Testing an AI business case the way an actuary prices a product

For CFOs, COOs and boards at insurers, asset managers, platforms and advice firms: how to test an AI or technology business case with the same discipline an actuary applies to pricing a product, before the money is committed.

IN BRIEF

The problem

AI business cases tend to arrive with one set of favourable assumptions, benefits that start on day one, and costs that stop at the licence fee.

Why it happens

The case is usually built to win approval rather than to price the risk, so nobody is asked what it looks like when the assumptions are wrong.

What to do

Rebuild the case with a best estimate and a prudent basis, include every cost of running the tool, and set the experience you will monitor after launch.

01

Why AI business cases disappoint

Many technology business cases read like sales illustrations. They use a single set of assumptions, every one of them favourable. The benefits start in the first month, the whole team uses the tool from launch, and the cost line stops at the licence fee.

Pricing a financial product works differently. An actuary sets a best estimate for each assumption, adds a margin for what is uncertain, counts every expense the product will carry, and plans how to monitor the experience once it is sold. An AI business case is the same exercise: pricing uncertain future cash flows and challenging the assumptions behind them.

In the Bank of England and FCA survey published in November 2024, 75% of firms said they were already using AI, and 46% said they had only a partial understanding of the AI they use.

02

Price the case like a product

Take each part of the case in turn and ask what an actuary would ask of a pricing basis.

Benefits are a best estimate, not a promise. How many hours does the tool save per task, on how many tasks, once checking time is taken off? What evidence supports that: a vendor demonstration, a pilot on your own data, or experience elsewhere?

Take-up is an assumption. In a product, it would be persistency. Some people will use the tool fully, some occasionally and some not at all. Assume a ramp, and say what it rests on.

Time saved is not money saved. Hours become cash only when they reduce cost or let the same team handle more business: fewer hires, less overtime, more cases. If the time is simply absorbed, the saving is real to the team but invisible in the accounts. Decide in advance which it will be.

Expenses include everything. Data preparation, integration with existing systems, staff time to check the tool's output, monitoring, training, and the cost of switching supplier if you need to. The licence is often the smallest of these.

Risk has a cost. An error that reaches a client can mean remediation, complaints and supervisory attention. The FCA has said it does not plan extra rules for AI and will rely on existing ones, including the Consumer Duty and the Senior Managers and Certification Regime. The firm remains accountable for the outcome, whichever supplier built the tool.

03

The same case on three bases

The table shows one illustrative case on the vendor's assumptions, a best estimate and a prudent basis. The tool and the task are the same in each column; only the assumptions change.

ILLUSTRATIVE EXAMPLE

One AI business case, three sets of assumptions

	Vendor's case	Best estimate	Prudent
Hours saved a year at full use	25,000	22,000	18,000
Hours spent checking the output	0	2,500	3,500
Share of time saved that becomes cash	100%	75%	60%
Take-up in year 1	100%	40%	25%
Upfront cost	£300,000	£420,000	£520,000
Running cost a year	£120,000	£180,000	£210,000
Cumulative position after 5 years	**£4,100,000**	**£874,000**	**-£596,000**
Pays back in	**Year 1**	**Year 3**	**Beyond year 5**

Illustrative assumptions: staff time at £40 an hour; take-up of 40%, 70%, 85%, 90% and 90% in years 1 to 5 in the best estimate, and 25%, 50%, 65%, 70% and 70% in the prudent case; checking hours are shown at full use, scale with take-up and are deducted before the cash share; no discounting.

The vendor's case pays back in its first year. On a best estimate the same tool pays back in its third year, and on prudent assumptions it doesn't pay back within five years: at the take-up it settles at, it would need about 18 more. None of these is the

right answer. The board's question is which basis it is approving, and whether the case still stands on the prudent one.

> FROM EXPERIENCE
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> Early in my career at Aviva I was the actuarial lead within an IT team automating policy data transfers (Prophet). At Prudential I migrated conventional savings and valuation models to MoSes. Both were technology projects with an actuarial core, and both depended on assumptions about data, timing and people that needed testing before anyone relied on them.
>
> That is how I approach an AI or technology business case. The questions are the ones I would ask of any pricing basis: what is the best estimate, what margin does the uncertainty need, what has been left out, and how will we know early if we are wrong?

04

Set the monitoring before launch

A priced product is monitored against its assumptions from the first month. Do the same with an AI tool. Agree three or four measures before launch, such as take-up, time saved per task, the rate at which output is corrected, and the cost line the case said would fall. Review them against the business case each quarter, and agree in advance what result would lead you to scale back, renegotiate or stop.

Questions for the board

01 Which line of the profit and loss account will change if this works, by how much and by when?

02 What take-up have we assumed in each year, and what is that based on?

03 How much of the time saved will become money, through fewer hires, less overtime or more business handled?

04 What does the case look like on prudent assumptions, and would we still approve it?

05 What will it cost to check the tool's output, monitor it and change supplier if we need to?

06 Who is accountable for the outcomes the tool affects, and how will we know within three months if the assumptions are wrong?

A business case that works only on the vendor's assumptions hasn't been tested yet. Pricing it properly usually takes days rather than weeks, and it can change the decision or improve the contract terms.

If this is on your table, a 30-minute conversation is usually enough to tell whether I can help.

Talk to Mark

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ABOUT THE AUTHOR

Mark Woodruff is a Chartered Actuary (FIA) and Chartered Financial Planner (FPFS). He spent 15 years pricing and building products at Aviva, Prudential, Partnership and St. James's Place, then more than seven years founding and running advice firms through to a substantial sale. Through Mark Woodruff Consultancy he works with financial services firms on product, pricing, distribution and governance.

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