Firms learn more from 'knowledge-gap' failures than mere 'slip-ups,' says study

April 23 2024, by Phil Ciciora

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A study co-written by a team of University of Illinois Urbana-Champaign business scholars and published in *Organization Science* finds that organizational learning from failures can vary significantly based on two factors: the nature of the failures themselves, and the innovation capabilities of the firms involved.

The research investigated organizational learning from failures by dividing the failures into two categories: process-related, that were mostly traced to "slip-ups," versus design-related, that were mostly traced to "knowledge gaps."

More organizational learning was associated with design-related recalls than with process-related recalls, according to research co-written by Gopesh Anand and Ujjal Kumar Mukherjee, both professors of business administration at Illinois.

The two types of failures—slip-ups and knowledge gaps—can be roughly translated into, respectively, "I should have known better" versus "I had no idea I was making this mistake," said Anand, the William N. Scheffel Faculty Scholar and Professor at the Gies College of Business.

"A slip-up is when you know you should be doing something, but you don't do it," he said. "We know we should eat a healthy diet and exercise 30 minutes a day, but we don't always do that, right? That's a slip-up.

"The other failure is not knowing you were making a mistake. Not knowing, for example, that you shouldn't be eating a certain food while taking a certain medication. That's a knowledge gap, and we find that firms learn more from knowledge-gap failures than slip-up failures."

The researchers analyzed data from voluntary product recalls of more

than 100 publicly traded U.S. firms in the medical device and pharmaceutical industries from 2000 to 2016.

They found that firms learned more from design-related recalls than process-related recalls. In other words, slip-up failures didn't improve a firm's performance in preventing subsequent failures, according to the paper.

"This implies that either slip-up failures do not create an impetus in firms encountering them or that it's more challenging for firms to reduce the occurrence of slip-up failures," Mukherjee said.

"In either case, it points to the unresolved challenge of maintaining continuous attention to compliance and the need for deliberate efforts to maintain compliance regardless of the presence or absence of any impetus from slip-up failures."

The scholars also discovered that a firm's accumulated patents and investment in research and development enhanced learning from design-related recalls.

"Firms that place a premium on innovation face a higher risk of failures, which stands to reason: if you're doing more experimental work, you will inevitably have endured more failure," Mukherjee said.

"But experimentation also provides a firm with a solid foundation of knowledge about their resources and capabilities, which ultimately serves to augment the firm's knowledge infrastructure. So that helps firms recover from their failures much, much quicker. It also means they're able to improve their product and their competitiveness much better in the future."

"A key takeaway from our research is not to shy away from innovation,"

Anand said. "Because if you do, sure, you might reduce failure in the short run. But your competitiveness in the long run will be impacted because you're not fostering that culture of innovation within the firm."

"Both the medical device and the pharmaceutical industries are, quite obviously, innovation-driven," Mukherjee said. "Therefore, any sort of competitive advantage that a firm is going to have will come from their ability to innovate, not purely from cost or scale. Which is why firms that have these broad patent portfolios and have made investments in research and development are better 'learners' when there are product recalls. Such firms are much more agile and are able to learn better from their mistakes."

Although the study uses product recalls to identify knowledge-gap and slip-up failures in the pharmaceutical and medical device industries, the categorization could readily apply to failures in other regulated industries as well, including automotive and toys, which also deal with recalls—and even industries that are not as heavily regulated, such as software platforms, the researchers said.

"A culture of innovation encourages the in-depth exploration of the root causes of problems instead of relying on superficial 'Band-Aid' solutions," Anand said. "A real-world example of this is the problems Boeing is currently facing with their quality and safety. They may be suffering the consequences of applying Band-Aids."

More information: Gopesh Anand et al, Learning from Failures: Differentiating Between Slip-ups and Knowledge Gaps, *Organization Science* (2024). DOI: 10.1287/orsc.2021.15663

Provided by University of Illinois at Urbana-Champaign