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MODELING EXPENDITURE TO PROVIDE ECONOMIC SECURITY OF INSURANCE COMPANIES

Summary. *Existing functional approach to control is not able to provide the required level of quality of insurance services of the enterprise. The need to rebuild an outdated functional approach is conditioned not only by its principal disadvantages, but by objective conditions when there are new opportunities for mastering segments of the market of resources, capital, sales of insurance services through the improvement of the quality of service provision. Also, to the objective conditions and opportunities should be as follows: required restructuring of the type of management existing in the company, taking into account the interests of shareholders; the need for sufficient liberalization of integration processes, the degree of freedom in the implementation of integration processes that are related to the economic interests and ownership of business chains, when the functions of regulating their joint activities are reliant on the parent company; acquired further development of the foreign economic activity, when the processes cover together several spheres of the enterprise or the activities of several enterprises that make up the corporation.*

Key words: *quality of services, costs, economic security, insurance sector.*

Statement of the problem. The quality of services is a priority area for improvement for insurance companies. The achievement of the required level of

service quality is possible only with the stable functioning of the enterprise, with the help of a management system, taking into account both a functional and a process approach, which will allow to assess the quality at each stage of the provision of services. The main ways of coordinating the functioning of the management system, the quality management system, and the corresponding business process control contours are [1-4]: "forecasting of interactions" - a quality management system is a connecting link (in choosing the optimal managerial decisions, the necessary parameters of quality serve as the criterion); "interactions assessment" - the quality management system sets the range of signal changes for the parameters of the business processes, quality parameters act as limiting conditions in the development and implementation of appropriate management actions; "Interconnection solution" - the quality management system acts autonomously, independently choosing connecting signals (in case of necessity, maintaining the quality level of various processes, works, products at a certain level); "providing responsibility", which involves the relationship between the actions of the quality management system and the actions (outcomes) of the contours of management of business processes.

Analysis of recent researches and publications. The problem of providing the economic security of the insurance company is still the subject of sharp scientific discussions, which indicates the complexity of this concept and the ambiguity of interpretation. The work of well-known foreign experts is devoted to providing the economic security of the insurance company in the sphere of the insurance industry: Rejda, G. E., Ocampo, J. A., Pearson, R., & Elson, D., Flannery, M. J., Wan, M.

Formulation purposes of article (problem). The purpose of the article is to improve the methodology of cost modeling to ensure economic security measures.

The main material. We construct a multi-factor model for forecasting the sale of insurance services and calculating costs for ensuring economic security on the basis of correlation-regression analysis.

The calculations and the obtained results allow us to construct a model for forecasting the sale of insurance services and calculating the costs of providing economic security on the basis of correlation-regression analysis for IC"Knyazha" in Tables 1-4.

Table 1

Output data for constructing a model for predicting sales of insurance and calculating costs for ensuring economic security

№	Period	Sales volume of services, UAH					Costs of providing economic security, UAH				
		Current month	1 month after	2 month after	3 month after	4 month after	Current month	1 month after	2 month after	3 month after	4 month after
1	06/2016	383238	250873	280559	377721	315232	6431	2627	5581	4495	4896
2	07/2016	478453	383238	250873	280559	377721	3658	6431	2627	5581	4495
3	08/2016	571128	478453	383238	250873	280559	7572	3658	6431	2627	5581
4	09/2016	623823	571128	478453	383238	250873	5974	7572	3658	6431	2627
5	10/2016	723846	623823	571128	478453	383238	9630	5974	7572	3658	6431
6	11/2016	722437	723846	623823	571128	478453	11740	9630	5974	7572	3658
7	12/2016	1316385	722437	723846	623823	571128	10722	11740	9 630	5974	7572
8	01/2017	693548	1316385	722437	723846	623823	5976	10722	11740	9630	5974
9	02/2017	704495	693548	1316385	722437	723846	8406	5976	10722	11740	9630
10	03/2017	679509	704495	693548	1316385	722437	9493	8406	5976	10722	11740
11	04/2017	573296	679509	704495	693548	1316385	8475	9493	8406	5976	10722
12	05/2017	561328	573296	679509	704495	693548	5 831	8475	9493	8406	5976
13	06/2017	730696	561328	573296	679509	704495	7426	5310	8475	9493	8406
Change		Y	X1	X2	X3	X4	X5	X6	X7	X8	X9

Source: author's calculations

Dispersion analysis is a statistical method for analyzing results that depend on qualitative characteristics. Each factor can be a discrete or continuous random variable, which is divided into several constant levels (gradations, intervals). If the number of measurements (samples, data) at all levels of each of

the factors is the same, then the dispersion analysis is called uniform, otherwise

- uneven.

Table 2

Dispersion analysis

	df	SS	MS	F	Value of F
Regression	9	5.5881E+11	6.209E+10	8.48348663	0.052670674
Remainder	3	2.1957E+10	7318881106		
Total	12	5.8076E+11			

Source: author's calculations

Table 3

Building a model for forecasting the sale of insurance services and

calculating costs for ensuring economic security

Indicators	Coefficients	Standard error	t-statistics	P- value	Low 95%	Upper 95%
Y-intersection	-317308	164514	-1.929	0.149	-840864.62	206247.94
Change X1	-0.409	0.1935	-2.113	0.125	-1.025	0.207
Change X2	-0.292	0.2303	-1.266	0.295	-1.024	0.441
Change X3	-0.830	0.2884	-2.877	0.064	-1.747	0.088
Change X4	-0.885	0.1800	-4.916	0.016	-1.458	-0.312
Change X5	40.268	16.6796	2.414	0.095	-12.814	93.350
Change X6	106.977	17.8772	5.984	0.009	50.084	163.870
Change X7	42.663	17.0766	2.498	0.088	-11.683	97.008
Change X8	41.901	24.6260	1.701	0.187	-36.470	120.272
Change X9	105.861	26.8506	3.943	0.029	20.410	191.311

Source: author's calculations

Table 4

Retrospective check of regression model and calculation of average error of

approximation

List No.	Period	Sales of services, UAH	Forecast of sales of services, UAH	Error %
1	June 2016	383 238	390 747	2.0%
2	July 2016	478 453	542 858	13.5%
3	August 2016	571 128	590 353	3.4%
4	September 2016	623 823	524 019	16.0%
5	October 2016	723 846	709 049	2.0%
6	November 2016	722 437	769 935	6.6%
7	December 2016	1 316 385	1 303 801	1.0%
8	January 2017	693 548	705 669	1.7%
9	February 2017	704 495	722 003	2.5%

10	March 2017	679 509	689 644	1.5%
11	April 2017	573 296	559 972	2.3%
12	May 2017	561 328	583 229	3.9%
13	June 2017	730 696	670 903	8.2%
Average approximation error				5.0%

Source: author's calculations

The method of correlation-regression analysis is based on the forecast model of the amount of service provided by the insurance company:

$$Y = -317308 - 0.409 \times X_1 - 0.292 \times X_2 - 0.803 \times X_3 - 0.885 \times X_4 + 40.268 \times X_5 +$$
$$+106.977 \times X_6 + 42.663 \times X_7 + 41.901 \times X_8 + 105.861 \times X_9 \qquad (1)$$

where: Y – forecast amount of insurance company's services, UAH; X_1 ... X_4 – volume of sales of services in months, UAH; X_5.....X_9 – costs of providing economic security, UAH

For IC "Knyazha" we will determine the dependence of operating expenses on ensuring economic security Y (UAH) from the amount of costs for ensuring the competitiveness of services (a group of technology and organization factors) in the sum of cost of services X1 (UAH), the sum of costs for ensuring the competitiveness of services (a group of financial factors) in the amount of administrative expenses X2 (UAH), the amount of costs for ensuring the competitiveness of services (a group of market factors of technology) in the amount of unproductive expenses X3 (UAH) and the amount of costs for ensuring a competitive services (group of factors of competition) in the amount of other operating expenses X4 (UAH).

For the convenience of conducting calculations, place the results of the interim calculations in Table 5.

Table 5

Output data to calculate the dependence of operating costs on providing economic security Y (UAH) from the amount of costs to ensure the competitiveness of services

List No.	year	Y	X1	X2	X3	X4
1	2013	399399.33	328429.36	18990.56	37128.15	14851.26
2	2014	399709.26	324776.41	23666.6	36618.75	14647.5
3	2015	380288.31	311572.73	27106.32	29720.9	11888.36
4	2016	61574.59	290483.06	29925.16	29404.55	11761.82
5	2017	321514.53	253449	31112.6	26394.95	10557.98
6	2018	94226.03	76288.52	8486.04	6751.05	2700.42

Source: author's calculations

Consequently, another independent method of evaluation confirmed the fairly high cost effectiveness of service quality. In some cases, the coefficient of elasticity for the cost of providing quality services reaches 100-fold value (that is, for every additional expenditure spent on ensuring the competitiveness of the services of the hryvnia, we have over UAH 100 additional volumes of sales of services). It is significant that sales of previous periods, in this model, have a negative impact on the sale of services: the more we sell, the more then we have to spend on quality of services, so as not to lose the conquered positions.

Insights from this study and perspectives for further research in this direction. The study found that the proposed methodological approaches to the management of economic security companies insurance sector, unlike the existing ones, should be determined on the basis of their areas by constructing a matrix of economic security and predictive model of volume of insurance services [5-7]. This makes it possible to take into account the actual conditions of functioning of insurance enterprises, to increase the scientific validity of strategic decisions in a competitive environment, in particpular, to develop competitive position and strategic direction of the company. Realization

developed scientific statements, conclusions and recommendations in the process of implementation in insurance enterprises of Ukraine confirmed their reliability and usefulness of enterprises services in decision-making.

References

1. Dauphinee, W. D., Boulet, J. R., & Norcini, J. J. (2018). Considerations that will determine if competency-based assessment is a sustainable innovation // Advances in Health Sciences Education. – P. 1-9.

2. Florio, C., & Leoni, G. (2017). Enterprise risk management and firm performance: The Italian case // The British Accounting Review, 49(1). – P. 56-74. URL:

   https://www.sciencedirect.com/science/article/abs/pii/S0890838916300221

3. Fraser, J. R., & Simkins, B. J. (2016). The challenges of and solutions for implementing enterprise risk management // Business Horizons, 59(6). – P. 689-698. URL:

   https://www.sciencedirect.com/science/article/pii/S000768131630057X

4. Gatzert, N., & Schmit, J. (2016). Supporting strategic success through enterprise-wide reputation risk management // The Journal of Risk Finance, 17(1). – P. 26-45. URL:

   https://www.emeraldinsight.com/doi/abs/10.1108/JRF-09-2015-0083

5. Drobyazko S.I. (2016). Current state and trends of financial services market development in Ukraine. Journal "Investments: Practice and Experience". – № 14. – 2016. – P. 20-23.

6. Mnykh N.V. (2017). Mechanisms of action to provide the financial stability of insurance companies and the necessity of their regulation in the implementation of insurance activities // Scientific journal "Economics and Finance". – № 3/2017. – 124 p. – P. 51-64.

7. Oliva, F. L. (2016). A maturity model for enterprise risk management // International Journal of Production Economics, 173. – P. 66-79. URL: https://www.sciencedirect.com/science/article/pii/S0925527315005320