

LEADER · 7 MINUTE READ

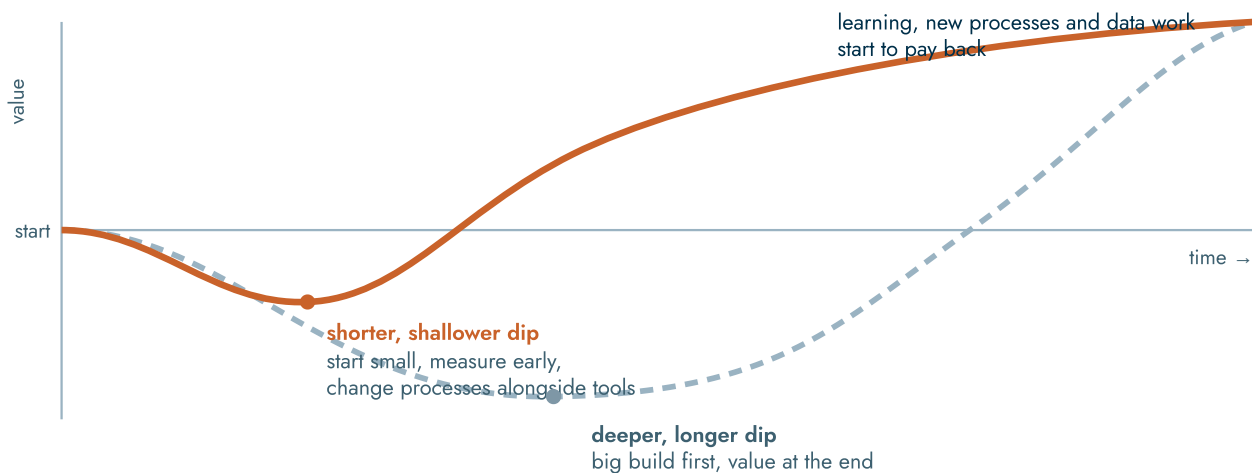
The AI J-curve: why results dip before they rise

AI usually pays back only after people, processes and data adapt, so results often dip first. Plan for the dip, shorten it, and review it honestly.

What it is

When a team starts using AI seriously, results often go down before they rise. Measured results and real results can both dip. On a chart the line looks like the letter J: a drop, then a climb. This is the **J-curve**.

The J-curve: measured results can dip before they rise (illustrative shapes, not data; same end point)



The reason is that AI is a **general-purpose technology**: a technology, like electricity or the computer, useful in almost any kind of work, but paying back only once the work changes around it. People need time to learn, processes need redesigning and data needs cleaning. That effort costs time and money before it produces anything you can count.

Think of a kitchen with a new layout. For a while the cooks are slower, reaching for the wrong drawer. Once they adapt, it runs better than before.

Two pieces of research describe related patterns: one about how the dip is measured, one about real losses in firms.

- Economists Erik Brynjolfsson, Daniel Rock and Chad Syverson, in "The Productivity J-Curve: How Intangibles Complement General Purpose Technologies" (American Economic Journal: Macroeconomics, 2021, doi.org/10.1257/mac.20180386), argue that the investment comes first in **intangibles**: skills, new processes and data. These are poorly captured in normal measures, so early productivity is understated and later productivity looks stronger than it really is.
- A study by Kristina McElheran, Mu-Jeung Yang, Zachary Kroff and Erik Brynjolfsson, "The Rise of Industrial AI in America: Microfoundations of the Productivity J-curve(s)" (US Census Bureau working paper CES-25-27, 2025, census.gov/library/working-papers/2025/adrm/CES-WP-25-27.html), using US Census Bureau data on manufacturers, found significant initial productivity losses, followed by longer-term gains among firms that survived. The authors link the losses to **adjustment costs**, the cost of changing how work is done, and found them mostly among older, established firms.

Neither source promises how long the dip lasts, and nor does this guide: it depends on the organisation, the task and how the change is managed.

Why it matters

- A normal dip can be mistaken for failure, and a project cancelled just before it pays back.
- A leader who expects the dip can plan, budget and explain it in advance.
- How you introduce AI can affect how deep and how long the dip is.

- Not every dip turns into a rise. Without review points, a failing project can carry on for too long.

How to do it

1. **Name the causes of the dip in advance.** Expect learning time, process change, data clean-up and **double running** (old and new ways side by side).
2. **Start small.** Pick one team and one or two tasks rather than a whole department. A small dip is easier to absorb (see guide 16).
3. **Measure early.** Time the task before AI and again after a few weeks, recording quality as well as speed (see guide 28).
4. **Change the process, not just the tool.** Ask which steps, approvals or hand-offs should change now that AI drafts part of the work.
5. **Reuse what works.** When one team finds a good prompt or way of working, share it so others skip part of their dip (see guide 29).
6. **Set review points.** Agree dates where a named person looks at the measures and decides: continue, change course or stop.
7. **Keep a person accountable.** A named person checks the AI output and owns the decision at each review point.

Example

A finance team introduces an AI assistant to draft the monthly management report.

Without a plan: in the first month the report takes longer. Staff are learning, figures are checked line by line and the old spreadsheet process still runs alongside. The director concludes "AI does not work for us" and stops.

With a plan: the director tells the board before starting:

```
We are trialling AI on [task] in [team] for [period].
Expect the first [few weeks] to be slower: people are learning,
we are cleaning [data source] and running the old process in parallel.
We will measure [time per report] and [error count] at each review on [dates].
At each review, [name] decides: continue, change course, or stop.
We will stop if [measure] has not improved by [date].
```

In this example, by the second review the team has simplified approvals and cleaned the data feed; report time is back to where it started. By the third, it is lower than before, with the same error count. The board expected the dip, so nobody panicked.

Common mistakes

- **Judging the project in the first few weeks.** Fix: agree in advance when you will judge it and on which measures.
- **Promising the board fast savings.** Fix: present the dip as part of the plan and report measured results (see guide 28).
- **Adding AI to an unchanged process.** Fix: redesign the steps around the tool and drop those it makes unnecessary.
- **Double running forever.** Fix: set a test for when the old way can stop, and a person who signs it off.
- **Treating every dip as normal.** A dip that never turns is a signal. Fix: if the review points show no improvement, change course or stop, and record what you learned.

Try it this week

1. Pick one AI project that is running or planned in your area.
2. Write down which causes of the dip apply: learning, process change, data clean-up, double running.
3. Choose two measures, one for speed and one for quality.
4. Set three review dates and name the person who decides at each.
5. Draft three sentences for your board: a dip is expected, and how you will know if it lasts too long.

Going further

- **Budget for intangibles.** Put training, process redesign and data work in the plan as visible costs.
- **Use evaluations to shorten double running.** A small set of test cases with known answers lets you check the new way faster and more fairly (see guide 27).

- **Build the support around the AI early.** Saved instructions, checklists and review steps steady results sooner (see guide 23).

Key words

- **J-curve:** a pattern where results dip after a change, then rise above where they started.
- **General-purpose technology:** a technology useful across many kinds of work, which pays back only once work is reorganised around it.
- **Intangibles:** investments you cannot touch, such as skills, processes and organised data.
- **Adjustment costs:** the time and money spent changing how work is done.
- **Double running:** running the old and new ways side by side while you check the new one.
- **Review point:** an agreed date where a named person decides to continue, change course or stop.