251	54.99	yes	yes
‘Vityaz’	first	400	2	+	272	57.99	yes	yes
‘Vosem Zlakov’	first	300	2	+	251	56.99	yes	yes
OOO BELAYA VEZHA								
‘Shveytsarskiy’	first	400	2	+	205	43.99	yes	yes
‘Estonskiy’	first	300	2	+	213	44.90	yes	yes
‘Borodinskiy’	rye	400	2	-	208	41.00	yes	yes
‘Mariinskiy’	rye	300	2	+	249	34.90	no	yes
‘Kneip’ narez-noy	first	400	2	+	260	35.90	yes	yes
‘Suvorovskiy’	first	300	2	+	240	49.90	yes	yes
‘Fitness’	first	250	1	+	273	56.99	yes	yes
OOO TEKILAJAZ								
‘Fitness’	first	250	1	+	260	46.99	yes	yes
‘Estonskiy’	first	400	2	+	213	39.99	yes	yes
‘Derevenskiy’	first	350	2	+	244	22.99	yes	yes
‘Kneip’	first	400	1	+	260	35.90	no	yes
‘Latviyskiy’	first	300	2	+	210	44.90	yes	yes

The criteria used to evaluate the product assortments are the following: ingredients, use of additives, energy content, manufacturer, unit price. The samples acquired from the first three manufacturers have a shelf life of 72 hours, those obtained from TekilaJaz have a shelf life of three days. Table 1 presents the assortments of bakery products under study. All the samples are sold sliced and packaged [4].

The present market research identified two primary bread manufactures in Murmansk: OOO Khlebopek and OOO Viktoria.

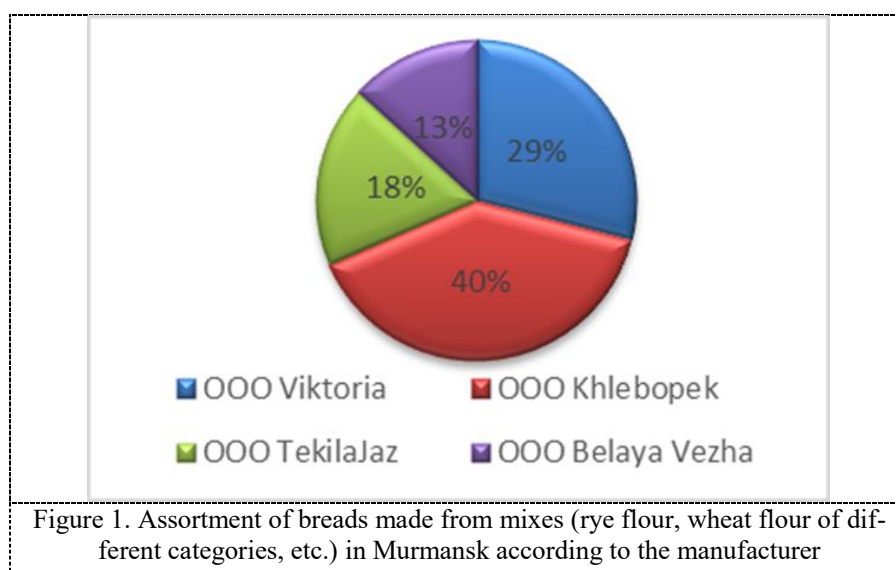
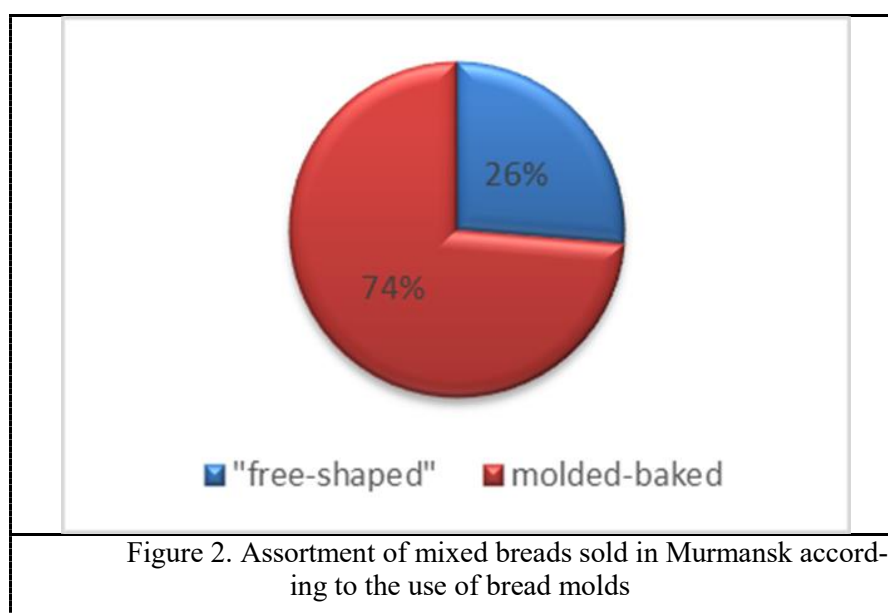


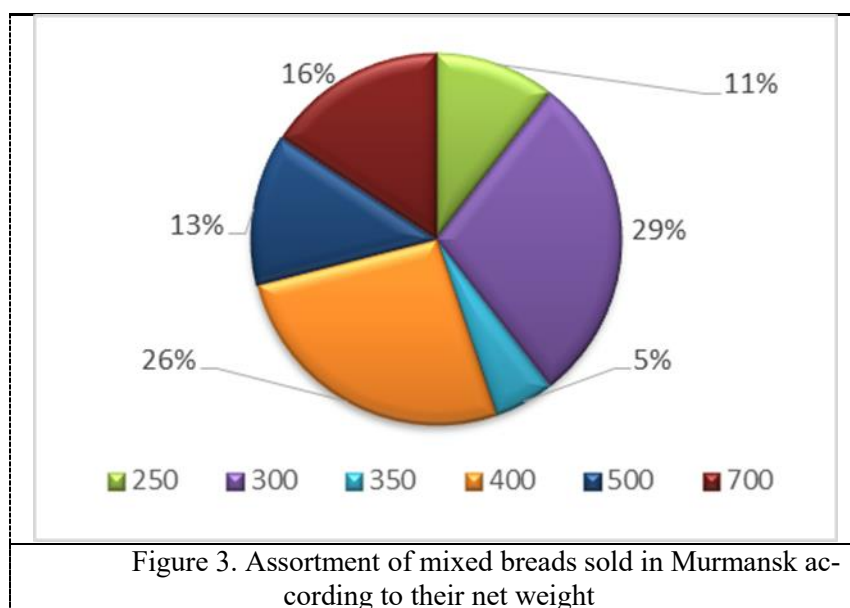
Figure 1. Assortment of breads made from mixes (rye flour, wheat flour of different categories, etc.) in Murmansk according to the manufacturer

OOO Khlebopek offers 15 items for sale: ‘Mariinskiy,’ ‘Appetitniy,’ ‘Borodinskiy,’ ‘Darnitskiy,’ ‘Sergeevskiy,’ ‘Solodoviy,’ ‘Kumuzhinskiy,’ ‘Prostoy,’ ‘Pomorskiy,’ ‘Murmanskiy,’ ‘Imandra,’ ‘Darnitskiy,’ ‘Mnogozernovoy,’ ‘Vityaz,’ ‘Vosem Zlakov,’ accounting for 40 % of the total amount of products [5].

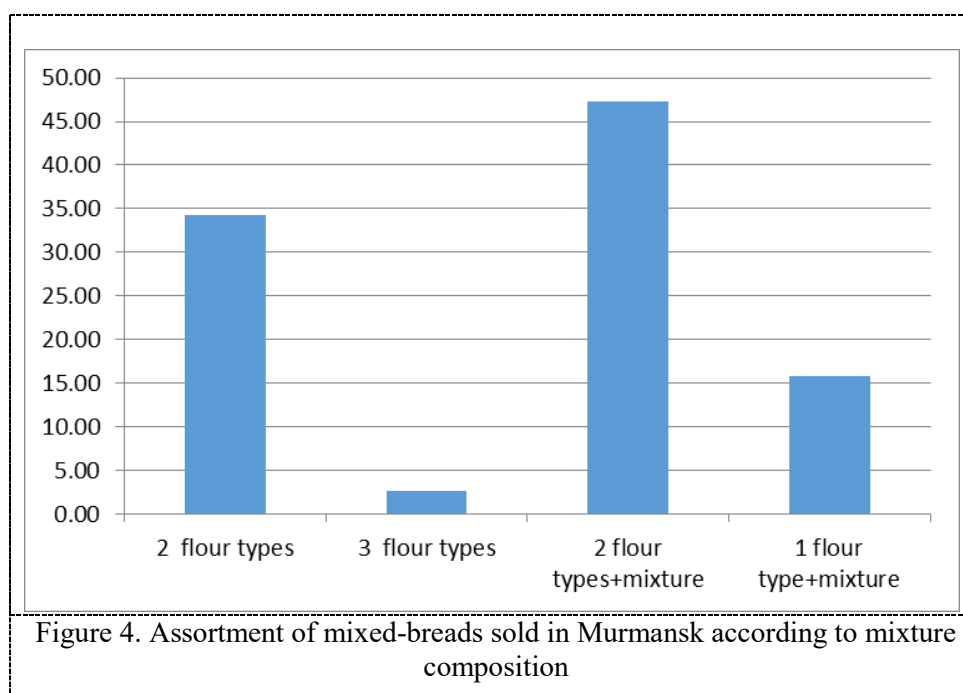
OOO Viktoria offers 11 mixed-bread items for sale: ‘Darnitskiy,’ ‘Orlovskiy,’ ‘Mariinskiy,’ ‘Borodinskiy Zavarnoy,’ ‘Sovital,’ ‘Grechishniy,’ ‘Zolotoye Zyornyshko,’ ‘Viktoria,’ ‘S Otrubyami,’ ‘Stolichniy,’ ‘Bogorodskiy,’ which makes up 20%. OOO Belaya Vezha and OOO TekilaJaz rank third and fourth, respectively: Belaya Vezha offers 7 items for sale, TekilaJaz — 5.



Analysis of the sample assortments reveals that the majority of breads are baked in traditional rectangular-shaped baking pans, or molds (Fig. 2): 74% of breads are molded-baked and only 26% of them are “free-shaped” [6].



Analysis of the data presented in Fig. 3 shows that bakery products weighing 300 g and 400 g (making up 29% and 26% of the examined samples, respectively) are produced in larger quantities, presumably due to being in greater demand among consumers. Breads weighing 700 g and 500 g (16% and 13% of all the samples, respectively) rank second. Breads weighing 250 g and 350 g are in the least demand [7].



Analysis of the data presented in Fig. 4 shows that nearly 50% of the sample items contain two types of flour, various mixtures and supplements, 34.21%— only two types of flour and no supplements, and 15.79% — one type of flour, various mixtures and supplements. A very limited amount (2.63%) is made from three types of flour and no supplements [8].

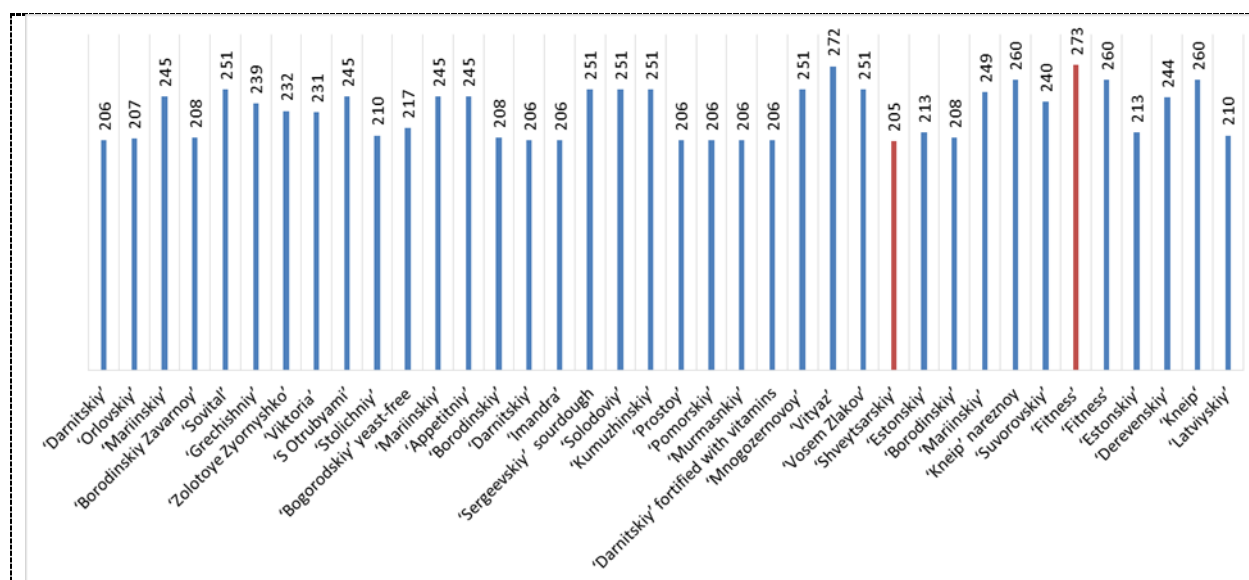


Figure 5. Assortment of bread samples according to their energy content per 100 g, kcal

Analysis of the energy content of the examined samples (Fig. 5) concludes that Fitness Bread (OOO Belaya Vezha) has the highest energy content while Shveytsarskiy Bread (OOO Belaya Vezha) has the lowest. The energy content of the majority of the samples varies from 205 to 210 kcal, so their composition will be used to create a new bakery product with functional additives [9].

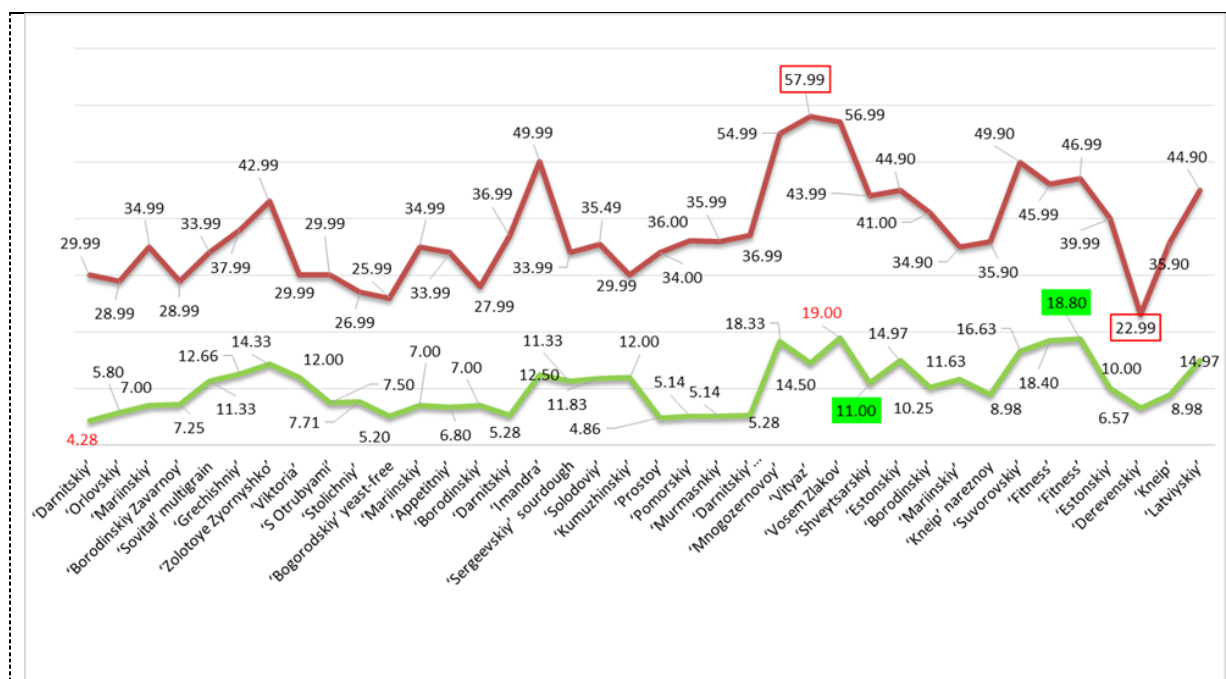


Figure 6. Pricing policy employed by the manufacturers of the examined samples, RUB

The average market price varies depending on the net weight of the item, there are more or less affordable bakery products. Analysis of the prices of the examined samples (Fig. 6) concludes that Vityaz Bread (OOO Khlebopek) has the highest price per item — 57.99 rub., while Derevenskiy Bread (OOO Belaya Vezha) has the lowest — 22.99 rub. Vosem Zlakov Bread (OOO Khlebopek) has the highest price per 100 g — 19.00 rub., whereas Darnitskiy Bread (OOO Viktoria) has the lowest [10]. Fitness Bread (OOO Belaya Vezha) has the highest energy content and the highest price per item and per 100 g: 56.99 rub., and 18.40 rub., respectively. Shveytsarskiy Bread has the lowest energy content and is sold at a price of 43.99 rub. per item, or 11.00 rub. per 100 g.

3. Conclusion

Data derived from this market research is to be used to create a bakery product with functional additives tailored to meet consumers' demands. To be economically viable, it should comprise two types of flour and functional additives, weigh 300 grams, and cost up to 11.00 rub. per 100 grams.

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