BLACK SWANS, GREY SWANS, AND WHITE SWANS

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There are a lot of swans out there, in today's world, which is filled with risks. And I'm not referring to birds here. I'm referring to the different types of risks - some may be predictable, and others are not predictable at all – but all have the capability of bringing an organization down to its knees.

A black swan is *a highly improbable event with three principal characteristics: it is unpredictable; it carries a massive impact; and, after the fact, we concoct an explanation that makes it appear less random, and more predictable, than it was* (c.f. Nassim Taleb - mathematical statistician and risk analyst). An example of a black swan was the global financial crisis of 2008 which was completely unexpected and had a devastating impact throughout the world.

A grey swan is an event that has a low probability of occurring but could have an important cascading impact if they did. Since the threat is quite low, companies and people tend to ignore these risks or provide limited resources for their occurrence. An example of a grey swan is the 9/11 attack on U.S. soil as it has an extremely important cascading impact, though warning signs were ignored. This was a true picture of what it meant to always stay alert, and things have never been the same in terms of security in the US.

A white swan is a highly predictable event that can easily be anticipated, and its size or importance can easily be estimated too. Some say that the COVID-19 pandemic is a white swan as it was relatively inevitable to occur at some point in time because of the structure of the modern world; and its economic consequences will be even more serious as a result of today's increasing interconnectedness.

The lineup of "swans with an impact" is long ... and is growing. No matter what the color of the swan is - black, grey or white – it's the damage these risks cause what matters, and how they can be anticipated, addressed or even avoided in the future.

Today's environment is extremely complex. It's fast-paced and changing at an unmatched rate. People, businesses, organizations, and governments are finding it increasingly difficult to keep pace with these changes and anticipate corresponding risks. A flood of data - structured and unstructured - is forcing many to adopt newer technologies to collect, analyze and leverage data for better decision-making and risk assessment.

The speed of current technological breakthroughs has no historical precedent and is evolving at an exponential rather than a linear pace. It is disrupting almost every industry in every country. The breadth and depth of these changes announce the transformation of entire systems of production, management, and governance. Also, according to research, global data is expected to grow from 33 zettabytes (ZB) in 2018 to 175 ZB by 2025. It is this massive amount of data that is driving new technologies and will positively impact risk management.

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) applies advanced analysis and logic-based techniques to interpret events, support and automate decisions, and take actions (www.Investopedia). AI applies different technologies which are working together to enable machines to sense, comprehend, act, and learn with human-like levels of intelligence. It can self-correct, understand and learn. More importantly, AI analyzes data, makes assumptions, learns, and even provides predictions at a scale and depth of detail that is impossible for individual human analysts.

Today, AI takes many shapes and forms and is used in many applications such as Recommendation Engines, Virtual Agents, and Speech Recognition. Its usage is expanding and many banks, insurance companies and other financial institutions are implementing AI solutions as part of their risk management processes by using AI algorithms, they can now analyze and determine patterns of risk to help identify and manage potential threats and evaluate fraudulent activity.

MACHINE LEARNING

Considered a subset of artificial intelligence, machine learning (ML) can be a powerful tool for prediction purposes. ML uses statistical models and algorithms to sift through tons and tons of data to identify relationships or patterns that humans may not "see" or inadvertently ignore. The goal is to uncover key insights to help drive better decision making throughout the organization. ML can run a multitude of variables within the data to produce powerful predictive models. It's ML's heavy computing power enables it to run a multitude of variables within the data thousands of times - in split second timeframes – so it can "learn" from the data and enhance its predictive capabilities.

COGNITIVE COMPUTING

Cognitive computing combines the technologies of artificial intelligence, machine learning, neural networks, and natural language processing. While AI is designed to *increase* human thinking, cognitive computing *mimics* the human thought processes and is programmed to learn from its mistakes. Traditional methods of analysis have become increasingly incapable of handling today's data volume, hence cognitive computing is increasingly used to help find indicators of known and unknown risks.

DATA ANALYTICS

Data analytics is the process of uncovering and communicating meaningful patterns found in large amounts of data, reviews data from past events for patterns/trends, makes assumptions and tests on past data to produce future "what if" scenarios to help predict what will happen next, or to suggest actions to take for optimal outcomes. Data and insight go hand in hand and is one of the reasons data analytics has been an incredibly useful tool for risk managers.

ROBOTIC PROCESS AUTOMATION

Robotic Process Automation (RPA) helps to perform the more routine tasks within an organization. These software applications or "bots" can execute repeatable, logic-based activities to help efficiently scale business operations -- while freeing up more experienced staff for more complex problems.

In risk management, these robotics can help identify and explain changes in risk exposure, evaluate credit limits and determine causes for breaches in such limits, while recommending remedial action automatically.

A QUICK WORD OF CAUTION ON TECHNOLOGY THOUGH...

It is obvious that these new technologies offer immense promise for industries across the globe. But there are threats - and consequences - as well, with the most visible ones being privacy violations, discrimination, accidents, and manipulation of systems. More concerning still are the consequences not yet known or experienced such as disastrous repercussions (think of loss of human life if an AI medical algorithm goes wrong, or the compromise of national security, if an adversary feeds information to a military AI system).

While many innovations in today's world can be considered a "two-edge sword", most risk managers argue that the benefits of using them outweigh the uncertainties.

Risks, whether it comes in the form of a white swan, a grey swan, or a black swan, abounds in the marketplace. And the pace of change and transformation is not slowing down. It is the ability of today's companies to anticipate and balance those risks.

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