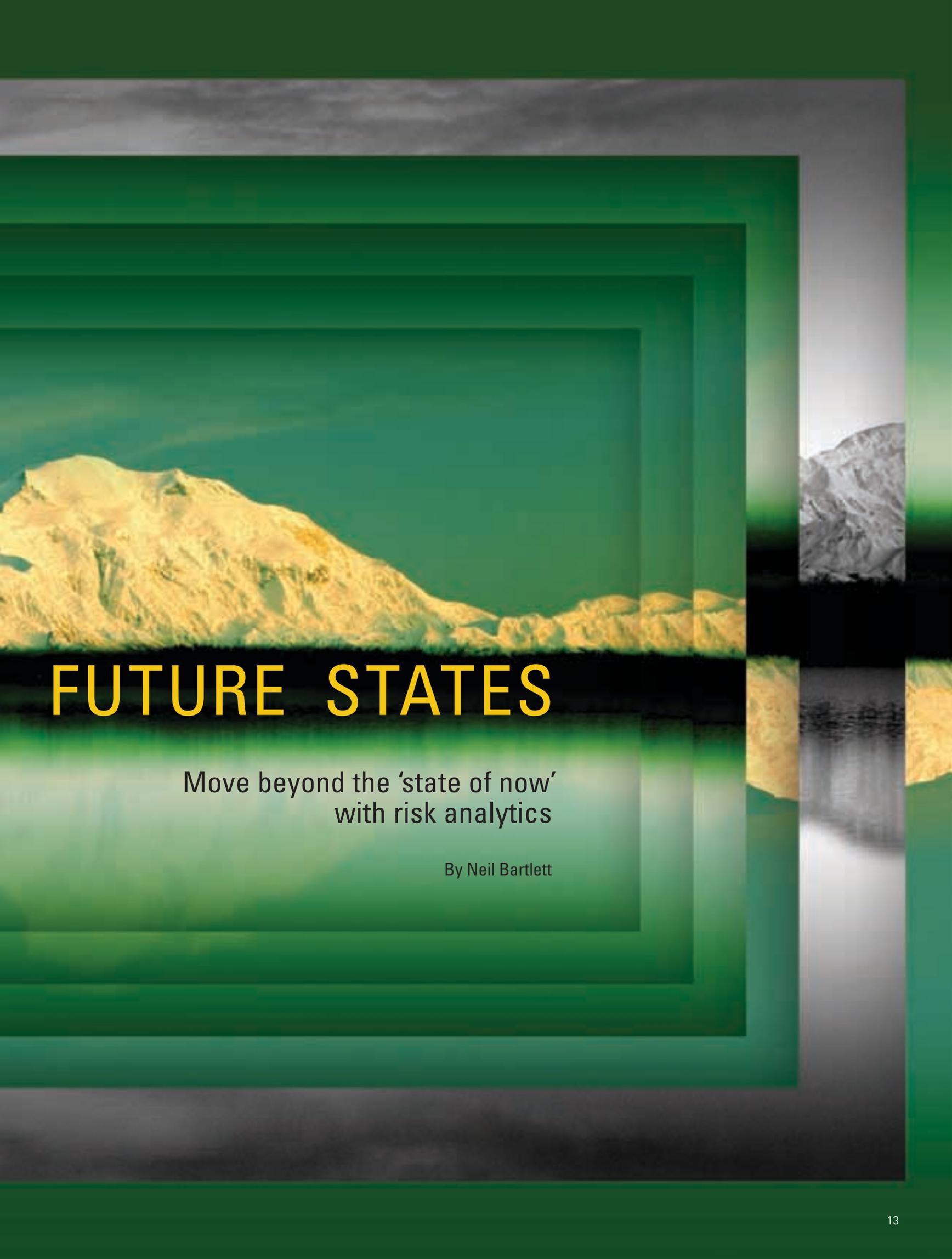


The image features a landscape photograph of a mountain range with a lake in the foreground. The scene is framed by multiple overlapping green borders of varying shades, creating a layered effect. The text "EMBRACE YOUR" is overlaid on the image in a bold, yellow, sans-serif font.

EMBRACE YOUR



FUTURE STATES

Move beyond the 'state of now'
with risk analytics

By Neil Bartlett



Imagine you're planning to buy or lease a new car. As you research various options online, you might bookmark a dealership, print out a review or two for closer reading, or forward a particular model to a friend or colleague for feedback. These are all standard steps of making an informed purchasing decision.

You then happen to come across an article suggesting that fuel costs will quadruple in over the next 10 years. This doesn't affect your current state, but could have a severe impact on future operating costs. Now, imagine there was a new, magic button on your browser. And let's say this button can connect information from any online page to your personal portfolio and financial information. Pressing this button would pull the information from an article and show you how it could affect your future cash flow.

The magic browser button doesn't exist yet, but the underlying concepts and tools do. For years, finance has leveraged the power of business analytics and risk management to understand potential future states of the world, identify likely outcomes, and use those outcomes to help inform decisions made in the present.

This is a wake-up call, or a manifesto, for industries outside of finance to do the same. To succeed in the modern world, variables must be accounted for. Risk is the framework industries can use to incorporate uncertainty into decisions made in the state of now.

BEYOND 'WHAT-IF'

All industries and projects are united by the same underlying premise: there is something that I want to do, but how do I know if it will make money or cost money?

Business analytics can help you answer this question, once the proper components are obtained. First, you will need to acquire and correlate data. Secondly, you will need models that can effectively use this data and produce a range of potential future outcomes.

The world could turn out in all sorts of ways, and the best method to incorporate these variables into strategic decision making is to turn them into scenarios. Scenarios let you leverage existing data and models that can be repurposed to acquire a new future state. They enable you to find out if your concerns are likely to affect costs, and give you a common framework to discuss which scenarios are worth addressing.

Thinking about future states that could play out based on scenarios is a far more powerful tool than asking "what-if." What-if projections are affected by and often limited by personal idiosyncrasies. You can create what-if statements and scenarios for anything you could think of. But each time someone else asks about one of their own concerns, or a new variable is introduced, the entire process has to be re-created. It is an inefficient and resource-consuming method.

Uncertainty has moved from a factor rarely considered to a fact of life. Fixed costs have been replaced by variable costs across the board, and you can pretend they don't exist or you can strive to understand how they affect you. Below are some examples about how business analytics could help manage uncertainty in real world situations.

HERE COMES THE SNOW

In January 1999, Toronto, Canada was buried under three feet of snow, and another major storm was on the way. Concerned that the additional snowfall would shut the city down completely, then-mayor Mel Lastman declared a snow emergency and drafted Canadian soldiers to dig out the streets. While the story is now part of city lore, it isn't generally considered a best practice. Most project managers don't have a literal army to fall back on in tough times.

If you were responsible for snow removal in your city, you would be asked to find service providers and contractors, and attempt to produce a snow removal budget based on whatever calculations are on

hand. You would likely look at what the average snowfall had been for past years, acquire a variety of quotes, and look to see what the predicted snowfall is for the coming winter. To defend this budget and plan, you would be asked questions, and be expected to provide estimates for whatever scenarios are presented to you.

But the scenarios presented in this fashion won't account for all likely outcomes. Via risk, a systemic approach can be taken that incorporates historical conditions, but also utilizes a much wider variety of found data, including weather, temperature, traffic conditions, labor, and fuel costs. Instead of examining snow removal in isolation, an analytics framework helps identify the true costs when snow removal doesn't happen on schedule, such as its impact on planned or in-progress street repairs.

This data can be used to feed and drive models, and then run as future states. Likely outcomes can be picked, averages can be created and stress tests can be applied against these averages.

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This systemic way to address uncertainty provides decision makers with more options: securing fixed rate contractors in case certain thresholds are breached, and insurance can be purchased for events that are unlikely to occur, but are so outside the expected costs that they would contribute to a severe budgeting shortfall.



FIXED COSTS HAVE BEEN REPLACED BY VARIABLE COSTS ACROSS THE BOARD, AND YOU CAN PRETEND THEY DON'T EXIST OR YOU CAN STRIVE TO UNDERSTAND HOW THEY AFFECT YOU.

As with many municipal services, snow removal is commonly treated as a reactive measure. Salt machines and snowplows are only deployed in response to triggers in winter events such as the volume of snowfall, maintenance standards and affected routes. This approach hopes that, on average, the costs fall into an acceptable level. As long as functions are treated in a reactive fashion, things are fine until they are not. And then the only option left is to call in the army.

ON THE ROAD AGAIN

Results-based road contracts typically run for a number of years and could be based on 5- or 10-year terms or longer. These contracts, negotiated up front, set a fixed rate for a service provider to assume liability for maintaining the roads up to certain standards. Results-based (sometimes called performance-based) contracts were first introduced in British Columbia, Canada in the late 1980s and early 1990s, next appeared in Australia, and have since been accepted across the United States, South America and Europe. Common elements in fixed-rate contracts include pavement, drainage, bridges, tolls, trash collection and maintenance. In some cases, the contractor may also be responsible for managing public inquiries.

Results-based contracts offer a level of cost certainty to governments. In an era where some North American cities have

flirted with bankruptcy and austerity measures have become part of the common vernacular around the world, the appeal of such contracts is clear. Yet the duration of these contracts makes them challenging to estimate with any precision.

From the contractor's side, scenarios could be used to explore a number of issues affecting hard costs over the life of the contract, including: labor, materials, politics, exchange rates for commodities, changes in traffic patterns, wear and tear. Cost control and maintaining quality standards are the top priorities on the government side, but so is reducing the potential for asymmetric information. Using data from city planning services, anticipated traffic patterns, wear and tear, labor and material costs, the government can run its own scenarios likely to have an impact over the course of the contract.

Utilizing business analytics to map out potential future states provides decision makers with greater insight that is crucial for multi-year and multi-decade contracts. A risk framework reduces the uncertainty inherent in such projects, which will likely be overseen by multiple administrators and administrations over the contract term.

SUPPLY CHAINS AND SEASONALITY

We're all affected by changing seasons. For some of us, they affect our moods. For many industries the summers are a slower period when many workers take holidays. But no industry feels the impact of seasonality as much as retail.

For retail chains, particularly of the enormous, one-stop-shop variety, it is an ongoing logistical challenge to ensure stock arrives in the right place at the right time. Ensuring that the accompanying signage



retailers better manage out-of-stock losses, so that bathing suits remain available longer during hot summers, and snow shovels can appear in an appropriate quantity over the course of an early winter.

SETTING UP A NEW (MULTI-NATIONAL) SHOP

Even in challenging economic times, many corporations find the need to open offices in new territories. Imagine your business decides to open a new office in London. Despite years of meticulous planning, that city's cost to host the 2012 Olympics was off by an estimate of billions of dollars. With all the variables that exist today, how can you make informed decisions about how much opening one new office is going to cost?

You can't be infinitely flexible with your budget, yet you still need to make assumptions about what the world will look like in 6 to 12 months, or possibly longer. Utilizing business analytics and risk models, you can reduce a great deal of uncertainty around factors such as exchange rate fluctuations, labor, and real estate costs by running scenarios and seeing what the greatest areas of concern are.

and fixtures are another requirement. While this scale of business should come with its own advantages of advanced technology and purchasing power, the sheer volume of inventory becomes challenging to schedule and organize.

Retail research studies suggest that as of 2008, out-of-stock items ran at an industry average of 8.3%, a figure that had been constant for the previous 15 years. Some of the causes have been identified by a disconnect between decisions made at the head office and what is experienced by shoppers in stores, inefficient technology, and poor communication. But attempts to fix these items individually, particularly the focus on optimizing collaboration across the supply chain – long considered the ideal goal of retailers – in a sense missed the point.

Enhancing individual measures is similar to a financial institution managing itself

silo by silo. Integrating all the various departments of a retail operation through a risk framework, supported by business analytics, enables individual decisions to be more effective as part of a larger, holistic system. Running scenarios and identifying likely outcomes before they are experienced would help retailers extract greater efficiencies from their operations, while reducing uncertainty.

Through a holistic view, retail could better anticipate potential issues with distribution, ensure stock and supporting materials arrive in the right place at the right time, and even connect their products to signage, fixtures, and the work of marketers to ensure consumers know, through social media and traditional advertising, what the most current products are and their availability. A greater ability to adapt to changing variables could help



Mostly, you want to ensure that you have enough funds in local currency to cover the full cost of the project. If your scenarios demonstrate that a sharp turn in exchange rates could lead to substantial overruns, you might decide to acquire an FX forward, ensuring you'll have funding available in GBP to complete the project. None of these scenarios will guarantee that in the world of now you'll acquire exact costs. But you can reduce many elements of uncertainty by accounting for as many variations as possible.

WHY CONTEXT IS KING

In nuclear power facilities, mean time between failures (MTBF) is used as a common methodology to schedule repairs. Within these planned MTBF episodes, select items will be repaired and, perhaps, replacement parts for related items will be on hand to maximize potential enhancements during the facility downtime. But what MTBF doesn't take into account is the whole system in a holistic fashion. MTBF as a metric considers the replaceable item only, and not measurable output needs such as weather conditions and economic factors.

In the pharmaceutical industry, maintaining appropriate production levels is an essential part of the business. If you have been producing one million pills of a specific drug for the past 10 years and demand has been stable, you have likely found ways to optimize production. What those one million pills can't tell you is how many will be needed in 2018, when an outbreak of a rare disease takes place, and instead of a gradual ramp up these drugs are required immediately.

One million pills a year sounds like an efficient operation. But without context for this number, it's just a number: a reading on a meter. And in the world of business, across all industries, there are millions of meters. All they are telling you is the state of now. What you really need is context for that number.

If you were told for example that you were driving 50 kilometers an hour on a highway, you might think, "sounds pretty slow." But if you were then told that you were crossing an icy bridge, and were rounding a sharp corner heading towards an intersection notorious for fatalities, you might instead think, "I'm going too fast." That is what business analytics does when used effectively. It becomes the helpful navigator. It provides the context, and now you have something to talk about with your fellow passengers.

It may seem counterintuitive to think of numbers without context as unhelpful, given how present they are in our lives. From stock tickers to temperature readings, we see numbers everywhere and expect them to hold information. But numbers are just the starting point. You can't converse with them. They can open the door to conversations though, which is where the real reduction of uncertainty begins.

THE JOYS OF CONVERSATION

Once you have acquired data, and acquired models to populate them with, you can run different projections to see how different items trend up or down towards future states. Next, you can run the results against any number of scenarios. At each stage of this process being completed, you have gained the insight you need to have conversations, and a common framework to make decisions. These decisions can be used to inform decisions on cash flow, while getting a better grasp on likely (and unlikely) cost uncertainties.

These are all good conversations to have. In the world of now, we are all susceptible to uncertainties. We are also held back by the limitations we bring to the table when we attempt to imagine the future through the filter of our own experiences. Instead, we should accept the presence of uncertainty and embrace it. Build on it. This is the conversation we should all be having in the world of now, to better prepare ourselves for whatever the future may bring. ◀

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