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THE NON-FINANCIAL FACTORS IMPACT ON THE ENTERPRISES ACTIVITY EFFICIENCY

Анотація. Обґрунтовано методику оцінки інтегрального індексу нефінансового аналізу для визначення економічної ефективності діяльності підприємства. Удосконалено механізм прогнозування результатів діяльності підприємства за допомогою нейромережевої архітектури багатошарового перцептронів та методику впливу немонетарних показників на річний результат діяльності підприємства. Набуло подальшого розвитку система інтегральної звітності для оцінки ефективності управління капіталом за всіма складниками, їхню взаємозалежність і роль в досягненні головної мети та узагальнення немонетарних показників ефективності діяльності підприємств.

Ключові слова: нефінансові показники, нейромережева архітектура багатошарового перцептронів, інтегрована річна звітність

Abstract. The estimation procedure of non-financial analysis integral index for comprehensive evaluation the enterprises economic efficiency is substantiated in the article. The mechanism for predicting enterprise activity using neural network architecture of multilayer perceptron is grounded. The technique the impact of non-monetary indices on the enterprises' annual performance results was further developed. The advantages and perspectives of integrated enterprises accounting system to assess the investment management effectiveness for all components, their interdependence and role in achieving the company's global goal highlighted. Non-monetary factors of the enterprise performance are generalized.

Keywords: non-financial criteria, neural network architecture of multilayer perceptron, integrated enterprises accounting system.

Problem statement. Taking into account conditions of competition development in the analysis and evaluation enterprises performance system significantly prevalent approaches based on organic set of financial and non-financial criteria which characterize the most important aspects of the company and show the level of accomplishment of its strategic objectives. The expediency of evaluation of marketing indicators non-financial nature that is conditional upon the need to use relevant, actual and accurate information about the company and the business environment to make effective management decisions.

Essential investigations and publications analysis. Fundamental investigations were made by known Ukrainian scientists as S. Bobilyov, O. Vasylyk, I. Jurovs'ka, V. Sydoruk, L. Mel'nik, I. Potravnyi. Foreign scientists who dedicated their researches in neural network architecture of multilayer perceptron are A.Taner, J. Brignell, S. Haykin etc. According to the theory of the balanced scorecard (Balanced scorecard - BSC), written by R. Kaplan and D. Norton, successful business management is possible if a comprehensive (balanced) approach to the

assessment of tangible and intangible assets of the business using the financial and non-financial indicators, form a synthetic indicator of the effectiveness [6].

Aim statement is generalization and deepening the theoretical aspects of integrated assessment of tangible and intangible assets, analyzing the non-financial indicators impact on the efficiency functioning of enterprise and study the algorithm of the integral index of non-financial analysis.

Results. The non-financial factors— are long-term indicators that characterize the company's activity with quality hand and presented in non-monetary terms, the result of which appears after a certain stage of the company. They are more complex and comprehensive, designed to predict future financial results. Non-financial indicators are of descriptive nature and serve as the basis for financial indicators calculation.

According to a joint study Deloitte and Economist Intelligence Unit was found that only financial performance is not sufficient to assess the health of the company. The result of the survey was dissatisfaction with the quality of measurement indicators that are unrelated to

finance. Only a third of managers are satisfied with the non-financial information value they receive [3].

The majority of the scientific community observes the impossibility to evaluate the marketing activities effectiveness due to the complexity of estimating all long-term effects of marketing activities and separation results exactly marketing activity, lack of financial market indicators expression [6, 7, 8].

In the competitive environment, the marketing activity factors and data-driven marketing are becoming more important. The problem lies in the complexity of analyzing the effectiveness of marketing activity through underestimate its importance and the lack of infrastructure to support the system performance and marketing.

The author singles out the most important non-financial efficiency indicators of the company.

The Brand awareness – the consumer's ability to recall a brand, advertising slogan a certain product or service. The awareness marketing measurement not only provided insights into product brand awareness and future purchasing intent, but also allowed us to optimize the campaign for future launches. The data-driven approach to awareness marketing gave us a very valuable insight into the specific market and target audience.

The Essential Evaluative Metric: test Drive – Customer pretest of a product or service prior to purchase. Using the Internet opens up new and unique opportunities for conducting marketing research on the stage of test marketing in the creation of goods and assessment of existing products. Increasing the level of this index will help the company expand the base of potential customers, to learn about the needs and demands of the target audience, evaluate the effectiveness of the activities that will serve a specific indicator of future sales.

Loyalty Marketing Metric: customer churn – the percentage of existing customers who stop purchasing your products or services, measured in a year, 90 days, or 30 days. Usually this is calculated each year and describes consumer loyalty.

Customer satisfaction (CSAT) measured by asking the essential question – “Gold”

marketing indicator that combines loyalty and brand awareness, and to determine the possibility of a satisfied customer to purchase in future. This index is determined using the answers the main question: "How high the possibility is it that you recommend the product, service, company to a friend or colleague?"

Net promoter score (NPS) – a way to assess consumer's attitude to product or service. This indicator determines the ability of the organization to create loyal relationships with customers. Net promoter score calculated as the difference between the share of promoters and share of detractors [4]. As promoters serve clients who are willing to recommend the product or service to a friend or colleague and detractors – critics of product or service. The author's suggesting, the problem for the company is that detractors may be personalities who do not even use the product, but they left a negative review.

Review coefficient – the proportion of clients who positively perceive information about the product, resulting in the process of acquiring it. This indicator which calculates as the ratio of the number of accepted offers to contact number allows to measure of internal efficiency of a campaign.

Customer Lifetime Value (CLTV) – total sales or total profit that brings customer during the product consumption or using of the services of the company.

$$CLTV = -AC - \sum_{n=1}^N \frac{(M_n - C_n)p^n}{(1+n)^n}, \quad (1)$$

AC – the cost of attracting the customer,

M_n – margin achieved by the client during the period “n”,

C_n – the costs of marketing and customer service,

p – the possibility that the customer will not leave the company per year,

N – the total number of years or periods.

The evolution of the Internet - marketing is characterized by the innovative approach application that affects the efficiency of the company.

Cost per Click – is the amount an advertiser pays to search engines and other Internet - publishers for each click on its advertisement

that accompanied the transition to a website or page that is advertised.

Transaction Conversion Rate – proportion of customers who have purchased a product after a few clicks on a link that led them to the site. This parameter defines the relationship between clicks and profits.

Return on Add Dollar Spent – measures the effectiveness of creating net profits from all areas of advertising investment (in the case when the final step is to purchase a product or service). The author considers right to use this index rather than the generally accepted financial indicator of ROI (Return on Investment), because it is ambiguous, does not consider the money time value and the interval time value.

The level of indifference – the proportion of website visitors who left it faster than 5 seconds.

Personal recommendations (WOM) – ratio of the number of direct recommendations and clicks on the recommendations to the direct clicks number.

Generally accepted interpretation of the world of mouth marketing as a way to spread gossip is limited because the marketing concept opens up new aspects and possibilities of this process. Ukrainian market is being actively developed and is open to innovation. Personal recommendations marketing is one such innovative ideas and can open up new opportunities for Ukrainian consumers and the advertising industry.

The author's definition of buzz marketing is the effective positioning of goods and services in the minds of clients through the customer's

feedbacks, which makes the promotion of the final product on the market successful.

To forecast the number of customers in the future for "Kyivstar" proposed using the method of multilayer perceptron. As the influence factors was chosen brand awareness, net promoter score, value services, brand value, the number of customers and the number of special offers.

The equation of neuroregression is as follows:

$$y = -10508434,69 + 414820,2x_1 - 881511,04x_2 + 0,0006x_4$$

y – the number of customers; x_1 – brand awareness; x_2 – net promoter score; x_4 – value of brand.

As the only factors x_2 and x_4 less significance level F ($0,0006 < 0,0096$ and $-881511,04 < 0,0096$, respectively), only they are significant.

Considering to the analys results of neuromodeling can be written in the form of an approximate equation of neuroregression:

$$y = -10508434,69 - 881511,04x_2 + 0,0006x_4$$

We found that significant indicators are indicators of brand awareness, net promoter score, brand value. It was found that a decrease in net promoter score and increase of brand value reduces the number of customers of the company. The most important indicator of the impact to potential customers is brand awareness. Using exactly these data was predicted the number of customers for the future (table 1).

Tab.1

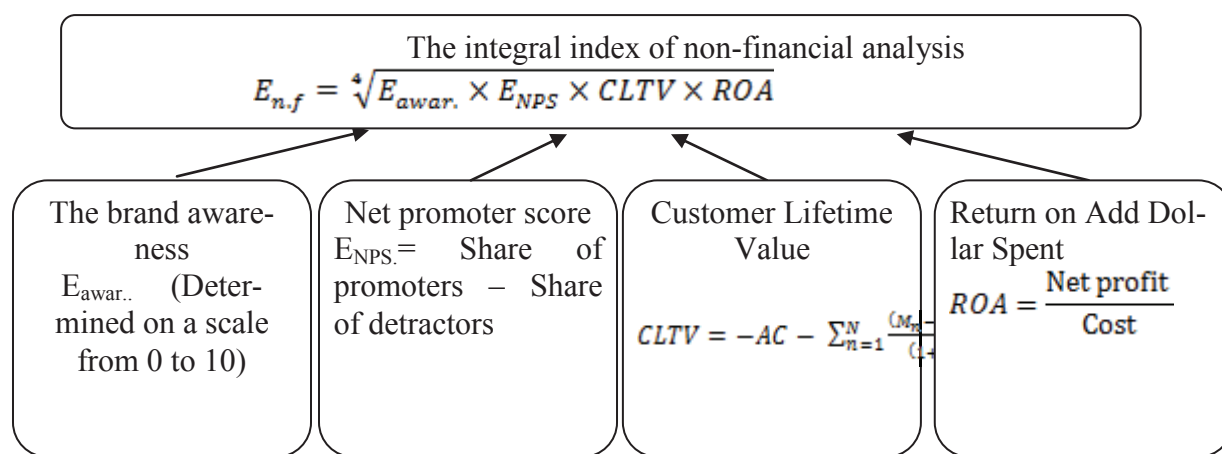
Forecast of the number of customers for "Kyivstar"

Year	The brand awareness %	Net promoter score, points (max 10)	Brand value, points (max 10)	The number of customers, million persons
2014	96,70	8,77	8,38	26,96
2015	97,20	9,10	8,39	26,97
2016	97,70	9,35	8,40	26,99
2017	98,10	9,20	8,41	27,02
2018	98,20	8,97	8,42	27,04

In the modern world traditional forms of promotion (advertising, promotion, personal selling) are not as relevant as they were a few decades ago, every year they lose their effectiveness. Glut of advertisement from TV as well as from real information space has led to a decreasing of response to it of a modern consumer, development of skepticism to traditional way of advertising.

Index of WOM Marketing value helps business determine its impact on the popularity of products or services and calculated as the

average of the impact of information about the brand in terms of sales, multiplied to the number of responses that fall into this category [5]. In assessing the extent of the impact of the reviews this index allows marketers to predict the effect in terms of growth of sales for various companies. As the non-financial indicators affecting the performance of the enterprise (sales) for a comprehensive analysis of the company the author proposes a methodology for evaluating the integral index of non-financial analysis (Pic.1)



Pic.1 The integral index of non-financial analysis

Each indicator can be either less than one (when diagnosed reducing the effectiveness of the impact of non-financial factors) or equal to one (then the impact of the effectiveness of non-financial factors remain stable) or more than one (if non-financial factors the impact of the efficiency increases).

The author defines the integral index of non-financial analysis by calculating the major non-financial indicators of the company performance. Calculations are based on the data of "Kyivstar" (Table 2).

Tab.2

The calculation of the integral index of non-financial analysis

Indicators	2011	2012	2013
The brand awareness	1,35	1,42	1,48
Net promoter score	1,4	1,18	0,99
Customer Lifetime Value	0,99	1,01	0,95
Return on Add Dollar Spent	0,68	0,7	0,66
The integral impact index	1,06	1,04	0,98

It was found that in 2011 – 2012 the index is above than 1 that characterizes the increasing of the effect of factors of non-financial analysis. In 2013 reduces the effectiveness of the impact of non-financial factors due to the reduction of net promoter score, customer lifetime value and return on add dollar spent.

Due to the definition of the role of non-financial indicators the author proposes a system of accounting for non-financial indicators, in that not all indicators are reflected in the standard accounting, financial and statistical reports. The author gives, in addition to the conventional balance sheet, to introduce

the use of non-financial reporting document for internal use, as well as Internet users that will improve the efficiency of production processes (engineering) departments or the company as a whole.

Conclusions. Transformational economy analysis of the enterprises' efficiency reflect only financial indicators, the innovative analytical methods application is limited. Based on the construction of neural network architecture of multilayer perceptron forecasted

the future number of customers as well as the dependence between the factors of influence and author's proposition to evaluate an integrated non-financial analysis index. Application of this method allows researcher to transform the company's priorities in a strategy, to implement business planning based on a wider range of impact aspects and make appropriate adjustments to achieve the main goal.

References

1. Ивлев В. Balanced ScoreCard / В.Ивлев, Т. Попова - Альтернативные модели. М., 2006 – №4
2. Макаренко М.В., Малова И.И. Системы показателей, модели и подходы к оценке эффективности деятельности предприятия, М., 2010
3. Нефинансовые показатели деятельности предприятия: за даними міжнародного дослідження [Електронний ресурс]. – 2007. – Режим доступу: <http://www.axioma-ekb.ru/root/news/35/>
4. NPS, Индекс чистой поддержки [Електронний ресурс]: Стаття. – 2012. – Режим доступу: <http://bigideas.ru/posts/8/601>
5. Ценность «сарафанного радио» [Електронний ресурс]: Стаття. – 2013. – Режим доступу: www.vestnikmckinsey.ru
6. Rust T. Measuring marketing productivity: current knowledge and future directions/ T.Rust , T.Ambler , G.Carpenter , V.Kumar , R.Strivastava // *Advances in Business Marketing and Purchasing*. – 2004. – Vol. 5. – pp. 46–58.
7. Sheth J. Marketing productivity: issues and analysis. / J. Sheth, R.Sisodia // *Journal of Business Research*. – 2002. – Vol. 55 (5), pp. 349–362.
8. Ambler T. Assessing marketing performance: reasons for metric selection». / T.Ambler, F.Kokkinaki , S.Puntoni // *Journal of Marketing Management*. – 2004. - Vol. 20, pp. 475–498.