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THE OPTIMAL COST MANAGEMENT RESEARCH FOR ADVERTISING ON THE BASIS OF DAIRY MILK FACTORY

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The modern society can not be imagined without advertising, so it has become an essential element that can contribute to the successful goods and services promotion. Advertising is the connection between producer and consumer. With the aid of advertising, «feedback» from the market and consumers is supported. Advertising should create conditions for free consumer choice of services and goods.

It allows promotions control, create and consolidate the buyer advertised benefits system objects should be in terms of market saturation goods and services.

In order to make working advertising, you need to develop a strategy for the campaign. The approach of developing strategies, will allow avoiding errors during the advertising. It will minimize the risks associated with consumer misunderstanding, and increase the effectiveness of advertising.

Advertising promotes the growth of business' activity, increase the volume of investment and number of work places. The result of it is the overall development of public goods production.

You can see the most primitive economic efficiency calculation of advertising: GAIN - MEANS spent on advertising is POSITIVE VALUE.

In this research, was analyzed allocation efficient of advertising based on statistical data of existing manufacturing plant, which processing dairy products.

The success of dairy enterprises depends on many factors, such as: seasonality, range, product quality, price, and of course advertising (Figure 1).

Each dairy processing company aims to maximize profits and minimize costs. So the question of optimal expenses control, especially advertising, is very important.

During the year finished goods sale is accompanied by a sharp decline. Moreover uneven sale of dairy products depends on the seasonality. The fluctuations of increasing and decreasing in product sales are repeated from year to year, with constant prices fluctuating for goods.

The main production and sale happens in the summer months. There is a large amount of raw milk flow and its processing in summer, and in the autumn and winter conversely reduced.
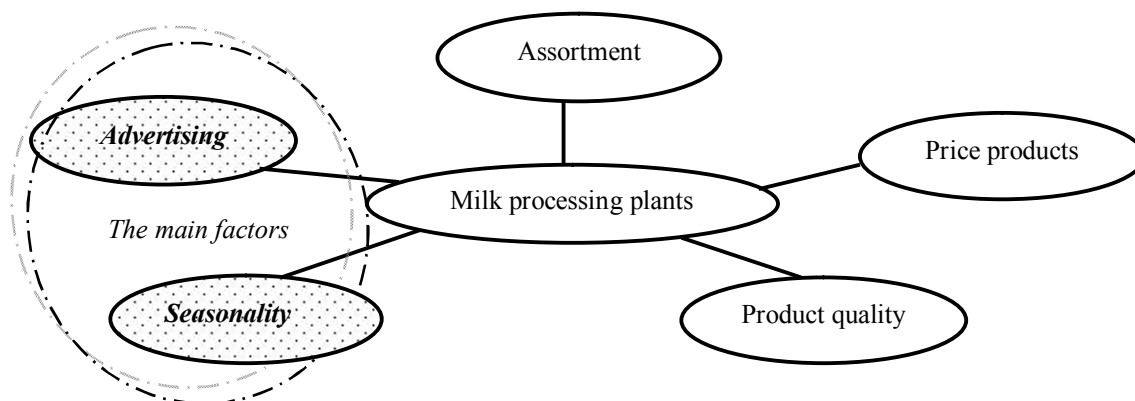

Fig. 1. The main factors affecting the success of dairy plants

If the company does not spent budget on advertising its products, it will stay with the existing demand, and may even lose a certain percentage of buyers.

Formulation of the problem. To conduct research and analysis of the optimal distribution of advertising costs by quarter next year based on statistic data 2015.

The purpose of the work. Make advertising costs calculation, maximizing production income obtained from marketing. And develop a model optimization.

Main material. The enterprise understands, that cost advertising are necessary, but the question is how much money have to be spent on advertising to minimize cost with maximum efficiency. Or how to spend money most effectively on advertising, and which budget would be considered as optimal.

We will consider generation and analysis models on the example of existing milk factory. All information about income and expenses for 2015 is shown in Table 1.

Table 1

Financing activities of the milk factory in 2015

Indexes	Quarters				Total
	I	II	III	IV	
Seasonality factor	0,7	1,2	1,3	0,8	**4**
The average number of sales of goods	2837,2	2837,2	2837,2	2837,2	**11348,8**
The actual number of sales	1986,04	3404,64	3688,36	2269,76	**11348,8**
Sales revenue	69511,4	119162,4	129092,6	79441,6	**397208**
Собівартість продукції, тис. грн.	39720,8	68092,8	73767,2	45395,2	**226976**
Собівартість продукції.	29790,6	51069,6	55325,4	34046,4	**170232**
Salaries	11000	13000	14000	12000	**50000**
Advertising costs	12000	12000	12000	12000	**48000**
Indirect costs	11121,82	19065,98	20654,82	12710,66	**63553,3**
Total costs	34121,82	44065,98	46654,82	36710,66	**161553**
Manufacturing profits	-4331,22	7003,616	8670,584	-2664,26	**8678,72**
Profitability, %	-6%	6%	7%	-3%	**3%**

Table 2

Quarterly cost of advertising production

Advertising costs	1000	3000	5000	7000	9000	11000	13000	15000	17000	19000
The average number of sales of goods	1600	2760	1827	2987	2563	3456	2814	3600	3512	3850

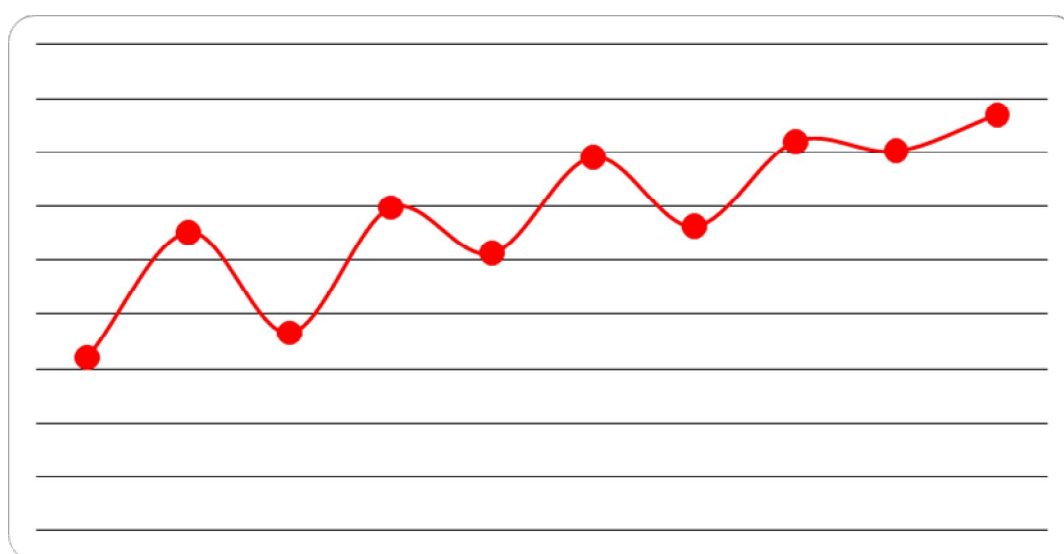A chard created based on tabular data, and after was made selection of trend line

Fig. 2. The average number of sales of dairy products

In the beginning will use all five analytical functions types (growth curves). And choose the one that is the highest degree approaching the graph with tabular dependence.

- $y = Ax + B$ – linear dependence;
- $y = A \cdot x^B$ – power trend-line;
- $y = A \cdot e^{Bx}$ – exponential;
- $y = A + A_1 x + A_2 x^2 + ... + A_6 x^6$ – polynomial;
- $y = A \cdot \ln x + B$ – logarithmic [1].

Based on the Table 2 data, it was used polynomial function, which is more adequately reflected the relationship between the two variables, is shown in Figure 3.
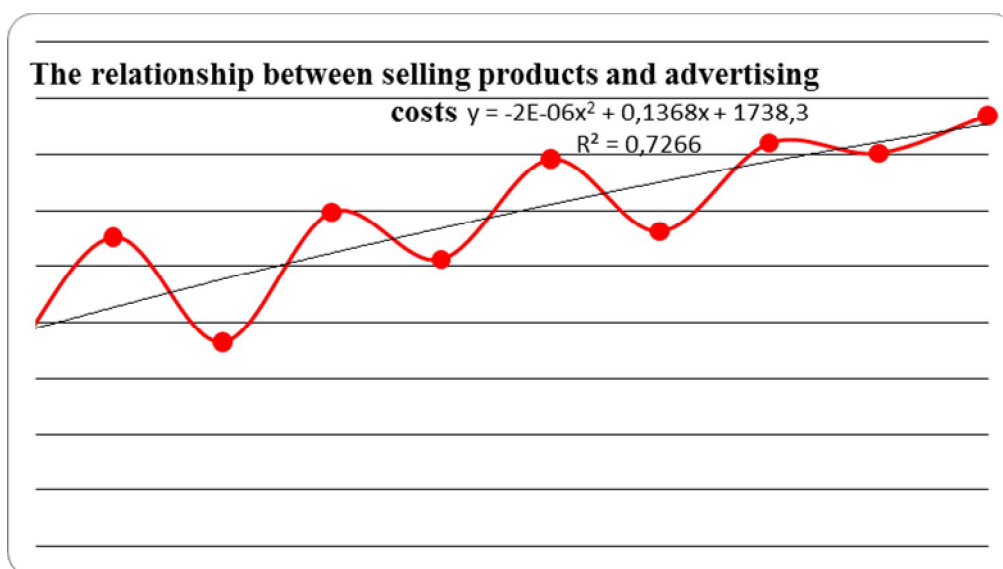

Fig. 3. Chart of the trendline and the value of the determination coefficient R^2

In order to find the optimal control advertising costs is used the formula $y = -0,000002x^2 + 0,1368x + 1738,3$ and the results are in Figure 4, which shows that the production profit is 13926,8 th.hrn., exceeding the previous Table 1, which was 8678,72. The determination coefficient $R^2=0,7266$ shows that the confidence level is not very high, but not low.

Indexes	Quarters				Total
	I	II	III	IV	
Seasonality factor	0,7	1,2	1,3	0,8	**4**
The average number of sales of goods	3091,9	3091,9	3091,9	3091,9	**12367,6**
The actual number of sales	2164,33	3710,28	4019,47	2473,52	**12367,6**
Sales revenue	75751,55	129859,8	140681,5	86573,2	**432866**
Собівартість продукції, тис. грн.	43286,6	74205,6	80389,4	49470,4	**247352**
Собівартість продукції.	32464,95	55654,2	60292,05	37102,8	**185514**
Salaries	11000	13000	14000	12000	**50000**
Advertising costs	**12000**	**12000**	**12000**	**12000**	**48000**
Indirect costs	12877,76	22076,17	23915,85	14717,44	**73587,2**
Total costs	35877,76	47076,17	49915,85	38717,44	**171587**
Manufacturing profits	-3412,81	8578,034	10376,2	-1614,64	**13926,8**
Profitability, %	-4,51%	6,61%	7,38%	-1,87%	**7,61%**
List Price	35				
Cost of products	20				

Fig. 4. Equable quarterly advertising funding

If next year dairy, wants to limit annual spending on advertising 2016 the amount of the previous year, which in turn is 48000 th. hrn, all this can be done on the basis of economic and mathematical models:

To find (v_1, v_2, v_3, v_4):

$$V = v_1 + v_2 + v_3 + v_4 \leq 48000$$
$$P = P_1(v_1) + P_2(v_2) + P_3(v_3) + P_4(v_4) \rightarrow max. \qquad (1)$$

Using the formula 1 and setting Excel «Search Solution» received optimal advertising spending plan for the next year pattern 5 and figure 6.
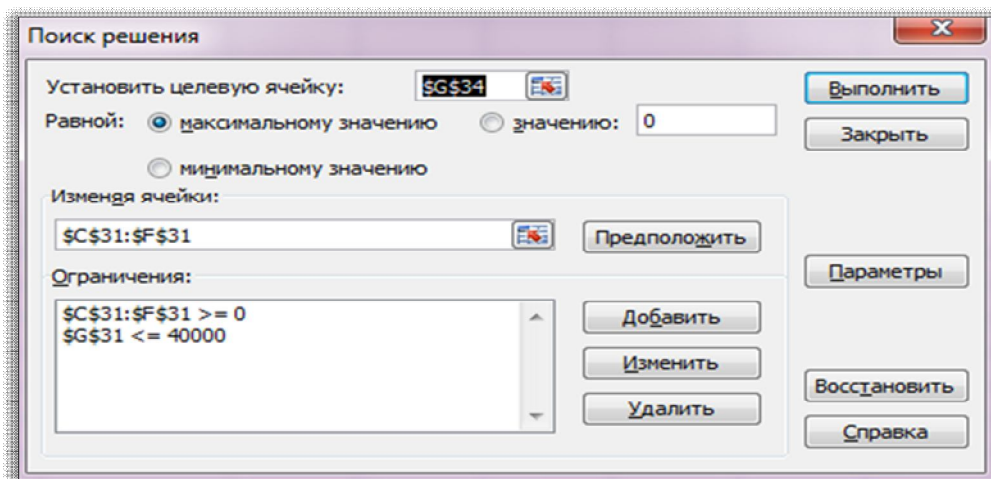

Fig. 5.Calculation of the advertising costs plan to sell dairy products with maximum profit

Indexes	Quarters				Total
	I	II	III	IV	
Seasonality factor	0,7	1,2	1,3	0,8	**4**
The average number of sales of goods	1738,3	3017,716	3174,5	1738,3	**9668,82**
The actual number of sales	1216,81	3621,259	4126,85	1390,64	**10355,6**
Sales revenue	42588,35	126744,1	144439,7	48672,4	**362445**
Собівартість продукції, тис. грн.	24336,2	72425,17	82537	27812,8	**207111**
Собівартість продукції.	18252,15	54318,88	61902,75	20859,6	**155333**
Salaries	11000	13000	14000	12000	**50000**
Advertising costs	**0**	**11179,7**	**12950,5**	**0**	**24130,3**
Indirect costs	7240,02	21546,49	24554,76	8274,308	**61615,6**
Total costs	18240,02	45726,23	51505,28	20274,31	**135746**
Manufacturing profits	12,1305	8592,648	10397,46	585,292	**19587,5**
Profitability, %	0,03%	6,78%	7,20%	1,20%	**15,21%**
List Price	35				
Cost of products	20				

Fig. 6. The best spending plan for next year

To compare the results, will calculate the contrary, the other economic - mathematical model:

To find (v_1, v_2, v_3, v_4):

$$P = P_1(v_1) + P_2(v_2) + P_3(v_3) + P_4(v_4) \geq 19587,5$$
$$V = v_1 + v_2 + v_3 + v_4 \rightarrow min. \qquad (2)$$

Figure 7 – Minimization of advertising funds for the next year

Indexes	Quarters				Total
	I	*II*	*III*	*IV*	
Seasonality factor	0,7	1,2	1,3	0,8	**4**
The average number of sales of goods	1738,3	3015,108	3172,289	1738,3	**9664**
The actual number of sales	1216,81	3618,129	4123,976	1390,64	**10349,6**
Sales revenue	42588,35	126634,5	144339,2	48672,4	**362234**
Собівартість продукції, тис. грн.	24336,2	72362,59	82479,52	27812,8	**206991**
Собівартість продукції.	18252,15	54271,94	61859,64	20859,6	**155243**
Salaries	11000	13000	14000	12000	**50000**
Advertising costs	**0**	**11151,4**	**12924,5**	**0**	**24076**
Indirect costs	7240,02	21527,87	24537,66	8274,308	**61579,9**
Total costs	18240,02	45679,31	51462,2	20274,31	**135656**
Manufacturing profits	12,1305	8592,63	10397,45	585,292	**19587,5**
Profitability, %	0,03%	6,79%	7,20%	1,20%	**15,22%**
List Price	35				
Cost of products	20				

Fig. 8. The optimal spending plan for next year by one calculation

Conclusion. Therefore, cost management is the ability to save resources and maximize the return from it. Therefore, the results for profit is 19587,5 th. hrn., what is bigger value from the previous figure 4. on 5660,7 th. hrn. You should also note that there was a reduction in the amount of advertising budget 48000-24130,3=23869,7, and this is big ammount.

From the calculation we can see, that the second model differs from the first at II – Quarter, and in the third – quarter 26 HRN. The difference is generally negligible.

So the impact of advertising on the company activities is quite important, because advertising challenges the competitors, which forces the company to improve their products, improve their own competitiveness. This contributes improving product quality.

Advertising is an essential condition of competition, because informing consumers about the variety of goods and services, forces the company manufacturer to improve their products, thereby stimulating consumer needs. On these factors is based efficiency of the economy.

The proposed optimization model will enable the company to control costs to the manufacturer so that both maximize profit, improve the chances to survive in a competitive environment.

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Tesolkin A., Ph.D., Associate Professor. **Shaparenko L.** Poltava National Technical Yuri Kondratyuk University. **The optimal cost management research for advertising on the basis of dairy milk factory.**

Modern life is unimaginable without advertising. It becomes a connecting part between the producer and the consumer. The commodities market is saturated and the services of advertising are a reliable tool to market products. But in order to advertising work, you need to develop a strategy for an advertising campaign that will avoid errors during the advertising and will help minimize the risks associated with a lack of understanding of the consumer and improve your performance.

Keywords: advertising, promotional campaign, the development strategy of an advertising campaign.

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Життя сучасного суспільства неможливо уявити без реклами. Вона стає сполучною ланкою між виробником та споживачем. В умовах насичення ринку товарами і послугами реклама є надійним інструментом просування товарів на ринок. Але для того, щоб реклама працювала, потрібно розробити стратегію рекламної кампанії, яка дозволить уникнути помилок при проведенні реклами і мінімізувати ризики, пов'язані з непорозумінням споживача, та підвищити ефективність реклами.

Ключові слова: реклама, рекламна кампанія, розроблення стратегії рекламної кампанії.

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Жизнь современного общества невозможно представить без рекламы. Она становится связующим звеном между производителем и потребителем. В условиях насыщения рынка товарами и услугами реклама является надёжным инструментом продвижения товаров на рынок. Но для того, чтобы реклама работала, нужно разработать стратегию рекламной кампании которая позволит избежать ошибок при проведении рекламы и позволит минимизировать риски связанные с недопониманием потребителя и повысить эффективность рекламы.

Ключевые слова: реклама, рекламная кампания, разработка стратегии рекламной кампании.