УДК 316.42

THE BLACK SWAN THEORY IN THE MODERN WORLD

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The phrase "Black Swan" was a common expression used in 16th century London as a statement of impossibility. The expression came from the belief that all swans must be white because, up until that time, people in Europe had only seen swans with white feathers. In 1697, the Dutch expedition led by explorer Willem de Vlamingh discovered black swans in Western Australia. Following the discovery, the term "Black Swan" changed to paradoxically connote an impossible event that one day might occur [1, 2].

Risk sits in an interesting space between known facts and the unknowable – for something to be a risk we need to know something about it. If something definitely will, or has actually happened it is a fact and potentially an issue that has to be managed. Most events involve some degree of uncertainty; for instance, we may know an unplanned event is absolutely guaranteed to occur, but not when. Risk assessment requires calculating the probability of a specific result and assess whether it's acceptable to carry on as before. If we're dealing with day–to–day events, that's fine, but what about rare and extreme events? A risk manager needs to know not only what can go wrong, but how wrong it may go.

The likelihood of any future event happening can be broken down into three categories [3, 4]:

- Known–known
- Known–unknown
- Unknown–unknown.

With a known–known event risk, enough is understood to be able to predict how likely it is that the event will occur. Inclement weather and software test failures tend to fall into this category. This type of risk is the most easily managed. With a known unknown event risk, there is an understanding that the risk exists, but not enough information to make accurate predictions about the event or why it may happen. For instance, the mechanics of earthquakes are well understood, but they are almost impossible to accurately predict. The final category unknown–unknown, also called "Black Swans".

Black Swans are the unknowable risks – events or outcomes that you cannot possibly predict or foresee until after they occur. To be a true Black Swan event, an event must have three distinct features:

1. The event is a surprise (to the observer).
2. The event has a major impact.
3. After its first recording, the event is rationalized by hindsight, as if it *could* have been expected (e.g., the relevant data were available but not accounted for).

The Black Swan theory was developed by Nassim Nicholas Taleb` to explain:

1. The disproportionate role of high–impact, hard–to–predict, and rare events that are beyond the realm of normal expectations in history, science, finance and technology
2. The non–computability of the probability of the consequential rare events using scientific methods (owing to the very nature of small probabilities)
3. The psychological biases that make people individually and collectively blind to uncertainty and unaware of the massive role of the rare event in historical affairs

Examples of Black Swan events are World War I, Black Monday stock market (1987), Nikkei collapse (1990), Tech bubble burst (2000), 9/11, the success of Google, the global financial crisis, BP's Deepwater Horizon tragedy, Mid–East political upheaval and Japan earthquake [4, 5]. Many people would say that any or all of these examples could have been predicted, but even if some people did foresee these events then no significant mitigating actions were taken or their impact would not have been so great.

Traditional risk management relies on identifying risks based on the experience of the teams involved in the enterprise. If the risk is outside the experience of the group it is unlikely to be considered.

Risk management concentrates of managing the risks to the enterprise that would have a significant impact and have a reasonable probability of occurring. This is simply a way of prioritizing potentially 'bad' events so that time and resource can be allocated. Brainstorming risks is also highly unlikely to capture Black Swans. The exercise will either be too narrow, by staying within the comfort zones of the participants, or too broad by considering risks that are not relevant to the business.

Black swan management consists of managing the affairs of organizations and individuals with the specific purpose of avoiding negative black swans and seeking out positive black swans.

The main idea of The Black Swan theory is to not attempt to predict Black Swan Events, but to build robustness against negative ones that occur and be able to exploit positive ones.

Main means for avoiding negative black swans are to reduce the complexity, size, and duration of planned projects. The objective of black swan management is to simplify the pay–back functions of thinning out the tails of the risk simultaneously. Black swan management tools reduce complexity and decrease the variability of performance. Commonly used methods of reducing complexity are modularity, agile planning approaches, and avoiding complex debt financing of projects. Because failure cases showed that difficult competitive environments e.g., eroding margins, low turn–over, high leverage can push firms over the edge [6].

Literature references

1. Wikipedia [Electronic resource] – Mode of access: http://en.wikipedia.org/wiki/Black_swan_theory – Date of access: 18.01.2012.

2. Black swan risk consulting [Electronic resource] – Mode of access: http://www.blackswanriskconsulting.com – Date of access: 18.01.2012.

3. Types of Risk [Electronic resource] – Mode of access: http://www.mosaicprojects.com.au/WhitePapers/WP1057_Types_of_Risk.pdf – Date of access: 18.01.2012.

4. Risk Assessment And Black Swans [Electronic resource] – Mode of access: http://www.thenbs.com/topics/PracticeManagement/articles/RiskAssessmentAndBlackSwans – Date of access: 18.01.2012.

5. N.N. Taleb, The Black Swan, Penguin, 2007.

6. Black swan management [Electronic resource] – Mode of access: http://en.wikipedia.org/wiki/Black_swan_management – Date of access: 18.01.2012.