Kohonen artificial neural networks in the service of a commercial bank

© T.I. Kuznetsova, E.N. Lobacheva, N.Yu. Tselsov

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article considers the substantiation of the alternative application of an artificial neural network as a statistical model to determine the solvency of commercial bank customers. Using the extended Kohonen neural network it is shown how a neural network trained on statistics of previous credit transactions solves the problem of classification of borrowers on the basis of their ability to pay.

Ключевые слова: Kohonen neural network, clustering input vectors, competing method of data processing, neural network structure, credit rating.

REFERENCES

- [1] Galushkina A.I., Tsypkina Ya.I. *Neyronnye seti: istoriya razvitiya teorii* [Neural Networks: The History of Theory Development]. Moscow, Alyans Publ., 2015, 840 p.
- [2] Sokolyanskiy V.V., Zakharov A.V., Nevretdinov A.R., Liev Sh.M. *Voprosy ekonomicheskikh nauk Problems of Economic Sciences*, 2015, no. 1, pp. 81–87.
- [3] Lavrushin O.I. *Bankovskoe delo: sovremennaya sistema kreditovaniya* [Banking: the Modern Crediting System]. Moscow, KNORUS Publ., 2013, 360 p.
- [4] Hawley D.D., Johnson J.D., Raina D. *Financial Analysts Journal*, November/December 1990, pp. 63–72.
- [5] Altman E.I., Marko G., Varetto F. *Journal of Banking and Finance*, May 1994, pp. 505–529.
- [6] Poddig T. Bankruptcy Prediction: A Comparison with Discriminant Analysis. In Neural Networks in Capital Markets, Refenes A.P., (ed.), New York, John Wiley & Sons Publ., 1994, pp. 311–323.
- [7] Kohonen T. Self-Organizing Maps. Heidelberg, New York, 2001, 501 p. [In Russ.: Kohonen T. Samoorganizuyushchiesya karty. Moscow, BINOM, Laboratoriya znaniy Publ., 2009, 624 p.].

Kuznetsova T.I. graduated from Moscow Finance Institute. Cand. Sci. (Economy), Associate Professor, Department of Economic theory, Bauman Moscow State Technical University. Author of over 100 research and educational publications in the field of theoretical economics, finance and credit. e-mail: ibm1@bmstu.ru

Lobacheva E.N., Dr. Sci. (Economy), Professor, Head of the Department of Economic theory, Bauman Moscow State Technical University. Author and supervisor of over 10 publications of economic textbooks for students of engineering faculties, bachelors and specialists, the supervisor of research in the subject area of IT-technologies, innovation and education. The area of research interests: innovation and application of scientific and technological achievements in the Russian economy. e-mail: ibm1@bmstu.ru

Tselsov N.Yu., student, Faculty of Rocket and Space Technology, Bauman Moscow State Technical University.