

The fact that technological progress in the mobile phone industry was extremely rapid is undoubted. The traditional phones changed to smartphones, but Nokia did not change its technology, while the competitors started to create highly advanced products. Eventually new smartphones got affordable for the users, and the society shifted to them. Just one factor – the refusal to change production technologies led to the failure of such a successful and perspective business.

However this is not the only example when advanced companies fail due to some specific factors that were ignored or just did not suit the companies' strategies. Such world-spread companies as *Polaroid*, *Blockbuster*, *Pan American World Airways* seemed to have a huge future, but they also went bankrupt because of the consequences of their mistakes. They were forced to leave the market.

The Anna Karenina principle was certain not to become a valid law, but this is the case when a writer made a historical contribution not only in literature, but into the whole science as well.

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УДК 336.648

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#### FINANCIAL PYRAMIDS

The term “financial pyramids” determines a scam – something like a dishonest or even illegal activity. It is a typically form of “getting rich” in a simple way. You bring your money today and take it back with a profit tomorrow. And this profit is much higher than they offer you in banks. Most people like freebie, so they might just take this bait easily.

For example, MMM, that was so popular in Russia in the 90<sup>th</sup>. Initially, the company was engaged in the sale of computers and then became a joint stock company artificially raising the price of its shares. The company was promoted through the legendary commercials about Lenya

Golubkov. The videos came out in the whole series. This character became so popular that one day he received the title of man of the year, beating even Boris Yeltsin. However, sooner or later everything ends, and this financial pyramid also collapsed. 10 million of depositors lost their money which adds up to \$ 70-80 billion and after a sharp devaluation of MMM securities, 50 people committed suicide.

But not all financial pyramids are illegal. Take Multi-level Marketing (MLM) for instance. It involves recruiting members to help with selling products or services providing value. This recruit earns a profit when they sell the product, and they're not necessarily required to get more people to join. But even then, one may find a version of MLM that exists as pyramid scheme. It means selling products or services with little to no value.

Obviously, financial pyramids are called in such a way because their schemes resemble pyramid. At the top, there are the organizers. According to their idea, all the money from the lower layers should get into their pockets. Therefore, each lower layer provides the upper one with money. The problem comes at the moment when there is no one who are ready to join the lower layers. Then, layer by layer, the pyramid begins to burn. The organizers accumulate in their hands almost all the participants' finances and the deal is closed down. 99% of those who invested lose their money forever. A lot of problems start: bankruptcies, suicides, breakups of families and so on and so forth. But the pyramid organizers are no longer interested. They got their money and are vacationing abroad already.

Let's have a look at a business phenomenon, named as a Bernie Madoff Ponzi Scheme.

What is Ponzi scheme? Named after Charles Ponzi it differs a little from classic type of pyramid. The essence is that it has only one ideological central organizer. It implies not only attracting new investors, but also keeping old ones, all conditions are created for them to reinvest their capital. And the legend that was invented by the organizer to attract clients is convincing, which allows such a scheme exist much longer than an ordinary financial pyramid.

As for Bernie Madoff, he started his company, Bernard L. Madoff Investment Securities LLC, in 1960, at the age of 22. Over time, this company became very successful. By the late 1980s Madoff was making profit of \$100 million a year.

Madoff's Ponzi scheme was classic and, in fact, frighteningly simple. Madoff attracted investors by promising them extraordinarily high returns on their investments. However, Madoff just deposited their money into his personal bank account. The bank, according to one estimate, may have

made as much as \$483 million from those deposits, therefore it was not profitable for the bank to learn about legality of this activity.

Everything worked well until 2008 when a large number of investors wanted to cash out their investments – to the tune of around \$7 billion. Madoff didn't have enough money to cover the request. This is how the largest pyramid of our time ended its existence. The size of his fraud was about \$65 billion. Thousands of investors lost their life savings and even a number of non-profitable organizations were defrauded by him also.

But situations like that are happening every day all over the world and our country is not the exception. For example, quite recently a very large financial pyramid was found in Grodno, the creator of which has not yet been caught. More than 40 people got into the network of this pyramid and the total amount of damage exceeded 900 thousand rubles.

Financial pyramids are dangerous because they can be easily disguised. That is why it is so important to know how to avoid getting into such a criminal system.

Pyramid schemes will never disappear, because people will never stop wanting to make easy money. Perhaps fewer people will fall into them, but this will only become an incentive for scammers to come up with more and more complex and intricate schemes or, on the contrary, simplify everything so that it will not be possible to suspect something. One day we'll find it out.

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УДК 004.032.26

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#### NEURAL NETWORKS

Currently, artificial intelligence has firmly entered our lives and helps people in many spheres of activities. The most promising area of artificial intelligence which will hasten the advance of the future is neural networks.

Artificial neural networks are built on the principle of biological ones with several assumptions [1]. They operate a huge number of simple pro-