



**Interimconsult**

## **Business of Innovation**

### **The Problem With Innovation Business Cases**

# Overview

Whilst not always the case, 'Return on Investment' (ROI) is usually viewed through a financial lens. The significance of social, economic and environmental value creation is, disappointingly, usually viewed as less important.

Investors expect a financial return so when it comes to investment in innovation there will always be a demand for some form of financial modelling of the return.

But there is a danger that attempts to define the value that is created from innovation using a handful of crude measures can give misleading results about investment decisions. When it comes to investment analysis, the results of the financial model are actually less useful than the thinking, insights, and experience the process of investment analysis brings together.

The application of textbook models and traditional approaches to analysing market size, customer adoption, costs and price can, by virtue of their seductive complexity, create a false sense of comfort and – even worse – a failure to look at the bigger picture. There can be no doubt that monte-carlo risk valuation, discounted cash flow analysis and net present value calculation provide valuable insight – but the complex nature of innovation means it is context that matters most.

Many of the limitations of this type of analysis can be overcome by a different approach that involves looking at the impact of 'what-if' scenarios and their links to the different types of value creation, not just financial.

This type of whole-system scenario modelling and wider assessment of non-financial value creation provides greater insight into the trends, issues and triggers that influence levels of success and failure.

One of the biggest limitations of ROI analysis is that the greatest influence on innovation outcomes are the innovation system's actors – the people creating the supply of ideas, the development of solutions, the narratives they create and, ultimately, the actual innovations that solve problems and create value.

People are the reason why innovation is complex, there is no simple formulae to take an idea and turn it into some form of sustainable value – the innovation journey can be a random walk and whilst marked by key milestones, remains an infinite journey. Unlike complicated problems, where a fixed solution can solve a clearly defined problem, complexity means that there is always 'a next step'.

So why does this matter, when it comes to the business of innovation, and the development of business cases? Understanding the difference between complication and complexity is important. ROI analysis can be complicated, but complication does not mean greater certainty when it comes to modelling the complex factors that affect innovation – complicated analysis provides not guarantee of the innovation outcome that is *turning ideas into sustainable value*.

Real-world complexity is the Achilles heel of forecasting ROI.



*At the beginning of each year, while many individuals make New Year's resolutions, organisations make forecasts about the year ahead. Both have high fallibility. Forecasts are predictions about what will happen in the future based on information currently available. As such, they are exercises of imagination, which studies have shown are rarely correct in their particulars.*

*Despite being reliably incorrect, savvy leaders can find strategic value from forecasts. When reviewed in aggregate, they capture the zeitgeist. We just need to ask the right questions: What do experts believe is important and likely enough to forecast? Where do they agree, and more interestingly, where do they disagree? Even if forecasts are specifically wrong, what do they indicate about the underlying trends and pivotal issues?*

**Martin Reeves, Suvasini Ramaswamy, and Annelies O'Dea**

**Harvard Business Review, March 2022**



# The Innovation Forecasting Challenge

Creating sustainable value from innovation is not guaranteed. Product development often fails to deliver a forecast ROI despite what appears to be comprehensive analysis that presents an unquestionable outcome that a proposed investment will be a success.

This is because the valuation of forecast outcomes can be somewhat arbitrary. Known but often overlooked shortcomings include:

- **Assuming prices and margins in real-terms will remain the same or grow forever** – market dynamics affect pricing. Competitor discounting, disrupted value chains and existential events such as inflation or climate change will happen. Economies are cyclical – change is a matter of when, not if and this affects prices and costs.
- **Assuming the timing of key events is known** – one of the key variables in every investment forecast is that of when sales take-off, and the shape of the customer adoption curve. But timing is affected by a huge number of factors. A case in point is the impact of the Covid-19 pandemic and working from home, where a shift that was always anticipated as inevitable has been accelerated from decades to months. For example, MS Teams users grew from 2 million in 2017, to 75 million in 2020 and 270 million in 2022. This could never have been predicted in any business investment case.
- **Sometimes things don't work** – innovation is not a zero-risk game. Projects fail, and it is not just something that happens to smaller companies. Google's plans to deliver global internet access to remote areas via a fleet of floating balloons in the stratosphere, ironically named Loon, was shut down in January 2021 despite almost ten years of development that's included over 20 balloon crashes. The Google X Laboratories Director said "Sadly, despite the team's ground-breaking technical achievements over the last 9 years [...] the road to commercial viability has proven much longer and riskier than hoped."

Estimating financial return when costs, sales and margins are all subject to so much uncertainty – despite extensive analysis – means forecasting ROI can be near impossible.

## What is Return on Investment?

Return on Investment (ROI) is a simple ratio that measures the net profit (or loss), divided by the investment cost. If an organisation invests £100,000 cost, and receives a profit of £25,000, the ROI calculation is:

$$\text{ROI} = (\text{Net Profit} / \text{Cost of Investment}) \times 100$$

$$\text{ROI} = (£25,000 / £100,000) \times 100$$

$$\text{ROI} = 25\%$$

So when it comes for forecasting, the ROI calculation is reliant on the accuracy of the estimated profit forecast, so an inaccurate forecast will lead to an inaccurate ROI calculation.

And estimating profit and costs is notoriously difficult – with many examples of failure.

## The Art of Forecasting

"We don't like their sound, and guitar music is on the way out," Decca Records about The Beatles, 1962.

"There is no reason anyone would want a computer in their home," Ken Olson, co-founder of Digital Equipment Corp., 1977.

"Apple's iPhone is the most expensive phone in the world and it doesn't appeal to business customers because it doesn't have a keyboard which makes it not a very good e-mail machine..." Steve Ballmer, Microsoft CEO, 2007.

"Children just aren't interested in witches and wizards anymore," an anonymous publishing executive told J.K. Rowling in 1996.

# What do we mean by complication?

Complicated challenges can be hard, but the problems they address, and their solutions are finite. Like a jigsaw puzzle, they may take time to solve but finding your way through the maze of complication has a starting point and an end point, albeit the journey to get there may be different for everyone.

Most of the factors that influence complicated problems, or the way the factors vary in different circumstances, are known in advance. The disciplines of engineering and science solve complicated problems all the time. Product development for mass market applications is difficult and demands a lot of creativity, but ultimately products and service are continually being developed to solve existing problems.

If a solution is available to a known problem, the scale of the market or adoption of the innovation can, through careful segmentation of user volumes and comparison with alternative solutions, be forecast with some degree of accuracy in the very short-term.

## Complication and Errors – A Word of Caution

Even with complication comes the potential for errors – and in financial reporting and modelling, spreadsheets errors can be a common cause.

- **Conviviality** – in late March 2018, Bargain Booze’s owner Conviviality had its share prices suspended after two profit warnings in the space of a week wiped more than 60% of its market value. The first warning was due to a £14m hole its forecast due to a spreadsheet error and the omission of a £30m tax bill due at the end of the month. One month later, after a failed attempt to raise funds, went into administration only 2-weeks after the error.
- **Edinburgh Hospital Opening Delay** – In 2020, a spreadsheet error from 2012 looking at the specifications for air flow in critical care rooms at the £150m hospital for children and young people was not spotted. Independent checks found the critical care rooms were operating with the wrong air flow. The planned opening of the hospital in July 2019 was cancelled at the last minute and remedial work worth £16m had to be carried out – the hospital was empty and unopened until March 2021.
- **Marks and Spencer** – In 2016, M&S had a similar mishap with its quarterly trading statement when, just 6 hours after announcing sales growth of 1.3%, it had to release a correction saying that sales had in fact fallen by 0.4%.



# What do we mean by complexity?

Innovation happens in a complex system comprising a mix of people, processes, technology, and culture, surrounded by an industry ecosystem, both of which are influenced by what is best described as the whole system.

Making innovation happen means changing the complex system's mix to create a systemic capability to innovate that continues to evolve and adapt over time.

With so many system attributes involved estimating returns on investment from innovation is at best, a form of art. Innovation outcomes vary due to complexity and context.

This is undeniably true since people are a part of the innovation system – variations in behaviours, competency, capacity, experience, and not least culture, lead to wholly different outcomes, even in what appear to be similar conditions.

Context means that some teams perform better than others when faced with similar problems as the path along the infinite innovation journey is laid over time. Future steps are influenced by history, the acquisition of new knowledge and the information gathered along the way. And how it is used is a critical success factor.

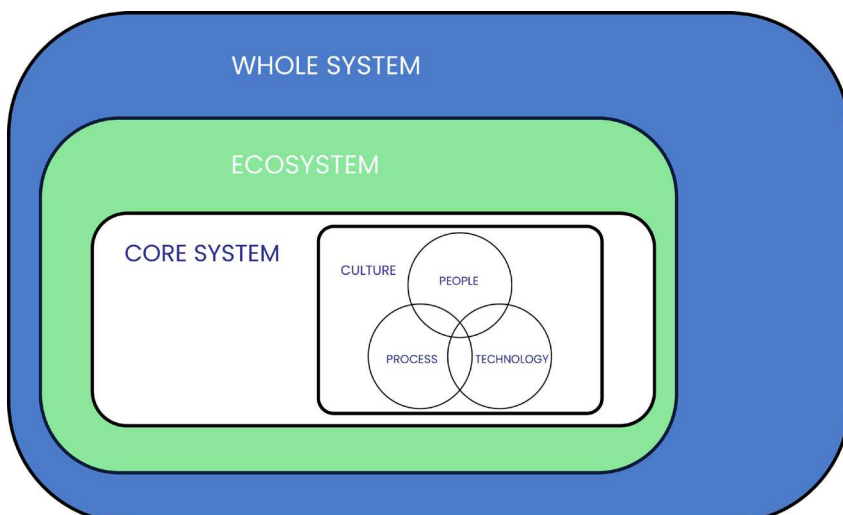
And it is important to understand that complexity does not mean volatility. There may be long deceptive periods of stability followed by a sudden tipping point, triggered by an organisational change or existential event, that leads to a rapid and significant irreversible transformation and period of instability. And this pattern is then repeated again and again over time.

In a complex system, the level of certainty about future scenarios varies over time, and this itself leads to changes in the interaction between people, processes, technology, and culture – which in turn affects innovation. Uncertainty is different to risk – it cannot be managed or mitigated, but it can provide inspire creativity and generate opportunities for innovation.

The importance of context cannot be overstated since context plays a critical role in determining if and when innovation-driven whole-system change may happen.

Markets might be on the edge of a tipping point and 'ready for change', or largely fixed until disrupted by an existential influence – government policy, social perspectives, economics, and exponential developments in technology can make systems susceptible to transformational change.

In essence, looking at the bigger picture using scenario modelling of future system states is more informative than using investment analysis based on fixed assumptions about what appears to be the most likely scenario. This is especially true when looking further into the future to forecast medium-term and long-term returns.



## The Three Levels of Innovation System Complexity

*Systems never exist in isolation - those things that are core exist within an ecosystem and an ecosystem exists within the whole system.*

*So this is what makes innovation complex.*

# The Making Innovation Happen Challenge

Investment cases to support innovation need to recognise that innovation is an infinite journey across a complex and shifting landscape. This has an impact when it comes to the fundamentals of building a business case for innovation in terms of:

- Identifying solutions
- Estimating costs and programme duration

When we look at investment in innovation, the implications of whether we are dealing with complication and complexity are important.

Activity	Complication	Complexity
Identifying Solutions	<p>Innovative solutions to complicated problems can be based on different 'final' options. Unleashing creativity increases the likelihood of identifying the best solution to solve a complicated problem - a solution that creates sustainable value.</p> <p>Once a solution is available and implemented, no more work is needed. The journey is complete.</p>	<p>Solutions to complex problems are forever evolving. The interaction between people, processes, technology, and culture makes the timing, nature, and scale of change uncertain.</p> <p>Progress can only be measured relative to a point in time by asking, is there an increase or decrease in value? The journey is infinite.</p>
Estimating Costs and Programme Duration	<p>By knowing that a solution to a complicated problem will, at some point, be available, the estimation of cost is much easier. Defining scope and programme duration mean a reasonable estimate of cost is achievable.</p> <p>Team size, the mix of unit labour rates and the duration of the programme can be estimated based on experience and uncertainty modelled using statistical techniques such as Monte Carlo analysis.</p> <p>Programme duration can be estimated based on a knowledge about activities to solve similar types of programme in the past. Benchmarking data may be available.</p> <p>Less time means less money but people's capability, capacity, competency, and behaviours, along with organisational culture, might lead to substantial variations in what can be achieved over a given time and duration.</p>	<p>The timing of when a complex system might undergo a change of state is hard to predict.</p> <p>Identifying the mix of local and existential system attributes might give an indication of market or user readiness, and this can be used to estimate when a 'tipping point' for system change could be triggered.</p> <p>Identifying the 'what, how and when' in terms of innovation outcomes is highly uncertain so cost is best estimated using assumptions about team size and length of investment based on a series of timebound sprints.</p> <p>Agile delivery can prioritise the use-cases and features that matter most, and run-rate sprint costs are easier to estimate.</p> <p>The budget will determine the resource costs and programme duration but innovation outcomes and solution maturity are hard to predict.</p>

# Summary

Predicting the return on investment from innovation is complex due to complex factors that exist at multiple levels – industries, businesses, teams, and even individuals all of which influence creativity. Innovation happens within a network of users and suppliers, each adopting different mixes of processes and technology in different cultures and micro-cultures that vary across those same industries, businesses, and teams. Context matters – the ‘best ideas’ do not necessarily deliver the ‘best’ innovation outcomes.

In reality the greatest influence on innovation in complex environments comes from the system’s actors – the people creating both the supply of ideas and the market demand for innovative solutions. Given similar size investments, similar teams and similar circumstances – some organisations, teams and individuals will outperform others in terms of innovation outcomes.

When it comes to doing the actual work, people’s relationships, beliefs and motivations make up the culture of innovation – and a truly innovative culture is hard to create – it takes time. Industry logic, routines, behavioural norms, networks, power hierarchies and mixed incentives, all play their part.

These create complex innovation ecosystems that can stall innovation – or make innovation happen.

## What does this mean when it comes to making decisions about investment in innovation?

- Recognise that innovation is complex due to people and culture – quantitative ROI analysis cannot take context into account, no matter how complicated the tools.
- Don’t rely on quantitative analysis and complicated spreadsheets as the ultimate test of success or a source of comfort. As an alternative, use scenario modelling to look into the future and explore how context might change, and what might trigger that change.
- Only use ROI calculations to provide insight and inform future decisions about investment, not as the main tool to make decisions based solely on financial criteria.
- Test the most important assumptions including those about long-term pricing movements, the timing of key events and the fact that sometimes things just don’t work.





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