

“Big data and an orange juice, please!”

When you are stuck, you turn to your apps for help. Prescriptive analytics is maturing into an effective, all-purpose weapon for better decisions.



A simple recipe: A perfectly maintained supply chain, constant, intensive analyses, and meticulous work over many years ensure that the burgers from large restaurant chains have the same great taste all over the world.

Powerful prescriptive analytics are not possible without artificial intelligence (AI) and machine learning (ML).

HELENA SCHWENK,
IDC expert

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Prescriptive analytics is the next logical step.

Fast food fans know the flavors that are nearly identical worldwide: meat, bun, pickles, onions, and, of course, sauce. The fact that these individual components combine to create the same burger taste in the almost 40,000 restaurants of the world's largest fast food restaurant operator is the result of years of meticulous, precision work, intensive analysis, and a perfect supply chain. However, this goal is much harder to achieve with the hardly controllable product orange juice. One year, the harvested fruit are very sweet and other years they have less flavor. Sometimes the oranges are juicier and other times hail storms decimate crops – the effects of Mother Nature. And yet, customers expect “their” juice to taste the same. For this reason, a special methodology (“blackbook”) is becoming more and more important for the largest fruit juice producer in the world, which is based in Atlanta, Georgia, just like Coca-Cola. The beverage company uses this technology to synchronize its orange juice production and ensure a consistent taste experience. The supply chain is meticulously evaluated and based on available weather or harvest data, and the juice mixture is determined in advance. Welcome to the world of prescriptive analytics.

It is the next logical step in the evolution of data analytics. After descriptive (“What happened?”) and diagnostic analytics (“Why did it happen?”) came predictive analytics (“What will happen?”). Now the time has come for what may be the last supreme discipline: prescriptive analytics (“What should happen?”).

The market for business intelligence and analytical tools reached a global volume of 4.79 billion euros in 2016, according to IDC experts. By 2020, they expect annual growth of more than 8 percent. “This increase is driven primarily by the continuing need to digitize business and increase the value of the massive amounts of

data that businesses capture and store – to better understand and serve their customers and move their business forward,” says IDC expert Helena Schwenk.

With the orange juice example, not only does this discipline analyze what is likely to happen, but the technology also provides concrete instructions or suggested solutions.

Schwenk's colleague Axel Oppermann, head of the analyst firm Avispador, considers the technology to be “decisive for the war.” “All companies, all those in charge who ask themselves, ‘What should I do,’ that is, who actively pursue future and business planning, benefit from the technologies and thinking patterns of prescriptive analytics,” Oppermann emphasizes.

A second, major reason for the strong demand for prescriptive analytics is that these technologies are mutually beneficial for other trendy digital developments. “Just as analytics evolves along these lines, they need support like machine learning, which can expose patterns in the data and continually build knowledge over time to predict problems and take the necessary action,” explains Schwenk. In other words, powerful prescriptive analytics are not possible without artificial intelligence (AI) and machine learning (ML). And, conversely, the two technologies only gain momentum and their special value through analysis.

Schwenk knows how this will look in practice in the future. Accordingly, AI and ML feed the prescriptive analytics tools gradually, learn permanently, and can give their operators or other machines recommendations on what to do specifically. “These can be precise forecasts, automated processes such as fully automatic ordering of goods, or the metering of certain goods.” Carsten Bange, from the analyst firm BARC, provides another example: “Predictive analytics is about having plenty of fresh salad on Saturday, for example, by analyzing weather data or



Artificial intelligence and machine learning support the market-driven production of natural foods.

the shopping behavior of customers. In the future, the software will say: "Have 30 heads of lettuce on hand. This way you won't run out and won't have a lot left over."

In sum, the new prediction method reduces the guessing game more and more. It provides clarification, supports decision-making in a very targeted way, and can even completely eliminate the need for it. This results in other application scenarios for experts like Schwenk that are almost limitless, such as in the detection of fraud, diagnosis and further treatment of illnesses, or automated settlement of insurance claims. For Oppermann, prescriptive analytics will also occupy an outstanding position in supply chain management and, last but not least, in energy management. "Especially in the field of renewable energies, this technology will be enormously important when it comes to avoiding supply bottlenecks."

An investigation from last year shows just how realistic Oppermann's assessment is. The costs of managing bottlenecks in the power grid today can already be reduced by more than 200 million euros per year. This

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CARSTEN BANGE,
Managing Director of
Wurzburg-based BARC-GmbH

was the result of an interdisciplinary working group led by the German Energy Agency and the Office for Energy Management and Technical Planning – and initiated by the Federal Ministry for Economic Affairs and Energy. Recently, it has cost almost one billion euros every year to avoid bottlenecks in the German power grid and to ensure system stability. Given the world's ambitious targets for renewable energies, it is therefore more than understandable that prescriptive analytics will also play a major role here. Climate data and consumption parameters are included in the calculations, on the basis of which sound recommendations for energy management can then be made.

Another example comes from the procurement of raw materials. The experts at the Technical University of Munich found that data-driven optimization approaches with prescriptive analytics produce valid procurement strategies. For example, these industries can significantly reduce both the operating risk due to price fluctuations and their procurement costs. In this way, companies could achieve natural gas purchase prices up to 11 percent cheaper on average instead of relying on traditional cash transactions or futures.

Ultimately, companies benefit from prescriptive analytics across the board. And, according to industry experts, fast food chains are currently working on having the analysis tools independently suggest new recipes and burger ideas. So maybe big data on the menu will become reality within a few years – who knows.



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THE TEN BIGGEST ORANGE PRODUCERS WORLDWIDE (2016)

Rank	Country	Amount (in tonne)
1	Brazil	17,251,291
2	People's Republic of China	8,419,881
3	India	7,503,000
4	United States of America	5,160,000
5	Mexico	4,603,253
6	Egypt	3,438,030
7	Spain	3,137,546
8	Indonesia	2,138,474
9	Iran	1,944,023
10	Turkey	1,850,000

Source: Telekom

Prescriptive analytics can minimize the effects of weather-related – and latently huge – default risks on the most important supplier countries of agricultural products for food producers.