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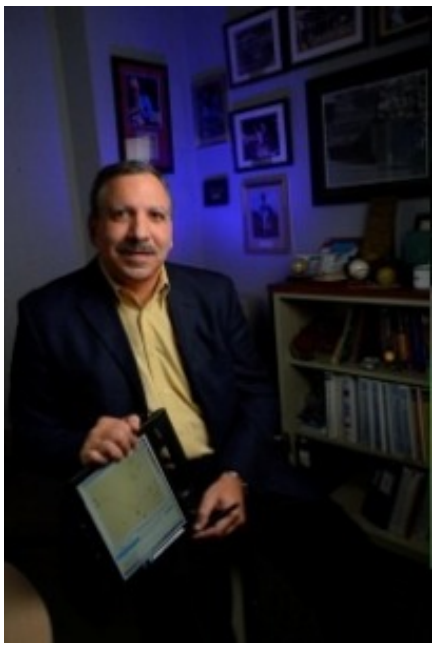

Jack Levis of UPS

The payoff from investments in predictive and prescriptive analytics comes when front-line workers use the findings to make better business decisions. Companies that hire data scientists to seek new patterns in corporate data also need a workforce with a deeper knowledge of statistics who can act on the results.

"You have to understand how to interpret the answers," says Jack Levis, director of process management with United Parcel Service. Levis is rolling out an initiative, On Road Integrated Optimization and Navigation (ORION) that crunches business rules, map data, customer information and employee work rules, among other factors, to optimize package delivery routes.

When fully deployed, the system will offer more than 55,000 front-line supervisors and drivers the tools to test scenarios and make tradeoffs. To reach a performance objective, is it better to save a mile of driving? Or to make a premium delivery 15 minutes early?

Neither the managers nor the drivers are expert data analysts, nor do they need to be. UPS provides role-based training that teaches employees how to use ORION, and what's behind the results it generates. "They need to understand, if I change this parameter, this is what the answer is going to be," says Levis. They also need to recognize when—and why—the

software gives an answer that doesn't make sense.

"The skills you need that were exclusive to analysts are being pushed down further and further to the front lines," observes Thilini Ariyachandra, associate professor of MIS at Xavier University Williams College of Business in Cincinnati. But today's workers may not have an academic background in math, statistics or analytics to fall back on. Meanwhile, improving data literacy—the ability to understand and learn from data—requires practical business experience.

Teach Them About Data

Most front-line employees don't use analytics today, says Tony Cosentino, vice president and research director with Ventana Research. Even executives aren't inclined to dive into corporate data. "They're going to their analysts to present them with the story lines."

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But data professionals and corporate executives alike expect that to change as companies attempt to reap the benefits of advanced analytics. Not everyone will need to know lots of math or statistics, Cosentino says. But managers, for example, will need to know what a regression or a cluster analysis is supposed to tell them.

In 2012, Ventana surveyed more than 2,600 organizations about their use of analytics: two-thirds of respondents were already using predictive analytics to at least some degree.

However, fewer than half of organizations reported providing adequate training for users in three key areas: analytics concepts and techniques; application to business problems and use of technology.

Cosentino says he expects companies will start to identify the analytics skills they are missing and develop online training tools for employees that are aligned with their career development.

Universities, meanwhile, are incorporating business intelligence and analytics training more broadly into the business school curriculum, in subject specialties outside of MIS such as finance or marketing. At Xavier even business minors get exposure to BI, through introductory courses, says Ariyachandra. One of the biggest challenges for universities, she adds, is giving students real-world experience. Employers want students to have internships, or to have worked with real business data. But creating partnerships with companies that will hire students, provide datasets for analysis or offer access to their tools isn't easy.

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Yet the business context is critical. Writing in the American Society for Quality's *Six Sigma Forum Magazine* last August, Peter Sherman, director of process excellence with Cbeyond, suggested companies should not only train workers in how to use data, but also provide them with coaching from subject matter experts in how to interpret it.

That coaching is a main theme in the UPS effort. "You have to be able to relate it back to something that they already know," says Warren Charest, a UPS project manager who was part of the team that created materials used to train employees on ORION. When teaching front-line managers how to use the software, "we take miles as something to explain the algorithm. If you reduce miles, you save money," he says. "People understand that, and they start asking questions."

Drivers train on the road. But computers in every building graphically display their routes. Supervisors can break down the route into sections and show the driver how the algorithm is deriving it. Drivers can be skeptical about ORION's value compared to their own knowledge of their routes. But those who embrace it are challenged to use their experience to beat it.

Over a few months, one driver used feedback from the system to cut more than 30 miles from his regular route. "The better they understand how the tool is finding an opportunity, the better we do as an organization," Charest says.

Refining Data Views to Hide the Math

UPS deployed ORION at its first location in 2008, and is expanding the rollout this year. An early version presented managers with too many variables to manipulate; it was difficult for them to learn how the variables all played off of each other, Charest says. In later versions, developers wrote software that eliminated any variables that could be calculated behind the scenes, leaving managers only with those that required their input.

Lessons from UPS Training

- Tell users how using analytics helps them meet performance objectives. For example, saving money but cutting miles traveled.
- Relate data findings to workers' existing practices. Explaining graphical displays of truck routes challenged drivers to beat the machine.
- Too much information can overwhelm. Refine data displays to what's important to front-line workers and offer access to deeper dives on request.

"A lot of people try to put too much in front of people all at once," says Charest, a college math major who started his career at UPS loading trailers, and worked for a time in industrial engineering. If managers want to dig deeper, they can ask engineers to run an advanced analysis, "but you're not going to train the front line supervisors" to do it.

UPS developed ORION in-house. But

- Remember smartphones and other consumer technologies are making workers (especially younger ones) more comfortable with data displays.

vendors are starting to offer tools that, similarly, hide the math, says Cosentino. That means line managers will find it easier to do predictive analytics without having to do a lot of computation.

The march of consumer technology, meanwhile, is helping workers to become more comfortable with data, suggests Charest. “When I started 21 years ago, I had one friend who had a cell phone. Now people are used to dealing with big piles of data because we have so much through social networking.”

Says Cosentino: “The tools, married with, hopefully, the interdisciplinary mind of millennials, will help solve this.”

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Home page image of UPS truck via Wikipedia.