What Zillow's failed algorithm means for the future of data science

BY **Erik Sherman**February 01, 2022, 11:19 AM

The Zillow website on a mobile phone arranged in Hastings on Hudson, N.Y., as seen in November 2021. (Photographer: Tiffany Hagler-Geard—Bloomberg/Getty Images)

Zillow's homebuying service, Zillow Offers, seemed like a great idea when it was introduced in 2019. Sellers had it easy: forget prepping the house or real estate agents. Just answer some questions online, snap and upload a few photos, and wait for the offer.

Harvard Business Analytics Program

Big-data analysis told Zillow what to offer and how much to charge on the flip. Easy peasy. Except, come 2021, the wheels came off. Zillow had bought thousands of houses, and the algorithms didn't factor in repairs with the skyrocketing costs of materials and labor.

"We've determined the unpredictability in forecasting home prices far exceeds what we anticipated, and continuing to scale Zillow Offers would result in too much earnings and balance sheet volatility," Zillow Group cofounder and CEO Rich Barton said in the company's fiscal third-quarter earnings release. Zillow didn't respond to a request for an interview, and the exact details of what happened haven't publicly surfaced, but the company ended Offers and cut one-quarter of employees.

Big data has become a magical talisman in business. But as with Zillow, many companies make fundamental mistakes that will cost them. To get new and old generations of leaders making the right moves, educators need to reconsider how they teach data science in programs around the country.

Data failures beyond Zillow

Data caressed by artificial intelligence tools are the rage in business because executives are supposed to get insights and connections they wouldn't otherwise—for good reasons. "Data is the currency for digital transformation," says Sheila Jordan, chief digital technology officer for Honeywell. "Data is a thread to create this experience."

"There is a reason why governments and intelligence firms are bullish on big data," adds Lian Jye Su, a principal analyst at ABI Research. "There's not enough human intelligence to go around. It's not cheap to hire the people. And we're swamped with data."

But many projects like Zillow Offers go terribly wrong, and experts estimate failure rates that vary from 60% to 85%.

"Everything starts with a problem you're trying to solve," says Sandeep Kharidhi, general manager of data and analytics platforms and chief product officer at payments and business technology company Deluxe. Or it should. Unfortunately, keeping your eye on the tech can miss what's important.

"An IT-driven approach often leads to technical solutions looking for problems...rather than focusing on what is most important to the business," says Stephen Brobst, chief technical officer at Teradata. One example? A client company that was hot to have A.I. handle inbound customer calls. It worked, except that only human conversations turned into additional sales. Bots dutifully didn't try.

"We see the challenges not in the size of the data sets themselves, but the variety," says Paul Fahey, head of investment data science, asset servicing for Northern Trust. "It's about the size of the data, the complexity, the variety of data, and it being in multiple places."

Need the right learning

One place the situation can change is in classrooms.

"Most of the people who are dealing with data did not have any formal education in it, and if they did, they only had a piece," says Peter Aiken, associate professor of information systems at the Virginia Commonwealth University's School of Business.

The lack of understanding only magnifies an inherent problem in the complexities of data analysis.

"Data models, especially data science and the training models, are not good at things that have not happened before," says Aleksandar Tomic, associate dean for strategy, innovation, and technology at Boston College. "A computer will do whatever you ask it to do, but [the outcome] depends on what you ask."

"[Company leaders] learn about A.I. and the data technology," notes Polo Chau, an associate professor of computing at Georgia Tech. "They have to focus not only on how to use the technology, but why they use the technology and when they use it."

"People should realize there's a limitation to technology," says Oliver Yao, a professor and associate dean for graduate programs at Lehigh University's College of Business. "I do think that people sometimes rely on big data, on technology, too much. The time has come, and they don't have to think, they don't have to do much. They just have to rely on what data tells us to do. We cannot just rely on technology, on data. They're absolutely useful, but we cannot 100% rely on them."

Executives and managers also need to understand the practical limits of data. "All the data we gather, whether qualitative, big data, small data, are based on assumptions," says Usha Haley, W. Frank Barton distinguished chair in international business and professor of management at Wichita State University. "They face reliability and validity problems. They have been gathered for different purposes and they may not actually be shedding light on the problem at hand. Using big data as a talisman isn't helpful."

In short, schools should move to a more holistic consideration of what people need to know. "I hope all the colleges in the U.S., when they educate their students, that students in a business school don't only learn about technical skills but critical thinking and people skills," Lehigh's Yao says.

See how the schools you're considering landed in Fortune'*s rankings of the best business analytics programs, data science programs, and part-time, executive, full-time, and online MBA programs.*