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DETERMINATION OF A LIFE-CYCLE STAGES OF INSURANCE COMPANIES ON THE TOURIST SERVICES MARKET IN MANAGEMENT OF COMPETITIVENESS

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ВИЗНАЧЕННЯ СТАДІЙ ЖИТТЄВОГО ЦИКЛУ СТРАХОВИХ КОМПАНІЙ НА РИНКУ ТУРИСТИЧНИХ ПОСЛУГ ПРИ УПРАВЛІННІ ЇХ КОНКУРЕНТОСПРОМОЖНІСТЮ

Based on the analysis of literature sources, it was identified the lack of a unified approach to determining the composition and number of life-cycle stages of insurance companies on the tourist services' market, as well as indicators for their identification. According to the results of content analysis, 4 main stages of the life-cycle were identified: introduction, growth, maturity and decline. The analysis of scientific approaches proved the existence of certain contradictions and ambiguities in determining the composition of indicators and their calculation. Therefore, it was formed a system of quantitative indicators to identify stages of insurance companies' development on the tourist services' market by: selection of the initial composition of indicators based on generalization of literature sources, elimination of high functional dependence between indicators using correlation analysis, reducing the number of financial ratios based on multidimensional factor analysis (principal components' method). It was formed observation of 45 companies as a source of data for correlation and multidimensional factor analysis. According to the results of factor analysis, it is established that the determination of life-cycle stages should be carried out on the basis of 3 obtained factors that characterize 70.9% of the variability of the original variables. Among the set of indicators of each factor using the method of "center of gravity" it was identified diagnostic features that have the most significant properties of the set of source data, including: growth rates of labor costs, the share of insurance companies on the tourist services' market, income, staff and profit. The life-cycle stages of the insurance companies included in the sample of objects were identified using cluster analysis, according to which 19 insurers were assigned to the stage of introduction, 3 to the stage of growth, 10 to the stage of stabilization and 13 to the stage of decline. In order to increase the practical significance of the obtained results it was developed models on the basis of discriminant analysis which allow to determine the life-cycle stages of insurance companies, that were not included in the study sample.

На основі аналізу літературних джерел встановлено відсутність єдиного підходу до визначення складу та кількості стадій життєвого циклу страхових компаній на ринку туристичних послуг, а також показників для їх ідентифікації. За результатами контент-аналізу визначено 4 основні стадії життєвого циклу: зародження, зростання, зрілість та спад. Проведений аналіз наукових підходів довів існування певних суперечностей і неоднозначності у визначенні складу показників та їх розрахунку. Тому у статті сформовано систему показників для ідентифікації етапів розвитку страхових компаній на ринку туристичних послуг шляхом: відбору первісного складу показників на основі узагальнення літературних джерел, усунення високої функціональної залежності між показниками з використанням кореляційного аналізу, зменшення кількості коефіцієнтів за допомогою багатовимірного факторного аналізу — методу головних компонент. Як вихідні дані для проведення кореляційного й багатовимірного факторного аналізу сформовано вибірку страхових компаній, яка має 45 спостережень. За результатами проведення факторного аналізу встановлено, що визначення стадій життєвого циклу доцільно проводити на ос-

нові 3 отриманих факторів, що за загальною дисперсією характеризують 70,9% мінливості вихідних змінних. Серед сукупності показників кожного фактора за допомогою методу "центра ваги" визначено діагностичні ознаки, що мають найбільш істотні властивості множини вихідних даних, зокрема: темпи росту витрат на оплату праці, частки страхової компанії на ринку туристичних послуг, доходу, чисельності персоналу та обсягу прибутку. Ідентифікацію стадій життєвого циклу страхових компаній, що увійшли до вибірки об'єктів дослідження, здійснено з використанням кластерного аналізу, відповідно до якого 19 страховиків віднесено до стадії зародження, 3 — до стадії зростання, 10 — до стадії стабілізації та 13 — до стадії спаду. З метою підвищення практичної значущості отриманих результатів на основі дискримінантного аналізу побудовано моделі визначення стадій життєвого циклу страхових компаній, що не увійшли до досліджуваної вибірки.

Key words: life-cycle stages, tourist services' market, introduction, growth, maturity and decline.

Ключові слова: стадії життєвого циклу, ринок туристичних послуг, зародження, зростання, стабілізація, спад.

INTRODUCTION

The life of each product or service, including insurance, depends on the emergence of new ways to meet market needs, technologies and innovations. The life-cycle model is a diagnostic tool to eliminate current problems in the activities of the insurers and in the process of competitiveness' management. It is used to describe the processes of economic systems' development, analyze the factors that increase their efficiency. The use of life-cycle theory allows to determine the optimal strategy of competitiveness management accordingly to the specifics of each stage of the life-cycle.

The study of scientific papers, which investigated the problem of cyclical development of insurance companies, showed that the problem of identifying the life-cycle stages of insurance companies is insufficiently studied. Most scientists, among which should be noted Kozmenko O. and Merenkova O. [1], Kravchuk G. [2], Ryabokon N. [3], Shore I. [4] mainly consider certain theoretical aspects of this problem, without paying much attention to determining the number, sequence, characteristics and indicators to identify company's development stage. In view of this, in establishing the sequence of stages and forming the composition of indicators to determine the life-cycle stages of insurance

companies on the tourist services' market it was considered the views of scientists at the life-cycle stages of various areas of economic activity.

Five decades after the development of life-cycle theory, a large number of approaches have been developed to establish the number of stages, their key properties, and to determine the position of an organization on the life-cycle curve. Considerable attention to these issues was paid in the scientific works of Antipiev M. [5], Adizes I. [6], Bilyaeva V. [7], Gorshkova L. [8], Greiner R. [9], Duvalova E. [10], Zagorsky D. [11], Miller D. [12], Mozgova I. [13], Osovskaya G. [14], Smith K. [15], Shevtsova O. [16], Shmorgun L. [17] and many others. Despite the significant number of researches and the importance of life-cycle theory, a lots of questions arise in the process of its practical implementation: there is no single point of view on the classification of life-cycle stages and determining their number; there is no single set of indicators and methodological approach to determining the stages of the life-cycle; there are no empirical developments to determine the life-cycle stages of insurance companies on the tourist services' market. All these problems determine the relevance of the purpose of the study.

The purpose of the article is development of a methodological approach to determining of life-cycle stages of insurance com-

Table 1. Content analysis of approaches to determining the number and composition of organizations' life-cycle stages

Life-cycle stage	Author												
	Shore I. [4]	Kozmenko O. and Merenkova O. [1]	Ryabokon N. [3]	Zagorsky D. [11]	Adizes I. [6]	Osovskaya G. [14]	Antipiev M. [5]	Duvalova E. [10]	Miller D. [12]	Shmorgun L. [17]	Mozgova I. [13]	Shevtsova O. [16]	Bilyaeva V. [7]
Creation	—	—	—	—	—	—	+	—	—	—	+	—	—
Introduction	—	—	—	+	+	+	—	+	+	+	—	+	—
Entrance	—	+	—	—	—	—	—	—	—	—	—	—	—
Implementation	+	—	+	—	—	—	—	—	—	—	—	—	—
Start	—	—	—	+	—	—	—	—	—	—	—	—	—
Baby	—	—	—	—	+	+	—	—	—	—	—	—	—
Childhood	—	—	—	—	+	+	—	—	—	—	—	—	—
Youth	—	—	—	—	+	+	—	—	—	—	—	—	—
Growth	+	+	+	+	—	—	+	+	+	+	—	—	+
Development	—	—	—	—	—	—	—	—	—	—	+	—	—
Formation	—	+	—	—	—	—	—	—	—	—	—	—	—
Maturity	+	—	+	—	—	—	—	—	+	+	—	—	—
Flourish	—	—	—	—	+	+	—	—	—	—	—	—	—
Equilibrium functioning	—	+	—	—	—	—	—	—	—	—	—	—	—
Stability	—	—	—	—	+	+	—	+	—	—	—	—	+
Becoming	—	—	—	—	—	—	—	—	—	—	+	+	+
Aristocracy	—	—	—	—	+	+	—	—	—	—	—	—	—
Saturation	—	—	—	—	—	—	—	—	—	—	—	+	—
Early bureaucratization	—	—	—	—	+	+	—	—	—	—	—	—	—
Bureaucratization	—	—	—	—	+	+	—	—	—	—	—	—	—
Death	—	—	—	—	+	+	—	—	—	—	—	—	—
Decline	+	+	+	+	—	—	—	+	+	+	—	+	+
Stagnation	—	—	—	—	—	—	+	—	—	—	—	—	—
Transition to a new cycle of operation	—	+	—	—	—	—	—	—	—	—	—	—	—
New probable volume	—	—	+	—	—	—	—	—	—	—	—	—	—
Stabilization	—	—	—	+	—	—	—	—	—	—	—	—	—
Expansion	—	—	—	+	—	—	—	—	—	—	—	—	—
Crisis	—	—	—	—	—	—	+	—	—	—	—	—	—
Bankruptcy	—	—	—	—	—	—	—	—	—	—	+	—	—
Liquidation	—	—	—	—	—	—	—	—	—	—	+	—	+
Entrance	—	—	—	+	—	—	—	—	—	—	—	—	—
Total	4	6	5	6	10	10	4	4	4	4	5	4	5

Table 2. Characteristics of factors determining the life-cycle stages of insurance companies on the tourist services' market

Number of factors	Own value	The share of total variance, %	Cumulative own value	Cumulative variance, %
1	2.880321	41.14744	2.880321	41.14744
2	1.071355	15.30508	3.951676	56.45252
3	1.011933	14.45618	4.963609	70.90870

Table 3. The closeness of the relationship between the indicators for identifying life-cycle stages of insurance companies on the tourist services' market and the selected factors

Indicator	Values of factor loads by factors		
	Factor 1	Factor 2	Factor 3
K ₁	-0.244443	-0.155139	0.513852
K ₂	0.029210	0.890070	-0.146591
K ₃	0.949723	0.155550	-0.107798
K ₄	0.951224	0.119720	-0.175595
K ₅	0.321247	0.726655	0.009746
K ₆	-0.059905	-0.051868	-0.875895
K ₇	0.557521	0.439489	0.067974

Table 4. Statistical analysis of variance according to the formed clusters of insurance companies

Indicator	Intercluster dispersion	Degrees of freedom	Intracluster dispersion	Degrees of freedom	Statistical criterion (F)
K ₂	19.42722	3	21.57278	41	12.80485
K ₃	31.25834	3	22.74166	41	22.77527
K ₄	33.48734	3	10.51266	41	43.53420
K ₅	25.93040	3	18.06960	41	19.61207
K ₆	15.04918	3	18.95082	41	9.10419

panies on the tourist services' market in the management of their competitiveness. It was used methods of content, correlation, cluster and discriminant analysis to achieve the goal of the study.

RESEARCH RESULTS

Generalization of scientists' approaches to defining of quantity and structure of organizations' life-cycle stages is presented in table 1.

As shown in table 1, most scientists [4; 5; 10; 12; 17; 16] identify 4 stages of the organizations' life-cycle, among which the most common are the stages of introduction [6; 14; 10; 12; 17; 16], growth [4; 1; 3; 5; 10; 12; 17; 7], maturity [4; 3; 12; 17] and decline [4; 1; 3; 10; 12; 17; 16; 7], which have been chosen as the basis in further research.

Similarly, based on the content analysis of scientists' approaches [4–17] it was identified 7 main indicators to

determine life-cycle stages, including growth rates of term of insurer's activity on the tourist services' market — K₁, labor costs — K₂, share of the insurance company on the market — K₃, income (gross travel insurance premiums) — K₄, staff — K₅, profit — K₆ and expenses — K₇.

On the next stage it was constructed correlation matrix to eliminate the effect of multicollinearity and conducted factor analysis to separate interdependent indicators from independent, significant from insignificant, justify the choice of indicators and evaluate their informativeness. The informational basis of the study was data of 50 insurance companies operating on the tourist services' market in Ukraine.

According to the correlation matrix, it is established that there is no close connection between the selected indicators to determine life-cycle stages of insurance companies on the tourist services' market, so all of them will be used for factor analysis.

The obtained results of factor analysis are presented in tabl. 2, where the required number of factors is determined by the amount of accumulated variance.

The results of the factor analysis (table 2) showed that determining of life-cycle stages of insurance companies on the tourist services' market based on three factors that explain 70.9% of the variability of the assessment. According to the results of rotation by the varimax procedure, the factor loads were obtained (table. 3), which show the correlation between indicators and factors for the analyzed insurance companies.

Thus, after the factor analysis (tabl. 3), the indicators for determining the life-cycle stages of insurance companies on the tourist services' market included 5 coefficients: the growth rate of labor costs — K₂, the share of the insurance company on the tourist services' market of — K₃, income — K₄, number of staff — K₅ and profit — K₆.

The method of K-means cluster analysis was used to distribute insurance companies by life-cycle stages on the tourist services' market. The main criterion of the K-means method is that objects should be divided into a given number of clusters so the variance between these clusters will be as large as possible and the intraclass variance will be minimal. Prior to clustering, the sample of insurance companies was cleared of gross errors based on the calculation of Student's t test and data standardization was conducted. According to factor analysis, characteristics of intercluster and intracluster variance by groups of insurers are presented in table 4.

From the table. 4 it is seen that in terms of K₂–K₆ the intercluster variance significantly exceeds the intracluster variance, which indicates the efficiency of clustering. Fisher's statistical criterion for the same indicators significantly exceeds the tabular value (2.81), which allows us to conclude about adequacy of the cluster analysis. According to the results of clustering by K-means' method, it was found that 19 insurers belong to the stage of introduction, 3 — to the stage of growth, 10 — to the stage of stabilization and 13 — to the stage of decline.

Models of determining the life-cycle stages of insurance companies on the tourist services' market (fig. 1), which not included in the study sample, were built on the basis of discriminant analysis in order to increase the practical significance of this research results.

According to fig. 1, each life-cycle's stage corresponds to a separate model. The insurance company belongs to the stage with the highest value of the classification function (Y). The total percentage of correct classification according to the constructed models is 96.07%, which indicates high accuracy and, consequently, the possibility of practical use of the results of discriminant analysis.

Fig. 1. Models for determining life-cycle stages of insurance companies on the tourist services' market

CONCLUSIONS

Thus, the article proposes a methodical approach to identifying life-cycle stages of insurance companies on the tourist services' market, based on a number of indicators that are optimal in a quantity, which was proved by multidimensional factor analysis and best reflect trends in insurers' activity at each stage of their development. The implementation of the cluster analysis' method made it possible to identify the life-cycle stages of the objects of this study, and with using of discriminant analysis it was built functions on the basis of which it is possible to determine the stage of operation of any other insurers not included in this analysis. However, the choice of a specific competitiveness management strategy cannot be based only on quantitative criteria and requires consideration of experts' views on a particular type of strategy taking into account main specific of each life-cycle stage.

Література:

1. Козьменко О.В. Управління життєвим циклом страхової компанії у взаємозв'язку із фазами життєвого циклу страхових послуг / О.В. Козьменко, О.В. Меренкова // Проблеми і перспективи розвитку банківської системи України. — 2009. — № 26. — С. 238—242.
2. Кравчук Г.В. Моделювання залежності життєвого циклу страхової компанії від стадій життєвих циклів страхових послуг / Г.В. Кравчук // Проблеми теорії та методології бухгалтерського обліку, контролю і аналізу. — 2009. — № 3. — С. 148—151.
3. Рябоконь Н.П. Прямі та непрямі канали збуту страхових продуктів відповідно до етапів його життєвого циклу / Н.П. Рябоконь // Економічні науки. — 2012. — № 1. — С. 162—166.
4. Шор И.М. Управление финансовыми потоками на этапах жизненного цикла страхового продукта / И.М. Шор // Вестник Чувашского университета. — 2012. — № 4. — С. 510—514.
5. Антипов М.В. Определение стратегии предприятия на основе данных финансового анализа и оценки жизненного цикла организации [Электронный ресурс] / М.В. Антипов. — Режим доступа: <http://finanaliz.ru/litra/324/9705.html>
6. Adizes I. Corporate Lifecycles: how and why corporations grow and die and what to do about it / I. Adizes. — Englewood Cliffs, N.J.: Prentice Hall, 1988. — 361 p.
7. Біляєва В.Ю. Забезпечення фінансової стійкості банку засобами фінансового інжинірингу: автореферат дис.... канд. екон. наук: 08.00.08 / В.Ю. Біляєва. — Харків: ХНЕУ ім. С. Кузнеця, 2017 — 20 с.
8. Gorshkova L.A. Ensuring adaptability of a company using life cycle theory / L.A. Gorshkova, Y.V. Trifonov, V.A. Poplavskaya // Life Science Journal. — 2014. — Vol. 11. — P. 705—708.
9. Greiner L.E. Evolution and Revolution as Organizations Grow / L.E. Greiner // Harvard Business Review. — 1972. — Vol. 50. — P. 37—46.
10. Дувалова Э.П. Управление расходами коммерческого банка на стадиях его жизненного цикла / Э.П. Дувалова // Проблемы современной экономики. — 2012. — № 1. — С. 178—181.
11. Zahorsky D. Find Your Business Life Cycle [Электронный ресурс] / Darrell Zahorsky // Режим доступа <http://sbinformation.about.com/cs/marketing/a/a040603.htm>.
12. Miller D.A longitudinal Study of Corporate Life Cycles / D. Miller, P. H. Friesen // Management Science. — 1984. — № 10. — P. 1161—1183.
13. Мозговая И.Б. Финансовое оздоровление коммерческого банка: автореф. дис. ... канд. екон. наук: спец. 08.00.10 / И.Б. Мозговая. — Саратов, 2003. — 26 с.
14. Осовська Г.В. Основи менеджменту / Г.В. Осовська, О.А. Осовський. — К.: "Кондор", 2006. — 664 с.

15. Smith K.G. Top level management priorities in different stages of the organization life-cycle / K.G. Smith, T.R. Mitchell, C.E. Summer // Academy of Management Journal. — 1985. — Vol. 28. — P. 799—820.

16. Шевцова О. Життєвий цикл банківської установи, як економічної організації / О. Шевцова, Г. Мандзюк // Вісник НБУ. — 2007. — № 1. — С. 28—31.

17. Шморгун Л.Г. Менеджмент організацій / Л.Г. Шморгун. — К.: Знання, 2010. — 452 с.

References:

1. Koz'menko, O.V. and Merenkova, O. V. (2009), "Life cycle management of an insurance company in relation to the phases of the life cycle of insurance services", *Problemy i perspektivy rozvytku bankivskoi systemy Ukrainy — Problems and prospects of development of the banking system of Ukraine*, vol. 26, pp. 238—242.
2. Kravchuk, H. V. (2009), "Modeling the dependence of the life cycle of an insurance company on the stages of the life cycle of insurance services", *Problemy teorii ta metodolohii bukhgalterskoho obliku, kontroliu i analizu — Problems of theory and methodology of accounting, control and analysis*, vol. 3, pp. 148—151.
3. Riabokon, N. P. (2012), "Direct and indirect sales channels of insurance products according to the stages of its life cycle", *Ekonomichni nauky — Economic sciences*, vol. 1, pp. 162—166.
4. Shor, Y. M. (2012), "Financial flow management at the stages of the life cycle of an insurance product", *Vestnik Chuvashskogo universiteta — Chuvash University Bulletin*, vol. 4, pp. 510—514.
5. Antypev, M. V. (2010), "Determination of enterprise strategy based on financial analysis data and an assessment of the organization's life cycle", available at: <http://finanaliz.ru/litra/324/9705.html> (Accessed 10 Sept 2020).
6. Adizes, I. (1988), *Corporate Lifecycles: how and why corporations grow and die and what to do about it*, Prentice Hall, Englewood Cliffs, USA.
7. Biliaieva, V. Yu. (2017), *Zabezpechennia finansovoi stiiikosti banku zasobamy finansovoho inzhynirynhu [Ensuring the financial stability of the bank by means of financial engineering]*, KhNEU, Kharkiv, Ukraine.
8. Gorshkova, L.A. Trifonov, Y.V. and Poplavskaya, V.A. (2014), "Ensuring adaptability of a company using life cycle theory", *Life Science Journal*, vol. 11, pp. 705—708.
9. Greiner, L. E. (1972), "Evolution and Revolution as Organizations Grow", *Harvard Business Review*, vol. 50, pp. 37—46.
10. Duvalova, E. P. (2012), "Cost management of a commercial bank at the stages of its life cycle", *Problemyi sovremennoy ekonomiki — Problems of the modern economy*, vol. 1, pp. 178—181.
11. Zahorsky, D. (2020), "Find Your Business Life Cycle", available at: <http://sbinformation.about.com/cs/marketing/a/a040603.htm> (Accessed 10 Sept 2020).
12. Miller, D. A. (1984), "Longitudinal Study of Corporate Life Cycles", *Management Science*, vol. 10, pp. 1161—1183.
13. Mozgovaya, I. B. (2003), *Finansovoe ozdorovlenie kommercheskogo banka [Financial rehabilitation of a commercial bank]*, Saratov, Russia.
14. Osovskaya, H. V. and Osovskiy, O. A. (2006), *Osnovy menedzhmentu [Basics of management]*, Kyiv: Kondor.
15. Smith, K. G. Mitchell, T. R. and Summer, C. E. (1985), "Top level management priorities in different stages of the organization life-cycle", *Academy of Management Journal*, vol. 28, pp. 799—820.
16. Shevtsova, O. and Mandziuk, H. (2007), "Establish the life cycle of the bank, as an economic organization", *Visnyk NBU — Visnik NBU*, vol. 1, pp. 28—31.
17. Shmorhun, L. H. (2010), *Menedzhment orhanizatsii [Organizational management]*, Knowledge, Kharkiv, Ukraine.

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