



CFA SINGAPORE INSIGHTS

By Pranay Gupta



Investors need 'science' skills to enable the artist in them to shine

The smart-enabled investor will implement decision support tools to harness the knowledge of big data in any decision making

Every financial services firm today is desperately trying to prove how tech savvy they are by displaying robots and posting blogs with futuristic pictures of AI. But how much of this is advertisement gimmicks, and how much will it really impact the skill of investing money, at least in our lifetime?

What is investing?

Any kind of investing, be it by individuals or professionals, follows the same basic steps: digest all relevant information to understand the current status, predict what will happen in the future, and buy what you think will go up. Sounds simple, but it's not.

The problem with the first step, investment analysis, is that there is a deluge of data that exists with more becoming available every minute, so it's impossible to digest everything.

The problem with the second step, investment forecasting, is that no one has a crystal ball to know what will happen in the future. And the third step, implementation, has significant costs and hurdles to implement an investment decision, although this last step has benefited tremendously recently from using technology.

All of this means that managing money has always been very much an art, not a perfect science, similar to making a movie, where there may be a given script, but a movie's success is determined by the actors and directors.

Enter big data, AI, robotics, and more

In reality, all of these tools have been around for decades. For example, in the course of my own career, my colleagues and I have designed robots for a Japanese car company in the 1980s, used databases (now refashioned as big data) for the manufacture of missile systems in the 1990s and used artificial intelligence and machine learning techniques to manage over US\$25 billion in pension assets in the 2000s. So what's all the new fuss about?

The big difference now is that these tools have become pervasive in every mainstream industry as they are cheap enough even for small organisations to implement.

Investment analysis

In the last decade, the systematic capture of every possible kind of data has increased exponentially. This 'big data' ranges from capturing what almost every single human on our planet feels, thinks, communicates and does every minute to every non-human facet of our surroundings, celestial or terrestrial, natural or man-made. The capture and analysis of this data means that there is tremendous knowledge that can be harnessed, not only to improve every single machine process we have, but also to analyse how every facet of every business is likely to perform.

While it was already difficult for an analyst to digest the plethora of information available in his mind, it's now simply impossible. Analysis has become far more rigorous, but also more difficult.

Investment forecasting

The availability of big data means that sophisticated mathematical techniques, such as AI and machine learning, and programming are necessary to understand patterns and make forecasts. It can no longer be done on a spreadsheet using just judgment. This allows not only for improved forecasting, but also to continuously improve the process being used to make the forecast, similar to how our brain learns from our mistakes.

Risk management

While forecasting attempts to predict the future, risk management focuses on managing the impact of what we don't know about the future. However, unlike forecasting, risk management has to include the numerous scenarios which may eventually never happen. The availability of big data empowers risk management with an unparalleled toolkit to understand and manage risk, but to harness this knowledge, investors need to trans-

ition from the single risk management tool structure which is prevalent today, to using multi-dimensional risk diagnostics.

The new 'smart-enabled' investor

Traditional fundamental managers claim an edge by blending qualitative analysis with depth of understanding about specific assets, and quantitative managers claim an edge with the ability to digest a large breadth of data, and take unemotional investment decisions using algorithms. Big data and AI will give rise to a third, perhaps more successful investor category: the smart-enabled investor.

The smart-enabled investor will implement decision support tools to harness the knowledge of big data in any decision making – be it the stock to buy, the risk to manage, the product to launch, the clients to target or the allocation of resources.

Data and technology will no longer be just tools, as they are in today's organisations, they would be at the core of the organisation in every aspect, to enable better decisions. This requires the integration of quantitative, technology and financial analysis skills to create a core information and analytics hub. The idea of blending fundamental and quantitative skills is not new, but the difference this time is the scale of integration required, and the fallout if they ignore the presence of big data and AI.

Most importantly, it requires a cultural shift in almost every investment firm, where quantitative and technology personnel are not the geeks sitting in the corner, but the central core of the organisation, enabling humans to make better decisions. For the incumbents, perhaps this requires the comfort that AI is unlikely to replace portfolio managers any time soon, and using an iPhone, Google or Uber doesn't make us any less human, or investment less of an art, but it does make us more effective.

Asset managers today generally solve the investment problem using only good judgment, but going forward, if they ignore the knowledge possible from big data, they would be playing with only half a deck. One may still choose for decisions to be taken by a human or a machine, but ignoring big data and AI would simply mean that the firm will soon become ineffective or worse, obsolete.

But before you get excited that your investment provider is at the forefront of this revolution, ask them – How many of their portfolio managers and analysts understand programming or the mathematics of a neural network algorithm, or even what percentage understand and use information from big data?

Talking about big data and AI is easy, implementing it in an organisation and changing its culture is very different. If your provider is still not able to deliver online access to your account, online transactions, and on-call multi-dimensional analytics on markets and portfolios, they are unlikely to be anywhere near harnessing big data and AI, no matter how many photo-ops and blogs they have with robots.

I remember watching adventure cowboy movies as a kid, where the actors and their art in creating the movie made it a hit or a flop. In the adventure movies of today, the art has not decreased in importance, but it wouldn't be a movie worth watching if there were no intricate special effects made possible by data, mathematics and technology. Similarly, investing will always remain an art, but investors will now require the science of investing to be the core skill of their people and organisations, if the artist in them is to truly shine.

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