



## How to Tell the Age of an Innovation

**All innovations make the journey from “eureka” to “meh”. But they don’t do so according to fixed rules.**

Innovation never sleeps. It’s a relentless pursuit of the new and different, spurred by the awareness that yesterday’s breakthrough is today’s bare minimum for staying in the game. The competitive advantage to be reaped from new discoveries has a limited shelf life.

One factor determining the true age of an innovation is the rate of subsequent developments in the field or industry. Another is the rate of adoption – how quickly the copycat effect takes hold among competitors. Your shiny new toy is less impressive if all your rivals can flaunt the same bauble.

*Diffusion theory* is the area of academic research that investigates how innovations spread among organisations. Our recent review paper in ***Academy of Management Annals*** combs through 20 years of diffusion research to arrive at conclusions that may change – or at least complicate – what you think you know about the innovation copycat effect and what it means for competitiveness.

### Adoption rates

The received wisdom on diffusion argues that under normal conditions, a new practice or technology will spread via imitation until it becomes dominant in the field, industry, etc. The net result is that firms become less differentiated because they are all

copying each other. Common sense would seem to bear this out.

However, in surveying 178 diffusion-themed research articles from the past two decades, we saw that the very opposite was often the case. Once an innovation started freely circulating in the bloodstream of an industry, it seemed to cause mutations rather than uniformity.

To explain this phenomenon, let’s look at some examples. In a 2009 paper for ***Strategic Management Journal***, Henrich examined the sea-freight craze of the late 1980s and 1990s: so-called “fast ferries” that many claimed would push conventional ferries to the margins of the industry. Orders of fast ferries rose sharply until the mid-to-late 1990s, then levelled off. One reason for the slowdown in sales was rising fuel costs, which especially affected the profitability of gas-guzzling fast ferries. Another reason was that the fast ferry technology was judged ill-suited for many water routes (e.g. a Hawaii-based operator had to stop running two ferries to avoid harming whales in local waters). Many shipping corporations sold their newly acquired ferries after experiencing costly technical problems. As news of these mishaps leaked out, operators re-evaluated the appropriateness of fast ferries for their business. For some, the technology still made financial sense;

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others decided they were better off sticking to their existing fleet. Hence, adoption became a matter of suitability instead of inevitability, injecting a new point of differentiation into the industry.

Another illustration of non-linear diffusion is Ivana's research on the **reverse mergers** (RM) boom of the 2000s. She charts the rise and fall of the little-studied financial practice – by which companies entered public markets without undergoing an IPO, foreshadowing **today's SPAC boom** – by noting the contrasting forces affecting its diffusion. RMs proliferated in the mid-to-late 2000s, as information about the practice propagated by word-of-mouth and in the media. The meteoric ascent of RMs, however, drew sceptical attention from regulators, investors and the media, who viewed them as a way for companies to circumvent the scrutiny that normally accompanies an IPO. Toward the tail end of the decade, the controversy around RMs spread farther and wider than the practice itself. Consequently, RMs became too hot to handle, growing even more rare as the 2010s went on.

Early adoption of innovations also carries risks that can complicate diffusion, as shown in Henrich's analysis of the **roll-out of the DC-10 and L-1011**, two functionally similar aircraft models. Less than one year after the DC-10's official 1971 debut, design flaws in the cargo door caused a blow-out on one American Airlines plane, which was forced to make an emergency landing. Two years later, the crew and passengers of a Turkish Airlines flight were not so lucky; an unhinged cargo door sent the plane into an irrecoverable tailspin. All 346 souls aboard lost their lives, in what was at that time the deadliest air crash to date. This might have been the end of the DC-10, but for production delays with the competing L-1011 model. Blessed with first-mover advantage, McDonnell Douglas had time to fix what was wrong with the DC-10, which ultimately became a success. But things could have turned out very differently, had the L-1011's initial steps toward adoption been smoother.

Innovative practices can foment diversity as they spread based on how they interact with a firm's existing competencies. Vibha's work on the **adoption of corporate venture capital** (CVC) found that managers' approaches to the practice varied greatly according to their experience. CVC managers with firm-specific experience took a far more strategically oriented stance, with a greater proportion of acquisitions, as compared to unit managers from an investing background, who opted more often for the financially motivated move of exit via IPO.

### **The diffusion of differences**

These examples reflect risks that should be

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considered before adopting a new innovation: misalignment (fast ferries/CVC), societal backlash (reverse mergers) and the faults endemic to early-stage technology (the DC-10). Neglecting any one of these could result in financial and/or reputational losses.

On the other hand, innovations that clear all three bars could confer considerable competitive advantage. Again, a research example supports this idea: Henrich's work on **innovation in the shipping industry** describes how two path-breaking innovations – post-Panamax container ships and double-hull oil tankers – received surprisingly reticent take-up by the industry. In both cases, uncertainty about the value of the technology gave prospective adopters pause. The slow pace of adoption gave early buyers (such as Maersk, the world's largest container ship operator) sizeable competitive advantage, allowing them ample time to recognise the benefits of the technology and double down before more cautious competitors knew what was happening. Yet, in a sense, Maersk was luckier than it was smart: It was better situated within a network of partners and suppliers to receive good information and act on it quickly. In other words, it was more a smart imitator than a pioneer.

Our review paper suggests that innovation doesn't age according to fixed rules. Adoption depends on how the particular characteristics of a new technology or practice match those of potential buyers. If the combination is right, even copycats can soar above their peers. Diffusion, then, very often fuels industry divergence rather than convergence.

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