Scientific Thinking

Idea In Short

Business decisions are full of confident claims: this campaign works, this pricing will hold, this hire will thrive. Scientific thinking asks how we would know. It treats a belief as a hypothesis, gathers evidence that could prove it wrong, and welcomes replication before trusting a result. Research on entrepreneurs suggests the approach can be taught and that it improves outcomes, including fewer costly pivots. This article explains the method in plain terms, shows how managers can run small tests, covers the traps of correlation and confirmation, and offers a routine for turning opinions into questions that data and repeated trials can answer.

A founder is sure that customers want a premium tier. Interviews are warm, a competitor has one, and the team has already designed it. A colleague asks a simple question: "What would we see in the next three weeks if you are wrong?" The founder realizes that no one has defined an answer. The team designs a landing page test with a price, and the result shows that most interested visitors choose the basic plan.

The method in plain words

Scientific thinking is a way of learning that others can check. A piece in MIT Technology Review describes the scientific method at its core as a recipe for learning about the world in a systematic, replicable way: start with a general question based on experience, form a hypothesis that would resolve the puzzle and generate a testable prediction, gather data to test the prediction, and evaluate the hypothesis relative to competing hypotheses.1

Four ideas stand out. The question grows out of experience. The hypothesis must be testable. The data are collected to test it. And competing explanations are kept in view.

The same article adds that data are essential, but theory, intuition, and imagination remain important too, to generate hypotheses, to devise creative tests, and to interpret the data we

collect. Scientific thinking does not replace judgment. It disciplines it.

Evidence that managers can learn it

The most direct evidence comes from entrepreneurship. Researchers taught one group of startup founders to formulate theories, derive hypotheses, and test them, and compared them with a control group. A discussion paper reports that a large-scale replication of the first study, covering 759 firms in four randomized controlled trials, confirms that a scientific approach to entrepreneurial decisions can be taught and leads to superior results, and it finds that the approach generates fewer pivots, which is associated with higher performance.2

A summary from SDA Bocconi School of Management reports that the study, published in the Strategic Management Journal and reprised in Harvard Business Review, confirms that entrepreneurs can be taught to make decisions scientifically, with superior performance across various contexts. It adds that the hypotheses should be tested through experiments and reformulated if proved wrong.3

Fewer pivots do not mean fewer changes. The scientific approach makes changes more deliberate, because the team knows what it expected and what it learned.

Theory first

A common objection is that testing wastes time because the market is unpredictable. The research suggests that the opposite is true when the test is guided by a theory. A manuscript from City, University of London on the scientific approach notes that it promotes a clear definition of the business problem and its links to potential solutions and the environment, and that formulating theories is the backbone of articulating and testing hypotheses, making experiments more precise and less a matter of trial and error.4

In practice, a theory is a short statement of why you expect something to work. "Small accounting firms will pay for a scheduling tool because missed client calls cost them billable hours" is a theory. It generates hypotheses about who the buyers are, what they pay, and what they will do.

Write the theory down. A written theory can be challenged, refined, and compared with

results. An unwritten one shifts every time the team talks.

Correlation and cause

Business data mostly show correlations, and managers often want causes. The MIT Technology Review piece observes that in business most of what we observe is correlation, we do X and Y happens, yet we often want to know whether X caused Y, such as how many additional units an advertising campaign caused consumers to buy.

Replicating the conditions of a controlled experiment can be difficult in business, but it is often possible to approximate. Compare similar groups where one gets the change and the other does not. Stagger a rollout so that some regions go first. Randomly assign who sees which version of a page.

When you cannot run a test, say so, and treat conclusions as provisional. Name the other explanations that could produce the same pattern.

Experiments that persuade

Experiments do more than inform. Harvard Business School research by Rebecca Karp and colleagues, discussed in the school's Working Knowledge, shows that experiments can be used to make the case for a new idea as well as to gather data, and that leaders often use them to persuade audiences about key decisions.5

This dual role has a risk. A test designed to win an argument may be built to succeed. Separate the question of what is true from the question of how to persuade, and design the test for the first before using it for the second.

A good practice is to agree on the success criteria before the test begins, and to record them. When the result arrives, the criteria prevent after-the-fact reinterpretation.

Replication and humility

Replication means checking that a result holds when repeated. A pilot that works in one store may not work in another, and an email subject line that wins in March may lose in September. Before scaling a change, repeat the test in a different place or time.

Replication also guards against chance. Small samples throw up striking results that disappear on retesting. A team that scales on the strength of one lucky pilot pays for the lesson later.

Build humility into the process. Ask, "What would make us doubt this?" and "Who could repeat this and see if they get the same answer?" These questions make results sturdier and teams more honest.

Guarding against bias

People favor evidence that supports what they already believe. Counter it by deciding in advance what result would change your mind, by assigning someone to argue the opposite case, and by asking an outsider to review the design.

Report all results, including the ones that disappoint. A team that publishes only the wins loses the information needed to learn, and it trains people to hide bad news.

Beware of measuring what is easy and not what matters. Clicks are easy to count, and customer value is harder. Choose measures that connect to the theory.

A routine for managers

Begin with a belief that matters to your plan. State it as a hypothesis: "If we do this, we expect that, because of this reason." Then decide on the smallest test that could show it wrong.

Set a time limit, a sample, and a decision rule. For example, "We will run the offer to 200 visitors for two weeks. If fewer than 5 percent click the premium option, we drop it." Run the test, record the result, and write what you learned.

Finally, share the learning. A short note describing the question, the test, the result, and the decision builds an institutional memory that new leaders can use.

A hypothetical example

Imagine a hypothetical online retailer that believes free shipping will raise sales. Finance

worries about cost. The team runs a test in which half of visitors in two regions see a free shipping threshold and half see the current terms. Sales rise for the offer group, but the average order falls and margin does not improve.

The team repeats the test with a higher threshold, which raises order value and margin. It then rolls out the second version. The case is invented, but it shows how a small, repeated test can beat a confident belief.

Cautions

Do not use science as a ritual. Running tests without a theory or a decision rule produces numbers and no learning.

Avoid delay. Some decisions cannot wait for a test, and some tests cost more than the error they would prevent. Match the effort to the stakes.

Finally, remember the limits. Experiments measure what you design them to measure, and they can miss effects that unfold slowly or fall outside the test. Combine testing with judgment about the wider context.

- 1Scientific thinking in business
- 2A scientific approach to entrepreneurial decision making: large scale replication and extension
- 3The science of navigating business uncertainty
- 4Decision-making frameworks for entrepreneurs under uncertainty
- 5Socializing an idea: experiments can help convince your audience

Summary

Scientific thinking turns decisions into questions that evidence can answer. The method starts with a puzzle, forms a testable hypothesis, gathers data, and compares the hypothesis with alternatives, and it values replication before belief. Studies of entrepreneurs suggest that teaching this approach leads to better results and fewer pivots. Leaders still need theory, intuition, and imagination to generate good hypotheses and to read results. The

discipline lies in stating what would change your mind before you look. Choose one belief that drives your current plan, write the test that could refute it, and agree on the result that would make you change course.