Analysis of the DuPont model of the construction industry in the Baikal region

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Abstract. In the context of globalization, the role of the investment component in the dynamics of economic development is significantly increased. The DuPont model allows you to determine which factors caused the change in profitability or to make a factor analysis of the return on equity. The object of the study is construction companies (construction of residential and non-residential buildings) in the Baikal region of the Russian Federation (Irkutsk region, Republic of Buryatia, Zabaikalsky Krai). The article describes the methods of factor analysis developed by Filatov E. A., which make it possible to make an accessible and relatively simple conclusion about changes in the financial position of the enterprise, as well as to assess the degree of influence of factors on changes in the studied indicator. The purpose of this article is to generalize and systematize the theoretical and methodological foundations of factor analysis in a form that is accessible to specialists in the field of economics and management. The article should contribute to the formation of a basis for managers and economists to develop economic thinking, understanding the essence of economic processes and phenomena occurring within the framework of economic entities, and most importantly – the development of skills
for their quantitative assessment, economic interpretation and search for reserves to improve the efficiency of functioning. The article was carried out within the framework of the scientific project of the Inc SB RAS no. XI.174.1.4 «Activation of the internal development potential of regions of resource specialization (on the example of the Baikal region)».

1. Introduction
Construction is one of the key fund-forming industries, on which the formation of the national economy largely depends. In the structure of the gross value added of the Russian Federation for 2017, the construction sector occupies 6.2%.

Construction is a fund-forming industry, on which the formation of the national economy depends, and that is, the formation of a complex economic, social, organizational, and scientific and technical system depends.

The construction industry sets the pace of economic development and is a very significant sector in the economy of many countries of the world. The relevance of the article is due to the dynamic development of construction services in the last few decades in the world economy. At the same time, this industry is very sensitive to even minor changes in the global market environment.

2. Research questions
Improving the methods of factor analysis is a key task of economic analysis. The more detailed the influence of factors on the value of the indicator is considered, the more accurate the results of the analysis and the assessment of the quality of the decision made. In some situations, without a deep and comprehensive study of the direct impact of factors, it is impossible to draw reasonable conclusions about the company's performance.

One of the most important tasks of financial analysis of any economic phenomenon is to identify factors whose level and dimensions have a decisive influence on the formation and change of the level of the phenomenon, considered as effective in relation to these factors (Hakstian, A. R., Roqers, W. D., & Cattell, R. B., 1982).

One of the main tasks of financial management in the company is to ensure financial stability, which could contribute to the growth of return on equity.

In order to evaluate the performance of any company, you need to use some methods of analysis. The analysis methodology is understood as a certain sequence of operations, techniques, actions, and rules for the most appropriate execution of analytical work (Kim, J. O., & Mueller, C. W., 1978a).
Deterministic factor analysis is a method of studying the influence of factors that are related to the performance indicator is functional, that is, the performance indicator can be represented as the product of various factors (Kim, J. O., & Mueller, C. W., 1978b).

The profitability of the company and the growth of its value for shareholders is reflected by the profitability coefficients. Managing the profitability of an enterprise becomes a key task for all levels of management: strategic, tactical, and operational. DuPont has proposed a simple way to manage profitability by decomposing the profitability coefficient into factors that reflect various aspects of the company's activities.

In practical analytical work, the DuPont method was used by DuPont specialists in the 1920s.

The DuPont equation (also the DuPont Model or the DuPont Formula) is a modified factor analysis that allows you to determine which factors caused the change in profitability. The basis of the factor model in the form of a tree structure is the indicator of return on equity (ROE), and the signs are characterizing the factors of production and financial activity of the enterprise (Ivanov, P. I., 2019; Kazakova, N. A., 2018; Rozanova, N. M., & Zoroastrova, I. V., 2018). Simply put, the factors that affect ROE are broken down to find out which factors more or less affect the return on equity. The main three factors:

1. return on sales (this coefficient is calculated as the ratio of net profit to revenue (net) from all types of sales);
2. asset turnover (the asset turnover ratio or total capital return is calculated as the ratio of revenue from all types of sales to the total amount of assets);
3. the equity multiplier (the inverse of the financial independence coefficient or the autonomy coefficient characterizes the ratio of total assets to the organization's equity).

The purpose of the study is to analyze the DuPont model of the construction industry in the Baikal region using new author's methods of factor-based deterministic analysis (Filatov methods), which more reliably and argumentatively evaluated its results.

3. Materials and methods

The initial data for the analysis of the DuPont model of the construction industry in the Baikal region using Filatov's methods (Filatov, E. A., 2018) are presented in table 1.

The object of the study is construction companies (construction of residential and non-residential buildings) in the Baikal region.

The sources of the information base on the financial results of construction companies in the Baikal region were financial statements according to Russian
accounting standards: the Balance sheet as of December 31, 2017 and 2018; the Report on financial results for 2017 and 2018 (IS «BIR-Analyst», 2019).

**Table 1.** Initial data for factor analysis of the Baikal region by Federal Subjects

| No. | Indicators                                  | № factor's | 2017 year Plan (0) * | 2018 year Fact (I) ** | Deviation (Δ) *** |
|-----|---------------------------------------------|------------|----------------------|-----------------------|------------------|
| 1   | V – The net revenue, thousand $             | 1 194 149  | 1 086 591            | -107 559             |
|     | including:                                 |            |                      |                       |                  |
|     | - Irkutsk region                           | 883 524    | 806 341              | -77 183               |
|     | - Republic of Buryatia                     | 139 895    | 133 197              | -6 697                |
|     | - Zabaikalsky Krai                         | 170 731    | 147 052              | -23 678               |
| 2   | P – Net profit, thousand $                 | 33 980     | -21 583              | -55 562               |
|     | including:                                 |            |                      |                       |                  |
|     | - Irkutsk region                           | 16 198     | 24 524               | 8 326                 |
|     | - Republic of Buryatia                     | 8 313      | -51 781              | -60 094               |
|     | - Zabaikalsky Krai                         | 9 469      | 5 675                | -3 794                |
| 3   | A – Value of assets, thousand $            | 1 633 701  | 1 459 641            | -174 060              |
|     | including:                                 |            |                      |                       |                  |
|     | - Irkutsk region                           | 1 109 751  | 1 054 510            | -55 241               |
|     | - Republic of Buryatia                     | 294 550    | 232 175              | -62 375               |
|     | - Zabaikalsky Krai                         | 229 400    | 172 956              | -56 444               |
| 4   | SK – The average cost of equity, thousand $| 126 426    | 180 520              | 54 094                |
|     | including:                                 |            |                      |                       |                  |
|     | - Irkutsk region                           | 49 299     | 112 796              | 63 497                |
|     | - Republic of Buryatia                     | 28 202     | 25 530               | -2 673                |
|     | - Zabaikalsky Krai                         | 48 924     | 42 194               | -6 730                |
| 5   | **ROS – Return On Sales (2/1)**            | F₁         | 0.028455             | -0.019863             | -0.048318        |
|     | including:                                 |            |                      |                       |                  |
|     | - Irkutsk region                           | 0.018334   | 0.030414             | 0.012080              |
|     | - Republic of Buryatia                     | 0.059420   | -0.388756            | -0.448176             |
|     | - Zabaikalsky Krai                         | 0.055460   | 0.038590             | -0.016870             |
| 6   | **AT – Asset Turnover (1/3)**               | F₂         | 0.730947             | 0.744423              | 0.013476         |
including:

| Region                  | EM (3/4) | ROE (2/4) |
|-------------------------|----------|-----------|
| Irkutsk region          | 0.796146 | 0.328572  |
| Republic of Buryatia    | 0.474944 | 0.294745  |
| Zabaikalsky Krai        | 0.744249 | 0.193538  |

where: * 0 – past (base) period (year) taken as a basis for comparison; ** I – reporting (current) year; *** \( \Delta \) – change for the period is calculated as the difference between the fact and the plan \((I - 0)\).

The decrease in such basic absolute financial indicators as revenue by -9.01% and total assets by 10.65% is due to the depreciation of the ruble against the dollar during 2018 by 17.09%.

In this case, the original formula for factor analysis will have the following form (formula 1):

\[
ROE = \frac{P}{V} \times \frac{V}{A} \times \frac{A}{SK} = ROS \times AT \times EM = F_1 \times F_2 \times F_3
\]

(1)

The deviation balance is found as follows (formula 2):

\[
\Delta ROE = \sum_{n=1}^{3} ROE (F_n) = \Delta ROE (F_1) + \Delta ROE (F_2) + \Delta ROE (F_3)
\]

(2)

The algebraic sum of the influence of factors must necessarily be equal to the total increase in the effective indicator. The absence of such equality indicates mistakes in the calculations.
Next, we will consider 10 methods of deterministic factor analysis developed by Filatov E. A.

Auxiliary data on the author's comparative coefficients for factor analysis are presented in tables 2, 3.

**Table 2.** Multiple comparative coefficients for one factor in the whole Baikal region

| Comparison of factors | The designation of comparative coefficient | Value   | The product of coefficients (value) |
|-----------------------|-------------------------------------------|---------|-------------------------------------|
| \( F_1(I) / F_1(0) \) | \( A_1 \)                                  | -0.698041 | 1.00                                |
| \( F_1(0) / F_1(I) \) | \( A_2 \)                                  | -1.432581 | 1.00                                |
| \( F_2(I) / F_2(0) \) | \( A_3 \)                                  | 1.018437 | 1.00                                |
| \( F_2(0) / F_2(I) \) | \( A_4 \)                                  | 0.981897 | 1.00                                |
| \( F_3(I) / F_3(0) \) | \( A_5 \)                                  | 0.625727 | 1.00                                |
| \( F_3(0) / F_3(I) \) | \( A_6 \)                                  | 1.598142 | 1.00                                |

**Table 3.** Multiplicative comparative coefficients for two factors in the Baikal region as a whole

| Comparison of factors | The designation of comparative coefficient | Factor factors | Value       |
|-----------------------|-------------------------------------------|----------------|-------------|
| \((F_1(I) \cdot F_2(I)) / (F_1(0) \cdot F_2(0))\) | \( B_1 \)                                  | \( A_1 \cdot A_3 \) | -0.710911   |
| \((F_2(0) \cdot F_3(0)) / (F_2(I) \cdot F_3(I))\) | \( B_2 \)                                  | \( A_4 \cdot A_6 \) | 1.569211    |

Author's (alternative) methods of factor analysis are presented in table 4.

Method No. 1.1 (formulas 1.1 – 1.3 in table 4) is based on the difference between the effective targets, which is adjusted by comparative coefficients \((A_1, B_1)\).

Method No. 1.2 (formulas 2.1 – 2.3 in table 4) is based on the difference between the effective actual indicators, which is adjusted by comparative coefficients \((A_6, B_2)\).

Method No. 2.1 (formulas 3.1 – 3.3 in table 4) is based on the relation of deviation of the initial factor to the initial planned factor multiplied by the planned effective indicator which is corrected by the comparative coefficient \((A_1, B_1)\).

Method No. 2.2 (formulas 4.1 – 4.3, in table 4) is based on the relation of deviation of the initial factor to the initial actual factor multiplied by the actual effective indicator which is corrected by the comparative coefficient \((A_6, B_2)\).

Method No. 3.1 (formulas 5.1 – 5.3 in table 4) is based on the difference...
between the effective actual and planned indicators, which are adjusted by comparative coefficients \((A_1, B_1)\).

Method No. 3.2 (formulas 6.1 – 6.3 in table 4) is based on the difference between the effective actual and planned indicators, which are adjusted by comparative coefficients \((A_6, B_2)\).

Method No. 4.1 (formulas 7.1 – 7.3 in table 4) is based on the ratio of the deviation of the effective factor to the difference between the effective actual and planned factors, which is adjusted by a comparative factor \((A_1, B_1)\).

Method No. 4.2 (formulas 8.1 – 8.3 in table 4) is based on the relation of deviation of the effective factor to the difference between the effective actual and planned factors, which is adjusted by comparative coefficients \((A_6, B_2)\).

Method No. 5.1 (formulas 9.1 – 9.3 in table 4) is based on the ratio of the deviation of the effective factor to the difference between the actual effective factors, which is adjusted by comparative coefficients \((A_1, B_1)\).

Method No. 5.2 (formulas 10.1 – 10.3 in table 4) is based on the ratio of the deviation of the effective factor to the difference between the planned effective factors, which is adjusted by comparative coefficients \((A_6, B_2)\).

### Table 4. Methods of alternative factor analysis using comparative coefficients

| № formulae | formulas / calculations | the main part of the formula | adjustment factors |
|-------------|-------------------------|-----------------------------|-------------------|
| 1.1 | \(\Delta \text{ROE} (F_1) = \text{ROE}_0 *(A_1) - \text{ROE}_0 \) | – | – |
| 1.2 | \(\Delta \text{ROE} (F_2) = (\text{ROE}_0 *(A_3) - \text{ROE}_0)* A_1 \) | \(A_1 \) | – |
| 1.3 | \(\Delta \text{ROE} (F_3) = (\text{ROE}_0 *(A_5) - \text{ROE}_0)* (A_1 * A_3) \) or \(B_1 \) | – | – |
| 2.1 | \(\Delta \text{ROE} (F_1) = (\text{ROE}_1 - \text{ROE}_1 * (A_2))* (A_6 * A_4) \) or \(B_2 \) | – | – |
| 2.2 | \(\Delta \text{ROE} (F_2) = (\text{ROE}_1 - \text{ROE}_1 * (A_4))* A_6 \) | – | – |
| 2.3 | \(\Delta \text{ROE} (F_3) = \text{ROE}_1 - \text{ROE}_1 * (A_6) \) | – | – |
| 3.1 | \(\Delta \text{ROE} (F_1) = (\Delta F_1 / F_1(0)) * \text{ROE}_0 \) | – | – |
| 3.2 | \(\Delta \text{ROE} (F_2) = (\Delta F_2 / F_2(0)) * \text{ROE}_0 \) | – | – |
| 3.3 | \(\Delta \text{ROE} (F_3) = ((\Delta F_3 / F_3(0)) * \text{ROE}_0)* (A_1 * A_3) \) or \(B_1 \) | – | – |
| 4.1 | \(\Delta \text{ROE} (F_1) = ((\Delta F_1 / F_1(0)) * \text{ROE}_1)* (A_6 * A_4) \) or \(B_2 \) | – | – |
| 4.2 | \(\Delta \text{ROE} (F_2) = ((\Delta F_2 / F_2(0)) * \text{ROE}_1)* A_6 \) | – | – |
| 4.3 | \(\Delta \text{ROE} (F_3) = ((\Delta F_3 / F_3(0)) * \text{ROE}_1)\) | – | – |
| 5.1 | \(\Delta \text{ROE} (F_1) = (\text{ROE}_1 * A_4 * A_6) - \text{ROE}_0 \) | – | – |
| 5.2 | \(\Delta \text{ROE} (F_2) = ((\text{ROE}_1 * A_2 * A_6) - \text{ROE}_0)* A_1 \) | – | – |
| 5.3 | \(\Delta \text{ROE} (F_3) = ((\text{ROE}_1 * A_2 * A_6) - \text{ROE}_0)* (A_1 * A_3) \) or \(B_1 \) | – | – |
| 6.1 | \(\Delta \text{ROE} (F_1) = (\text{ROE}_1 - (\text{ROE}_0 * A_1 * A_5))* (A_6 * A_4) \) or \(B_2 \) | – | – |
| 6.2 | \(\Delta \text{ROE} (F_2) = (\text{ROE}_1 - (\text{ROE}_0 * A_1 * A_5))* A_6 \) | – | – |
| 6.3 | \(\Delta \text{ROE} (F_3) = \text{ROE}_1 - (\text{ROE}_0 * A_1 * A_3) \) | – | – |
| 7.1 | \(\Delta \text{ROE} (F_1) = \Delta \text{ROE} - (\text{ROE}_1 - (\text{ROE}_0 * A_1)) \) | – | – |
7.2 \[ \Delta \text{ROE} (F_2) = \Delta \text{ROE} - (\text{ROE}_1 - (\text{ROE}_0 \ast A_3)) \ast A_1 \]
7.3 \[ \Delta \text{ROE} (F_3) = \Delta \text{ROE} - (\text{ROE}_1 - (\text{ROE}_0 \ast A_5)) \ast (A_1 \ast A_3) \text{ or } B_1 \]
8.1 \[ \Delta \text{ROE} (F_1) = \Delta \text{ROE} - ((\text{ROE}_1 \ast A_2) - \text{ROE}_0) \ast (A_6 \ast A_4) \text{ or } B_2 \]
8.2 \[ \Delta \text{ROE} (F_2) = \Delta \text{ROE} - ((\text{ROE}_1 \ast A_4) - \text{ROE}_0) \ast A_6 \]
8.3 \[ \Delta \text{ROE} (F_3) = \Delta \text{ROE} - ((\text{ROE}_1 \ast A_6) - \text{ROE}_0) \ast (A_1 \ast A_3) \text{ or } B_1 \]
9.1 \[ \Delta \text{ROE} (F_1) = \Delta \text{ROE} - (\text{ROE}_1 - (\text{ROE}_1 \ast A_4 \ast A_6)) \]
9.2 \[ \Delta \text{ROE} (F_2) = \Delta \text{ROE} - (\text{ROE}_1 - (\text{ROE}_1 \ast A_2 \ast A_6)) \ast A_1 \]
9.3 \[ \Delta \text{ROE} (F_3) = \Delta \text{ROE} - (\text{ROE}_1 - (\text{ROE}_1 \ast A_4 \ast A_6)) \ast (A_1 \ast A_3) \text{ or } B_1 \]
10.1 \[ \Delta \text{ROE} (F_1) = \Delta \text{ROE} - (\text{ROE}_0 \ast A_5 \ast A_3 - \text{ROE}_0) \ast (A_6 \ast A_4) \text{ or } B_2 \]
10.2 \[ \Delta \text{ROE} (F_2) = \Delta \text{ROE} - ((\text{ROE}_0 \ast A_5 \ast A_1) - \text{ROE}_0) \ast A_6 \]
10.3 \[ \Delta \text{ROE} (F_3) = \Delta \text{ROE} - ((\text{ROE}_0 \ast A_3 \ast A_1) - \text{ROE}_0) \]

4. Results
The result for methods 1.1, 2.1, 3.1, 4.1, 5.1 is shown in table 5, the result for methods 1.2, 2.2, 3.2, 4.2, 5.2 is shown in table 6.

Table 5. Results for methods 1.1, 2.1, 3.1, 4.1, 5.1 for the Baikal region

| No. | the main part of the formula | adjustment factors | result     |
|-----|-----------------------------|--------------------|------------|
| 1   | \[\Delta \text{ROE} (F_1) = -0.456389\] | –                  | -0.456389  |
| 2   | \[\Delta \text{ROE} (F_2) = 0.004955\] | -0.698041 A_1      | -0.003459  |
| 3   | \[\Delta \text{ROE} (F_3) = -0.100595\] | -0.710911 A_1 * A_3 | 0.071514   |

Table 6. Results for methods 1.2, 2.2, 3.2, 4.2, 5.2 for the Baikal region

| No. | the main part of the formula | adjustment factors | result     |
|-----|-----------------------------|--------------------|------------|
| 1   | \[\Delta \text{ROE} (F_1) = -0.290840\] | 1.569211 A_6 * A_4 | -0.456389  |
| 2   | \[\Delta \text{ROE} (F_2) = -0.002164\] | 1.598142 A_6        | -0.003459  |
| 3   | \[\Delta \text{ROE} (F_3) = 0.071514\] | –                  | 0.071514   |

As can be seen from the final result of tables 1, 5, 6, the purpose of the analysis is achieved – the determination of the influence of factors is disclosed without deviations.

The final change in the return on equity of the construction industry in the Baikal region had a positive impact:
- decrease in the equity multiplier by -483.64%, caused an increase in return on equity by 7.15%.

The final change in the return on equity of the construction industry in the Baikal region had a negative impact:
- decrease in return on sales by -4.83%, caused a decrease in return on equity by -45.64%;
- an increase in asset turnover by 1.35% caused a decrease in return on equity by -0.34%.

The combined effect of three factors led to a decrease in return on equity by -38.83%.

The main decrease in the return on equity of the construction industry in the Baikal region is due to a decrease in the return on sales of the construction industry in the Baikal region. In turn, the decrease in the profitability of sales of the construction industry of the Baikal region is mainly due to a decrease in the net profit of the construction industry of the Republic of Buryatia by -60.1 million dollars.

The turnover of assets of the construction industry in the Baikal region has not changed much (a change of about 1%), which has almost no effect on the change in the return on equity of the construction industry in the Baikal region. The turnover of the construction industry of the main economy of the Baikal region – Irkutsk region decreased by 3%, which was offset by a 10% increase in the turnover of the construction industry of the Republic of Buryatia and the Zabaikalsky Krai.

The main increase in the return on equity of the construction industry in the Baikal region is due to changes in the equity multiplier of the construction industry in the Baikal region. In turn, the change in the equity multiplier of the construction industry in the Baikal region was mainly influenced by an increase in the equity of the construction industry in the Irkutsk region by +63.5 million dollars or 2.3 times.

5. Discussion

The investment attractiveness of the region depends on the level of return on equity. From the point of view of owners, profitability is most reliably displayed in the form of return on equity. This indicator is important for the company's shareholders, as it characterizes the profit that the owner will receive from one monetary unit of investment invested in the company. Return on equity provides an idea of the revenue that a company earns for shareholders. Return on equity is compared with possible alternative investments in shares of other companies, bonds, bank deposits, and so on.

The minimum (standard) level of profitability of an entrepreneurial business is the level of bank deposit interest. The minimum regulatory value of the return on equity (ROEn) is determined using the following formula 3:

$$ROEn = Sd \times (1 - Sp)$$ (3)
where: $\text{ROEN}$ – the Minimum standard value of the return on equity indicator; $\text{ROE}$ – return on equity; $\text{Sd}$ – the average rate on Bank deposits for the reporting period; $\text{Sp}$ – the income tax rate.

Let's calculate $\text{ROEN}$ for 2017 in Russia. Weighted average interest rates on deposits (deposits) of individuals attracted by credit institutions in rubles for the whole of the Russian Federation up to 1 year, including «on demand» in 2017, based on data from the Central Bank of the Russian Federation, amounted to 5.86%. The income tax rate is 20%. As a result, $\text{ROEN} = 0.0586 \times (1 - 0.2) = 0.0469$ or 4.69%.

Let's calculate $\text{ROEN}$ for 2018 in Russia. Weighted average interest rates on deposits (deposits) of individuals attracted by credit institutions in rubles for the whole of the Russian Federation up to 1 year, including «on demand» in 2018, based on data from the Central Bank of the Russian Federation, amounted to 5.35%. The income tax rate is 20%. As a result, $\text{ROEN} = 0.0535 \times (1 - 0.2) = 0.0428$ or 4.28%.

Count $\text{ROEN}$ for 9 months of the year 2019 in the Russia. Weighted average interest rates on deposits (deposits) of individuals attracted by credit institutions in rubles for the whole of the Russian Federation up to 1 year, including «on demand» for 9 months of 2019, based on data from the Central Bank of the Russian Federation, amounted to 5.63%. The income tax rate is 20%. As a result, $\text{ROEN} = 0.0563 \times (1 - 0.2) = 0.045$ or 4.5%.

In 2017, the $\text{ROE}$ of the construction industry: Irkutsk region 32.86%, Zabaikalsky Krai 19.35%, the Republic of Buryatia 29.47%.

In 2018, the $\text{ROE}$ of the construction industry: Irkutsk region 21.74%, Zabaikalsky Krai -202.83%, the Republic of Buryatia 29.47%.

6. Conclusion
Analysis based on the DuPont method allows you to determine the strengths and weaknesses of economic entities. Each weak financial ratio may be subject to a deeper decomposition to get an accurate idea of the cause of the weakness. When the sources of problems are identified, the company's management can develop measures to improve return on equity, for example, improve cost control, improve asset management, improve marketing, and so on (Boddy, D., 2002; Dolan, E. G., & Lindsey, D. E., 1988; Farnham, P. G., 2005; Glen, A., 2002; Naylor, J., 2004; Zikmund, W. G., 2003).

As you can see, the return on equity under the DuPont model depends on three factors: the level of return on sales, the speed of asset turnover, and the equity multiplier. Thus, the directions for improving the return on equity are directly indicated. DuPont's three-factor model shows the impact of operating activities (sales), investment and financial activities on the firm's return on equity.
Factor analysis is aimed at identifying the impact of individual factors on the performance indicator, so deterministic modeling of factor systems is a simple and effective means of formalizing the relationship of economic indicators, which serves as a basis for quantifying the role of individual factors in the dynamics of changes in the generalizing indicator (Bartholomew, D.J., 1984). Due to the fact that factor deterministic factor analysis is aimed at identifying the influence of factors on the value of the effective indicator of interest excluding error, it is most relevant for practical use in market relations (Joreskog, K. G., & Sorbom, D., 1979).

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