

From quantum research to commercial value

Five connected levers for turning scientific progress into practical adoption.

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THE PROBLEM

Scientific progress alone does not create a viable market. An emerging technology also needs customers who can use it, businesses able to commercialise it, and an industrial base that can deliver it. My academic analysis examined the gap between research strength and sustained economic value.

MY APPROACH

I combined innovation-systems research with the practical questions of strategy: where is progress blocked, who should act, what could go wrong, and why would the intervention be worth funding? Five executive frameworks connected proposed actions with delivery responsibilities, risks and illustrative financial models.

THE CENTRAL FINDING

Build the capability to adopt a technology alongside the technology itself.

WHAT THIS SHOWS

A way of translating a complex field into a sequence of commercial decisions: understand the barriers, develop the capability, make the investment case and test the route to adoption.

Status: Academic analysis. Interventions are proposed and financial benefits are modelled; this note does not report delivered client outcomes.

Five levers. One connected system.

The analysis connects technology, organisations and users rather than treating commercialisation as a single transfer from laboratory to market.

01 CREATE CREDIBLE EARLY DEMAND

Use lead-customer procurement to give emerging ventures a route to revenue. Spread technical risk across a portfolio and release funding against milestones. The financial question is whether dependable demand can make private investment more attractive.

02 FUND THE ABILITY TO SCALE

Assess management capability as well as scientific novelty. Capital allocation should consider whether a venture can develop commercial routines, deliver products and grow. The paper compares illustrative allocation scenarios; their returns are assumptions, not observed results.

03 BUILD THE MISSING INDUSTRIAL CAPABILITY

Connect research to the skills, specialist components and manufacturing capacity needed for delivery. The value-chain lens asks where economic value is created, where it may be lost, and which complementary capabilities an intervention should build.

04 MAKE STANDARDS PART OF THE STRATEGY

Consider secure communications, certification and international dependencies alongside the technology. The analysis treats regulatory coherence as a possible commercial advantage while recognising fragmentation and supply-chain risks.

05 ENABLE THE ORGANISATIONS THAT WILL ADOPT IT

Develop people who can translate between science and business, and embed that expertise in user organisations. An illustrative discounted-cash-flow scenario explores how earlier adoption could change the timing of value; it does not establish realised returns.

Source and scope. Adapted from Nitesh Chawda's assignment for Emerging Markets for Quantum Technology, University of Sussex. This original website summary removes identifying organisational detail and condenses the author's frameworks. It is an academic work sample; no university endorsement, adoption or client delivery is asserted.