

# Case Study on Model Factorial Analysis of Turnover Depending on the Structure of Production Sold in a Farm from South-Eastern Development Region

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## Abstract

Analysis of turnover involves the causal relationships between different factors (quantity, quality and structure) and changes in economic and financial phenomenon. Such a study is required arguments for a set of management measures geared towards improving work farms analyzed. The evolution over time in turnover was based on known statistical models. The period considered in the study farm is 2007-2008, and turnover analysis refers to the business of delivering fresh and frozen fish. Following the study found that modification of fish production during the two years the level of the average price of delivery and, ultimately, turnover of the holding. Thus in 2007, fresh fish represented 56% of the total quantity of fish delivered, in 2008 the share of fresh fish delivered was only 45.5% of the total production of fish delivered. This change in structure has helped to increase overall turnover resulting from the fish market in the year 2008 consisted of turnover from the sales of fresh fish 43.7%, 56.3% difference is that of fish delivered frozen.

**Keywords:** fish farm, South-East Development Region, structure of production, turnover.

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## 1. Introduction

According to turnover indicator it is appreciated the firm capacity to obtain incomes from current commercial operations. This indicator is a part from economical-financing results indicators category. It contribute to economical diagnose and evaluation of firm, to estimate efficiency of the management. A very important fact in turnover analysis is its structure, determination of its elements, in order to discover the possibilities for increase this indicators. In this way it is discover

the turnover causes and growth reserves, underlining sales structure studying.

## 2. Materials and methods

The structural analysis of turnover can be realized by market products groups. Usually, any commercial farm has a variable activity, which means that to realize the turnover, it participate more market products.

In analyzed fish farm, in turnover realization participate sale of fresh and frozen fish.

The factorial model of turnover analyze (CA), if market products is uniform [1] but differentiated on models, assortments, qualities, utilize the follow formula:

$$CA = QM \times \bar{p}, \text{ in which:}$$

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QM represents the volume of market products;  
 $\bar{p}$  is average sale price calculated by formula:  $\bar{p} = \sum sk * pk / 100$ , in which:  
 - sk is market products structure,  
 - pk is sale price per unit.

### 3. Results and discussion

In a synoptic factorial scheme, the turnover is influenced by direct action factors (QM,  $\bar{p}$ ) and indirect action factors (sk, pk) (Table 5) [2].

The turnover analyze can be made by:

1. Determination of factors action – according to model;
2. Verifying the correlations.

**Table 1.** Evolution of market product (QM), its structure (sk), the average selling price per unit of product (pk) and turnover for fish farms analyzed

Specification	2007				2008			
	QM tones	% sk	pk lei/kg	CA Thousand lei	QM tones	% sk	pk lei/kg	CA Thousand lei
<b>1. Fresh fish delivery</b>								
Carp 1-2 kg	16	14.8	5.5	88	5	6.3	6.0	30.0
Carp 2-10 kg	25	23.2	8.0	200	25	31.4	8.5	212.5
Silver carp 2-10 kg	40	37.0	3.8	152	30	37.6	5.0	150.0
Bighead carp 2-10 kg	15	13.9	3.8	57	5	6.3	4.5	22.5
Pike	1	1.0	7.0	7	1.5	1.9	7.5	11.25
Sheatfish	1	1.0	9.0	9	1.2	1.5	9.5	11.4
Crucian carp	10	9.1	3.0	30	12	15.0	3.5	42.0
Total	108	100	-	543	79.7	100	-	479.65
<b>2. Frozen fish delivery</b>								
Carp 1-2 kg	20	23.2	5.7	114	15	15.7	6.5	97.5
Carp 2-10 kg	5	5.8	8.5	42.5	25	26.2	9.0	225.0
Silver carp 2-10 kg	35	40.7	4.0	140.0	30	31.5	5.5	165.0
Bighead carp 2-10 kg	20	23.3	4.0	80.0	20	21.0	5.0	100.0
Pike	0	0	0	0	1.5	1.6	8.0	12.0
Sheatfish	1	1.1	9.5	9.5	0.8	0.8	9.8	7.84
Crucian carp	5	5.8	3.5	17.5	3	3.2	3.7	11.1
Total	86	100	-	403.5	95.3	100	-	618.44
Total market	194	-	-	946.5	175.0	-	-	1098.09

Source: own computation based on case study

1. Determination of factors action:

1.1. For “fresh fish” product we calculate the level of average price in two years:

$pk_{2007} = 5.0278$  lei/kg;  $pk_{2008} = 6.0182$  lei/kg

$\Delta CA = CA_{2008} - CA_{2007} = 479.65 - 543 = -63.35$  thousand lei, in which:

a) Following a market product (QM):

$\Delta CA (QM) = (QM_{2008} - QM_{2007}) \times p_{2007} = (79.9 - 108) \times 5.0278 = -142.2867$  thousand lei

b) Following an influence of sale average price per unit:

$\Delta CA (pk) = QM_{2008} \times (p_{2008} - p_{2007}) = 79.7 \times (6.0182 - 5.0278) = 78.9349$  thousand lei, in which:

b1) following an influence market product structure:

$$\Delta CA(sk) = \frac{QM_{2008} \times (\sum sk_{2008} * pk_{2007} - \sum sk_{2007} * pk_{2007})}{100} = 79.7 \times$$

$$(5.2447 - 5.0278) = 17.2869 \text{ thousand lei}$$

b2) following an influence of sale price per unit and assortments:

$$\Delta CA (pk) = \frac{QM_{2008} \times (\sum sk_{2008} * pk_{2008} - \sum sk_{2008} * pk_{2007})}{100} = 79.7$$

$$\times (6.0182 - 5.2447) = 61.648 \text{ thousand lei}$$

2.1. It is verifying if the correlations are respect:

$$\Delta CA (pk) = \Delta CA (sk) + \Delta CA (QM),$$

78.93 thousand lei = 17.28 thousand lei + 61.65 thousand lei;

$$\Delta CA = \Delta CA (QM) + \Delta CA (pk),$$

-63.35 thousand lei = -142.28 thousand lei + 78.93 thousand lei

1.2. For “frozen fish” product we calculate the level of average price in two years

$pk_{2007} = 4.6919$  lei/kg;  $pk_{2008} = 6.4894$  lei/kg  
 $\Delta CA = CA_{2008} - CA_{2007} = 618.44 - 403.5 = 214.94$  thousand lei, in which:

a) Following a market product (QM):

$\Delta CA (QM) = (QM_{2008} - QM_{2007}) \times p_{2007} = (95.3 - 86) \times 4.6919 = 43.6347$  thousand lei

b) Following an influence of sale average price per unit:

$\Delta CA (pk) = QM_{2008} \times (p_{2008} - p_{2007}) = 95.3 \times (6.4894 - 4.6919) = 171.0317$  thousand lei, in which:

b1) following an influence market product structure:

$\Delta CA (sk) = \frac{QM_{2008} \times (\sum sk_{2008} * pk_{2007} - \sum sk_{2007} * pk_{2007})}{100} = 95.3$

$\times (5.4099 - 4.6919) = 68.4254$  thousand lei

b2) following an influence of sale price per unit and assortments:

$\Delta CA (pk) = \frac{QM_{2008} \times (\sum sk_{2008} * pk_{2008} - \sum sk_{2008} * pk_{2007})}{100} = 95.3$

$\times (6.4894 - 5.4099) = 102.8764$  thousand lei

2.2. It is verifying if the correlations are respect:

$\Delta CA (pk) = \Delta CA (sk) + \Delta CA (pk)$ ,  
 $171.3$  thousand lei =  $68.42$  thousand lei +  $102.88$  thousand lei;

$\Delta CA = \Delta CA (QM) + \Delta CA (pk)$ ,  
 $214.94$  thousand lei =  $43.64$  thousand lei +  $171.3$  thousand lei

From Table 1 data result that the level of turnover in analyzed fish farm has increase during 2007-2008, with one exception: “fresh fish” product, which in 2008 has reiterated a smaller level than 2007. The modifications of turnover are caused by total market product and its structure.

From production structure point of view, we can say that the weight of carp 1-2 kg category decrease from 14.8% in 2007 to 6.3% in 2008.

In the same time, carp 2-10 kg, Silver carp 2-10 kg, Bighead carp 2-10 kg and especial Crucian carp categories has an ascendant evolution. Such structure modification influence, first of all, the level of average sale price per unit.

A similar situation is in case of “frozen fish” product. The quantity of this product has increase from 86 tones in 2007 to 95.3 tones in 2008. This increase concatenate with evolution of average sale price per unit (from 4.7 lei per kilo in 2007 to 6.5 lei per kilo in 2008) has permitted a continuous and ascendant evolution of turnover during 2007-2008. The level of turnover in 2008 is superior of the indicator in question in case of “fresh fish” product.

The modification of fish production structure has influence the level of average sale price and exploitation turnover. So, in 2007, the fresh fish represented 56% from total delivered fish and in 2008 the weight of delivered fresh fish was just 45.5% from total product. This structural modification has contributed to total turnover increase. The turnover is a result of fish sale, which in 2008 was constitute by 43.7% fresh fish sale and 56.3% frozen fish sale.

On the other hand, the changes of production structure in 2008 affected the possibility of consolidation and extend of freezing activity. This activity needs technical characteristics, rooms and equipment, great energy and other specific inputs consuming. This situation can create problems about product capitalization.

#### 4. Conclusions

About turnover factorial analysis we note some conclusions:

1. The turnover variation is determinate by two direct factors influence: quantity of fresh fish delivery and average sale price per unit.

2. As to “fresh fish”, the turnover during 2007-2008 decrease with -63.35 thousand lei, as a consequence of production decrease from 108 tones to 79.7 tones; the influence was -142.2867 thousand lei (-224.6%). Comparative, the average sale price increase from 5.03 lei per kilo to 6.02 lei per kilo has a positive contribution to turnover, which increases with 78.93 thousand lei (+146.8%). But this situation can not compensate the negative effect of fresh fish production decrease.

3. From indirect factors on “fresh fish” product, an important contribution was sale price per unit. The increase of this has influenced turnover in positive way with 61.6 thousand lei. The market product structure contributed to turnover increase with

17.3 thousand lei in 2008 in comparison with 2007.

4. The same situation was in case of “frozen fish” product, but the difference was that the turnover in analyzed period had an increase evolution (214.94 thousand lei in 2008 in comparison with 2007).

5. To “frozen fish”, all directly and indirectly factors have a positive influence on turnover evolution. An important role has average sale price per unit, with a contribution by 171.3 thousand lei. A smaller influence has the quantitative factor. The market product increase from 86 tones in 2007 to 95.3 tones in 2008. In consequence, the turnover increases with 43.64 thousand lei.

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