



ASPECTS REGARDING THE MARGINAL RATE IN MATHEMATICAL MODELING

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Abstract: In the case of the practical test, we performed economic applications in which we achieved the marginal rate of substitution, the slope of an isocost line and the slope of a budget line. The algorithm of the indifference curves will be the isoproduct curves, i.e. the totality of the combinations of the two factors of production: W and Q that ensure the same level of production. The indicator of the marginal substitution rate with a content perfectly similar to the one used in the analysis of consumer behavior was also introduced here.

• Introduction

In 1826 Philippe Suchard rented an abandoned mill, rebuilt it, equipped it with machinery and began producing up to 30 kilograms of chocolate a day, sold in the form of tablets or wafers. Already a year after the opening of the chocolate shop, Philippe Suchard puts into practice his second project. He decides to expand his business, so there will be no need to produce everything manually. In terms of the range of products, it can be said that Milka is a great success. The ever-growing brand can boast a very diverse range of products related to chocolate. From chocolate tablets with all the flavors to crispy biscuits and chocolate pralines, Milka also has chocolate especially for children and last but not least various personalized objects depending on the season or on certain occasions.

• Material and method

Marginal substitution rate

In the case of the practical test, we rationally chose two baskets, with chocolate and jam, respectively. I graphically represented certain curves of indifference, i.e. the totality of the combinations of two products A and B that give me the same satisfaction (therefore the same aggregate unit).

• Results and discussions

MARGINAL RATE OF SUBSTITUTION

The marginal substitution rate of the three baskets with products is presented in tables 1 and 2.

Table 1.

Mark A	Chocolate	Jam	Aq sold goods	Aq obtained goods	Substitution rate
	400	150	200	50	4
Mark B	200	200			

Defining the substitution rate between chocolate and jam as the ratio between the quantity of good sold (chocolate) and the quantity of good obtained (jam). Thus we obtain the substitution rate equal to 4.

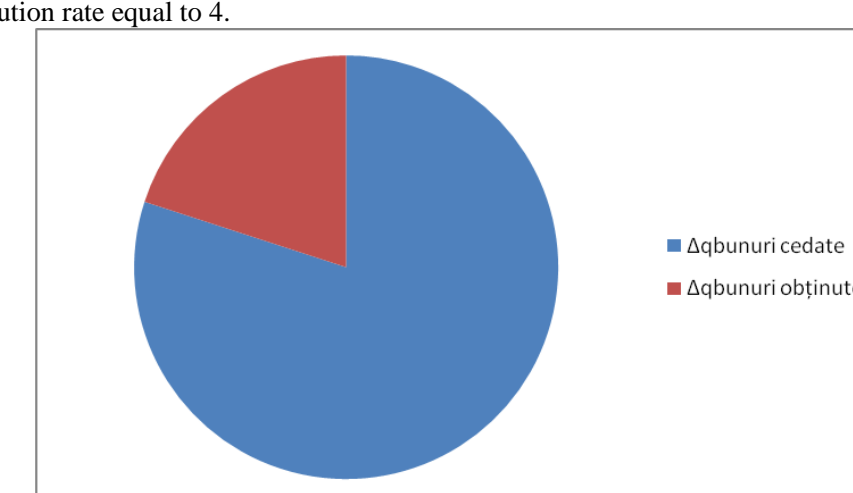


Figure 1. The ratio between sold goods and obtained goods

Table 2.

Mark B	chocolate	jam	Aq sold goods	Aq obtained goods	Substitution rate
	200	200	20	100	0,2
Mark C	180	300			

Defining the substitution rate between chocolate and jam as the ratio between the quantity of good sold (chocolate) and the quantity of good obtained (jam). Thus we obtain the substitution rate equal to 0,2.

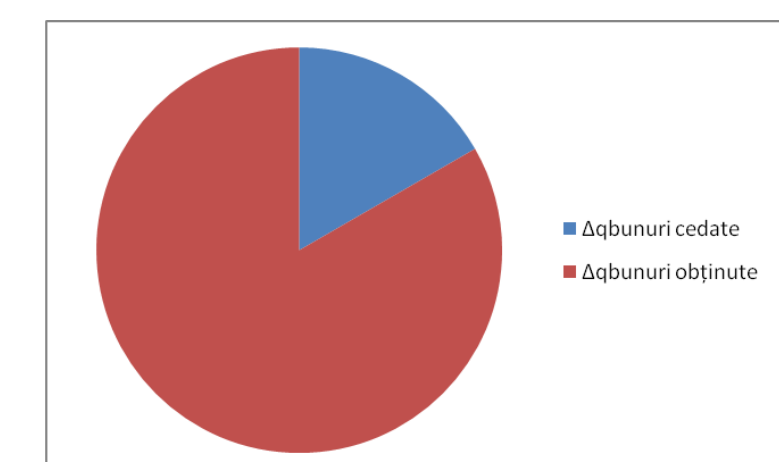


Figure 2. The ratio between sold goods and obtained goods

• Conclusions

Starting from the analysis of a company promoting Milka chocolate on the market, we considered to be a case study the way in which the product is implemented both in terms of quality and in terms of marketing.

Questionnaires were made and then the information was disseminated from a statistical point of view. Concluding that most consumers were very satisfied with the product, we considered another appropriate approach by analyzing by comparison with another product, the jam, with the help of mathematical analysis, an infinitesimal model of the isocost line and using the calculation for the marginal substitution rate.

The mathematically analyzed limits were interpreted as the minimum and maximum satisfaction level with a possible substituted produs.

We recommend as a result of this analysis that any two competitive and high quality food products be promoted together in the same campaign in order to achieve success and maximum profit.