



The Thin Red Line of Success

When competing in an innovative new market the benefits of an early lead can't be over-estimated.

When August Dvorak patented a simplified keyboard in 1936 tests proved its design was faster, and less prone to mistakes than the original QWERTY model. Despite these superior characteristics it was a commercial failure. Betamax video recorder had a similar fate when it competed for custom against the VHS model as did CP/M when up against MS/DOS.

Why do some innovative products come to dominate an industry while superior products fail?

When similar innovative products are released at the same time, chance events and social information processing have a role in making or breaking a product's success. Early path leaders get the advantage as consumers copy the decisions of others before them and critical mass gives them a commercial advantage in making the related goods cheaper.

The situation is slightly more complex in business where corporate leaders must look at how well an innovation operates as well as its business characteristics when making a decision. Still, choices are often based as much on the decisions of competitors as technical merits.

Not surprisingly these diffusion processes do not reliably spread the best innovations and the superior product can be overlooked.

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The battle of the "twins"

A good example is the comparison of two very similar early model wide-bodied jets produced in the 1970s: the McDonnell Douglas DC-10 and Lockheed L-1011, two aircraft similar enough in commercial applications and engineering aspects to be thought of as "twins". Component delays slowed the L-1011's entry into the market by a year, giving the DC-10 the early advantage leading to a gap in sales of about 250 aircraft.

Two major crashes caused by design flaws in the DC-10 and its temporary grounding by the Federal Aviation Administration did little to dull airlines' preference for this aircraft and in business terms the DC-10 was considered a relative success. Not so the L-1011 which had no follow-up model and caused its manufacturer Lockheed to exit from the civilian aircraft market entirely.

The thin red line

In seeking to understand why the DC-10 succeeded and the L-1011 failed my research, **The Thin Red Line between Success and Failure: Path Dependence in the Diffusion of Innovative Production Technologies**, co-authored with Marc- David L. Seidel, Associate Professor of Organizational Behaviour and Human Resources at Sauder School of Business, found evidence to

support the hypothesis that, contrary to classical assumptions, the diffusion process of successful and failed innovations is similar and the fate of innovative new products is largely affected by random components and heavily influenced by social information processing.

The study found that in their rush to get the competitive advantage from the introduction of these new wide-bodied jets, airlines paid perhaps too much attention to social sources rather than trusting their own judgments of the technical merits of the new aircraft. When updating their fleet, decision-makers relied heavily on the adoption choices of their competitors – particularly those with a similar size, market, route or strategic niche – and made the inference that any information competitors had about the design must have been positive.

Using the same logic, decision-makers were influenced by rivals' abandonments – aircraft models which were sold and replaced. In doing so they found themselves at a competitive disadvantage.

Boeing vs Airbus

There is potential for history to repeat itself as Boeing's 787 Dreamliner and its rival the Airbus A350 head to market today. Early groundings and production delays of the Dreamliner resulted in airlines snapping up more of the rival Airbus before it had even completed flight testing or carried passengers. Whether the right choice has been made is still to be seen.

In any case, there are lessons for to be learned for both the producers and consumers of innovative technology and processes.

For the producers, it's a race to get ahead: a race that is very intense from the start. The success or failure of an innovation stems back to a short period of time around its launch. Once a firm has the lead, the attractiveness of its product increases exponentially as it becomes more popular and production costs reduce due to economies of scale. If companies fall behind at this stage they are likely to lose the competition, due solely to the social processing of information.

To benefit from this social information processing, companies need to avoid delays in early production and have the ability to spread products quickly without skimping on quality. Customers are just as aware of abandonments of new technology among their competitors as they are of adoptions.

For companies investing in new technology or processes, the research is a warning to pay less

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attention to what others are doing. Too much reliance on social information processing and the amplification of small initial differences (which may have little or no impact on a firm's operations) could result in the purchase of an inferior product affecting the company's own ability to compete.

Path dependence: More random than we think

The importance of path dependence and initial conditions for the evolution of technologies, strategies and market competition has often been noted but is not sufficiently appreciated in research or practice. Competition among the makers of innovative production assets and the users of these assets is a highly uncertain world. Early events introduce significant "noise" into the diffusion process which can cause inferior products to spread more quickly suggesting the path dependence which sees one product succeed while another fails is perhaps more random than we may expect.



Henrich R. Greve is Professor of Entrepreneurship at INSEAD.

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