Chapter 1

The Innovation Imperative

LEARNING OBJECTIVES

By the end of this chapter you will develop an understanding of:

• what ‘innovation’ and ‘entrepreneurship’ mean – and how they are essential for survival and growth
• innovation as a process rather than a single flash of inspiration
• the difficulties in managing what is an uncertain and risky process
• the key themes in thinking about how to manage this process effectively.

Innovation Matters

You don’t have to look far before you bump into the innovation imperative. It leaps out at you from a thousand mission statements and strategy documents, each stressing how important innovation is to ‘our customers/our shareholders/our business/our future’ and, most often, ‘our survival and growth’. Innovation shouts at you from advertisements for products ranging from hairspray to hospital care. It nestles deep in the heart of our history books, pointing out how far and for how long it has shaped our lives. And it is on the lips of every politician, recognizing that our lifestyles are constantly shaped and reshaped by the process of innovation.
INNOVATION IN ACTION 1.1

Everybody’s Talking about It

- ‘We have the strongest innovation programme that I can remember in my 30-year career at P&G, and we are investing behind it to drive growth across our business’ – Bob McDonald, Chairman, President and CEO, Procter & Gamble
- ‘We believe in making a difference. Virgin stands for value for money, quality, innovation, fun and a sense of competitive challenge. We deliver a quality service by empowering our employees and we facilitate and monitor customer feedback to continually improve the customer’s experience through innovation’ – Virgin Life Care (http://www.virginlifecare.co.za/aboutus/aboutVirgin.aspx)
- ‘Adi Dassler had a clear, simple, and unwavering passion for sport. Which is why with the benefit of 50 years of relentless innovation created in his spirit, we continue to stay at the forefront of technology’ – Adidas (www.adidas.com)
- ‘Innovation is our lifeblood’ – Siemens (www.siemens.com)
- ‘We’re measuring GE’s top leaders on how imaginative they are. Imaginative leaders are the ones who have the courage to fund new ideas, lead teams to discover better ideas, and lead people to take more educated risks’ – J. Immelt, chairman and CEO, General Electric
- ‘We are always saying to ourselves. We have to innovate. We’ve got to come up with that breakthrough’ – Bill Gates, former chairman and CEO, Microsoft
- ‘Innovation distinguishes between a leader and a follower’ – Steve Jobs, co-founder and former chairman and CEO, Apple
- ‘John Deere’s ability to keep inventing new products that are useful to customers is still the key to the company’s growth’ – Robert Lane, CEO, John Deere

This isn’t just hype or advertising babble. Innovation does make a huge difference to organizations of all shapes and sizes. The logic is simple: if we don’t change what we offer the world (products and services) and how we create and deliver them, we risk being overtaken by others who do. At the limit it’s about survival, and history is very clear on this point: survival is not compulsory! Those enterprises which survive do so because they are capable of regular and focused change. (It’s worth noting that Bill Gates used to say of Microsoft that it was always only two years away from extinction. Or, as Andy Grove, one of the founders of Intel, pointed out, ‘Only the paranoid survive!’)
On the plus side innovation is also strongly associated with growth. New business is created by new ideas, by the process of creating competitive advantage in what a firm can offer. Economists have argued for decades over the exact nature of the relationship but they are generally agreed that innovation accounts for a sizeable proportion of economic growth. William Baumol points out that ‘virtually all of the economic growth that has occurred since the eighteenth century is ultimately attributable to innovation.’

OECD countries spend $1500 billion/yr on R&D.

More than 16,000 firms in the USA currently operate their own industrial research labs, and there are at least 20 firms that have annual R&D budgets in excess of $1 billion.

In 2008, 16.8% of all firms’ turnover in Germany was earned with newly introduced products; in the research-intensive sector this figure was 38%. During the same year, the German economy was able to save costs of 3.9% per piece by means of process innovations.

‘Companies that do not invest in innovation put their future at risk. Their business is unlikely to prosper, and they are unlikely to be able to compete if they do not seek innovative solutions to emerging problems’ – Australian government website, 2006.

‘Innovation is the motor of the modern economy, turning ideas and knowledge into products and services’ – UK Office of Science and Technology, 2000.

According to Statistics Canada, the following factors characterize successful small and medium-sized enterprises SMEs:

- Innovation is consistently found to be the most important characteristic associated with success.
- Innovative enterprises typically achieve stronger growth or are more successful than those that do not innovate.
- Enterprises that gain market share and increasing profitability are those that are innovative.

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Tim Jones has been studying successful innovating organizations for some time (see http://growthchampions.org/about-us/). His most recent work has built on this, looking to try to establish a link between those organizations which invest consistently in innovation and their

(continued)
Survival and growth poses a problem for established players but a huge opportunity for newcomers to rewrite the rules of the game. One person’s problem is another’s opportunity and the nature of innovation is that it is fundamentally about entrepreneurship. The skill to spot opportunities and create new ways to exploit them is at the heart of the innovation process. Entrepreneurs are risk-takers, but they calculate the costs of taking a bright idea forward against the potential gains if they succeed in doing something different – especially if that involves upstaging the players already in the game.

Global Innovation Performance

The consultancy Arthur D. Little conducts a regular survey of senior executives around the world exploring innovation. In its 2012 survey of 650 organizations, the following emerged:

- Top quartile innovation performers obtain on average 13% more profit from new products and services than average performers do, and 30% shorter time-to-break-even, although the gap is narrowing.
- There is a clear correlation between capability in innovation measurement and innovation success.
- A number of key innovation management practices have a particularly strong impact on innovation performance across industries.

Of course, not all games are about win/lose outcomes. Public services like healthcare, education and social security may not generate profits but they do affect the quality of life for millions of people. Bright ideas when implemented well can lead to valued new services and the efficient delivery of existing ones at a time when pressure on national purse strings is becoming ever tighter. New ideas – whether wind-up radios in Tanzania or micro-credit financing schemes in Bangladesh – have the potential to change the quality of life and the availability of opportunity for people in some of the poorest regions of the world. There’s plenty of scope for innovation and entrepreneurship and sometimes this really is about life and death. Table 1.1 gives some examples.
Chapter 1 • The Innovation Imperative

TABLE 1.1 Where innovation makes a difference

<table>
<thead>
<tr>
<th>Innovation is about …</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying or creating opportunities</td>
<td>Innovation is driven by the ability to see connections, to spot opportunities and to take advantage of them. Sometimes this is about completely new possibilities, for example by exploiting radical breakthroughs in technology. New drugs based on genetic manipulation have opened a major new front in the war against disease. Mobile phones, tablets and other devices have revolutionized where and when we communicate. Even the humble window pane is the result of radical technological innovation – almost all the window glass in the world is made these days by the Pilkington float glass process which moved the industry away from the time-consuming process of grinding and polishing to get a flat surface.</td>
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</table>

New ways of serving existing markets | Innovation isn’t just about opening up new markets; it can also offer new ways of serving established and mature ones. Low-cost airlines are still about transportation, but the innovations firms like Southwest Airlines, easyJet and Ryanair have introduced have revolutionized air travel and grown the market in the process. Despite a global shift in textile and clothing manufacture towards developing countries, the Spanish company Inditex (through its retail outlets under various names, including Zara) has pioneered a highly flexible, fast turnaround clothing operation with over 2000 outlets in 52 countries. It was founded by Amancio Ortega Gaona, who set up a small operation in the west of Spain in La Coruña – a region not previously noted for textile production – and the first store opened there in 1975. The company now has over 5000 stores worldwide and is the world’s biggest clothing retailer; significantly, it is also the only manufacturer to offer specific collections for northern and southern hemisphere markets. Central to the Inditex philosophy is close linkage between design, manufacture and retailing and its network of stores constantly feeds back information about trends, which are used to generate new designs. It also experiments with new ideas directly on the public, trying samples of cloth or design and quickly getting back indications of what is going to catch on. Despite its global orientation, most manufacturing is still done in Spain, and it has managed to reduce the turnaround time between a trigger signal for an innovation and responding to it to around 15 days. |

Case Study of James Dyson and his innovation-led business is available on the Innovation Portal at www.innovation-portal.info

(continued)
Part I  Entrepreneurial Goals and Context

Growing new markets

Equally important is the ability to spot where and how new markets can be created and grown. Alexander Bell’s invention of the telephone didn’t lead to an overnight revolution in communications – that depended on developing the market for person-to-person communications. Henry Ford may not have invented the motor car but in making the Model T – ‘a car for Everyman’ at a price most people could afford – he grew the mass market for personal transportation. And eBay justifies its multi-billion-dollar price tag not because of the technology behind its online auction idea but because it created and grew the market.

Rethinking services

In most economies the service sector accounts for the vast majority of activity, so there is likely to be plenty of scope. And the lower capital costs often mean that the opportunities for new entrants and radical change are greatest in the service sector. Online banking and insurance have become commonplace but they have radically transformed the efficiencies with which those sectors work and the range of services they can provide. New entrants riding the Internet wave have rewritten the rule book for a wide range of industrial games, for example Amazon in retailing, eBay in market trading and auctions, Google in advertising and Skype in telephony.

### TABLE 1.1 (Continued)

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<tr>
<th>Innovation is about ....</th>
<th>Examples</th>
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<tr>
<td><strong>Case Study</strong> of Zara and how it has used innovation around design and ‘fast fashion’ to create new opportunities in a crowded and mature marketplace is available on the Innovation Portal at <a href="http://www.innovation-portal.info">www.innovation-portal.info</a></td>
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<td><strong>Case Study</strong> of the Model T Ford is available on the Innovation Portal at <a href="http://www.innovation-portal.info">www.innovation-portal.info</a></td>
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<td><strong>Case Study</strong> of Alibaba and the Taobao online shopping mall, one of the world’s top ten most visited websites, is available on the Innovation Portal at <a href="http://www.innovation-portal.info">www.innovation-portal.info</a></td>
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Chapter 1  ●  The Innovation Imperative

TABLE 1.1  (Continued)

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<tr>
<th>Innovation is about ....</th>
<th>Examples</th>
</tr>
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<tbody>
<tr>
<td>Meeting social needs</td>
<td>Innovation offers huge challenges – and opportunities – for the public sector. Pressure to deliver more and better services without increasing the tax burden is a puzzle likely to keep many civil servants awake at night. But it’s not an impossible dream: right across the spectrum there are examples of innovation changing the way the sector works. For example, in healthcare there have been major improvements in efficiencies around key targets such as waiting times. Hospitals like the Leicester Royal Infirmary in the UK or the Karolinska Hospital in Stockholm, Sweden have managed to make radical improvements in the speed, quality and effectiveness of their care services, such as cutting waiting lists for elective surgery by 75% and cancellations by 80%, through innovation.</td>
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Case Studies of innovation in public services, Karolinska Hospital, Aravind Eye Clinics and Narayana Hrudayalaya Hospitals (NHL), are available on the Innovation Portal at www.innovation-portal.info

| Improving operations – doing what we do but better | At the other end of the scale Kumba Resources is a large South African mining company which makes another dramatic claim: ‘We move mountains.’ In Kumba’s case, the mountains contain iron ore and the company’s huge operations require large-scale excavation – and restitution of the landscape afterwards. Much of its business involves complex large-scale machinery – and its ability to keep it running and productive depends on a workforce able to contribute innovative ideas on a continuing basis. |

Case Study of Kumba’s innovation activities is available on the Innovation Portal at www.innovation-portal.info

INNOVATION IN ACTION 1.5

Finding Opportunities

- When the Tasman Bridge collapsed in Hobart, Tasmania in 1975, Robert Clifford was running a small ferry company and saw an opportunity to capitalize on the increased demand (continued)
for ferries – and to differentiate his by selling drinks to thirsty cross-city commuters. The same entrepreneurial flair later helped him build a company – Incat – that pioneered the wave-piercing design which helped the company capture over half the world market for fast catamaran ferries. Continuing investment in innovation has helped this company from a relatively isolated island build a key niche in highly competitive international military and civilian markets.

• ‘We always eat elephants’ is a surprising claim made by Carlos Broens, founder and head of a successful tool-making and precision engineering firm in Australia with an enviable growth record. Broens Industries is a small/medium-sized company of 130 employees which survives in a highly competitive world by exporting over 70% of its products and services to technologically demanding firms in aerospace, medical and other advanced markets. The quote doesn’t refer to strange dietary habits but to the company’s confidence in ‘taking on the challenges normally seen as impossible for firms of our size’ – a capability which is grounded in a culture of innovation in products and the processes that go to produce them.

• There has always been a need for artificial limbs and the demand has, sadly, significantly increased as a result of high-technology weaponry such as mines. The problem is compounded by the fact that many of those requiring new limbs are also in the poorest regions of the world and unable to afford expensive prosthetics. The chance meeting of a young surgeon, Dr Pramod Karan Sethi, and a sculptor, Ram Chandra, in a hospital in Jaipur, India has led to the development of a solution to this problem: the Jaipur Foot. This artificial limb was developed using Chandra’s skill as a sculptor and Sethi’s expertise and is so effective that those who wear it can run, climb trees and pedal bicycles. It was designed to make use of low-tech materials and be simple to assemble, for example in Afghanistan craftsmen hammer the foot together out of spent artillery shells, while in Cambodia part of the foot’s rubber components are scavenged from truck tyres. Perhaps the greatest achievement has been to do all of this for a low cost: the Jaipur Foot costs only $28 in India. Since 1975, nearly one million people worldwide have been fitted for the Jaipur limb and the design is being developed and refined, for example using advanced new materials.

• Not all innovation is necessarily good for everyone. One of the most vibrant entrepreneurial communities is in the criminal world where there is a constant search for new ways of committing crime without being caught. The race between the forces of crime and law and order is a powerful innovation arena – as work by Howard Rush and colleagues have shown in their studies of cybercrime.

Case Study detailing a report on cybercrime is available on the Innovation Portal at www.innovation-portal.info
Innovation and Entrepreneurship

Innovation matters – but it doesn’t happen automatically. It is driven by entrepreneurship – a potent mixture of vision, passion, energy, enthusiasm, insight, judgement and plain hard work which enables good ideas to become reality. The power behind changing products, processes and services comes from individuals – whether acting alone or embedded within organizations – who make innovation happen. As the famous management writer Peter Drucker put it:4

Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or service. It is capable of being presented as a discipline, capable of being learned, capable of being practised.

Joseph Schumpeter

One of the most significant figures in this area of economic theory was Joseph Schumpeter, who wrote extensively on the subject. He had a distinguished career as an economist and served as Minister for Finance in the Austrian government. His argument was simple: entrepreneurs will seek to use technological innovation – a new product/service or a new process for making it – to get strategic advantage. For a while, this may be the only example of the innovation so the entrepreneur can expect to make a lot of money – what Schumpeter calls ‘monopoly profits’. But of course, other entrepreneurs will see what he has done and try to imitate it – with the result that other innovations emerge, and the resulting ‘swarm’ of new ideas chips away at the monopoly profits until an equilibrium is reached. At this point the cycle repeats itself: our original entrepreneur or someone else looks for the next innovation that will rewrite the rules of the game, and off we go again. Schumpeter talks of a process of ‘creative destruction’, where there is a constant search to create something new which simultaneously destroys the old rules and establishes new ones – all driven by the search for new sources of profits.

In his view ‘[what counts is] competition from the new commodity, the new technology, the new source of supply, the new type of organization … competition which … strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives.’5

Entrepreneurship plays out on different stages in practice. One obvious example is the start-up venture in which the lone entrepreneur takes a calculated risk to bring something new into the world. But entrepreneurship matters just as much to the established organization which needs to renew itself in what it offers and how it creates and delivers that offering. Internal entrepreneurs – often labelled as ‘intrapreneurs’ or working in ‘corporate entrepreneurship’ or ‘corporate venture’ departments – provide the drive, energy and vision to take risky new ideas forward within that context.6 And of course, the passion to change things may
not be focused on creating commercial value but rather on improving conditions or enabling change in the wider social sphere or in the direction of environmental sustainability – a field which has become known as ‘social entrepreneurship’ (see Chapter 2).

This idea of entrepreneurship driving innovation to create value – social and commercial – across the lifecycle of organizations is central to this book. Table 1.2 gives some examples.

In the rest of the book, we use this lens to look at managing innovation and entrepreneurship. We’ll use three core concepts:

- **innovation.** As a process which can be organized and managed, whether in a start-up venture or in renewing a 100-year-old business
- **entrepreneurship.** As the motive power to drive this process through the efforts of passionate individuals, engaged teams and focused networks
- **creating value.** As the purpose for innovation, whether expressed in financial terms, employment or growth, sustainability or improvement of social welfare.

<table>
<thead>
<tr>
<th>TABLE 1.2</th>
<th>Entrepreneurship and innovation</th>
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</thead>
<tbody>
<tr>
<td><strong>Stage in lifecycle of an organization</strong></td>
<td><strong>Start-up</strong></td>
</tr>
<tr>
<td>Creating commercial value</td>
<td>Individual entrepreneur exploiting new technology or market opportunity</td>
</tr>
<tr>
<td>Creating social value</td>
<td>Social entrepreneur, passionately concerned to improve or change something in their immediate environment</td>
</tr>
</tbody>
</table>
Innovation Isn’t Easy!

Coming up with good ideas is what human beings are good at – we have this facility already fitted as standard equipment in our brains! But taking those ideas forward is not quite so simple, and most new ideas fail. It takes a particular mix of energy, insight, belief and determination to push against these odds; it also requires judgement to know when to stop banging against the brick wall and move on to something else.

It’s important here to remember a key point: new ventures often fail, but it is the ventures which are failures rather than the people who launched them. Successful entrepreneurs recognize that failure is an intrinsic part of the process. They learn from their mistakes, understanding where and when timing, market conditions, technological uncertainties, etc. mean that even a great idea isn’t going to work. But they also recognize that the idea may have had its weaknesses but that they have not failed themselves but rather learnt some useful insights to carry over to their next venture.

INNOVATION IN ACTION 1.7

Failure Breeds Success

Thomas Edison was a pretty successful entrepreneur with over 1000 patents to his name and the reputation for bringing many key technologies into widespread use, including the phonograph, the electric telegraph and the light bulb; he also founded the General Electric Company, which is still a major player today. He is famous for his attitude towards failure, typified by the search for the right material to make the filament for his incandescent light bulb, where he explored over 1000 different options. He is reported as having said that the process did not involve failure so much as ‘the elimination of a design that didn’t work, so we must be getting close’.

While the road for an individual entrepreneur may be very rocky with a high risk of hitting potholes, running into roadblocks or careering off the edge, it doesn’t get any easier if you are a large established company. It’s a disturbing thought but the majority of companies have a lifespan significantly less than that of a human being. Even the largest firms can show worrying signs of vulnerability, and for the smaller firm the mortality statistics are bleak.

Many SMEs fail because they don’t see or recognize the need for change. They are inward looking, too busy fighting fires and dealing with today’s crises to worry about storm clouds on the horizon. Even if they do talk to others about the wider issues, it is very often to people in the same network and with the same perspectives, for example the people who supply them with goods and services or their immediate customers. The trouble is that by the time they realize there is a need to change it may be too late.

But it isn’t just a small firm problem. There is no guaranteed security in size or in previous technological success. Take the case of IBM – a giant firm which can justly claim to have laid the foundations of the IT industry and came to dominate the architecture of hardware
and software and the ways in which computers were marketed. But such core strength can sometimes become an obstacle to seeing the need for change – as proved to be the case when, in the early 1990s, the company moved too slowly to counter the threat of networking technologies – and nearly lost the business in the process. Thousands of jobs and billions of dollars were lost and it took years of hard work to bring the share price back to the high levels which investors had come to expect.

One problem for successful companies occurs when the very things which helped them achieve success – their ‘core competencies’ – become the things which make it hard to see or accept the need for change. Sometimes the response is ‘not invented here’: the new idea is recognized as good but in some way not suited to the business.

### INNOVATION IN ACTION 1.8

**The ‘Not Invented Here’ Problem**

A famous example of ‘not invented here’ was the case of Western Union, which, in the 19th century, was probably the biggest communications company in the world. It was approached by one Alexander Graham Bell, who wanted the company to consider helping him commercialize his new invention. After mounting a demonstration to senior executives, he received a written reply which said, ‘after careful consideration of your invention, which is a very interesting novelty, we have come to the conclusion that it has no commercial possibilities … We see no future for an electrical toy.’ Within four years of the invention, there were 50,000 telephones in the USA and within 20 years five million. Over the next 20 years, the company which Bell formed grew to become the largest corporation in the USA.

Sometimes the pace of change appears slow and the old responses seem to work well. It appears, to those within the industry that they understand the rules of the game and have a good grasp of the relevant technological developments likely to change things. But what can sometimes happen here is that change comes along from outside the industry – and by the time the main players inside have reacted it is often too late.

### INNOVATION IN ACTION 1.9

**The Melting of the Ice Industry**

In the late 19th century, there was a thriving industry in New England based upon the harvesting and distribution of ice. In its heyday, it was possible for ice harvesters to ship hundreds of tons of ice around the world on voyages that lasted as long as six months – and still have over half
the cargo available for sale. By the late 1870s, the 14 major firms in the Boston area of the USA were cutting around 700,000 tons per year and employing several thousand people. But the industry was completely overthrown by the new developments which followed from the invention of refrigeration and the growth of the modern cold storage industry.

Of course, for others these conditions provide an opportunity for moving ahead of the game and writing a new set of rules. Think about what has happened in online banking, call-centre-linked insurance or low-cost airlines. In each case, the existing stable pattern has been overthrown, disrupted by new entrants coming in with new and challenging business models. For many managers business model innovation is seen as the biggest threat to their competitive position, precisely because they need to learn to let go of their old models as well as learn new ones. We also need to see that while for established organizations these crises are a problem, they represent a rich source of opportunity for entrepreneurs looking to disrupt an established order and create value in new ways.

In many cases the individual enterprise can renew itself, adapting to its environment and moving into new things. Consider the example of the Stora company in Sweden: founded in the 13th century as a timber cutting and processing operation it still thrives today – albeit in the very different areas of food processing and electronics.

All of these examples point to the same conclusion. Organizations need entrepreneurship at all stages in their lifecycle, from start-up to long-lived survival. The ability to recognize opportunities, pull resources together in creative ways, implement good ideas and capture the value from them are core skills.

Managing Innovation and Entrepreneurship

The dictionary defines ‘innovation’ as ‘change’; it comes from Latin in and novare, meaning ‘to make something new’. That’s a bit vague if we’re trying to manage it; perhaps a more useful definition would be ‘the successful exploitation of new ideas’. Those ideas don’t necessarily have to be completely new to the world, or particularly radical; as one definition has it: ‘innovation does not necessarily imply the commercialization of only a major advance in the technological state of the art (a radical innovation) but it includes also the utilization of even small-scale changes in
Part I  •  Entrepreneurial Goals and Context

technological know-how (an improvement or incremental innovation). Whatever the nature of the change the key issue is how to bring it about, in other words how to manage innovation.

Can we do it? One answer comes from the experiences of organizations that have survived for an extended period of time. While most organizations have comparatively modest lifespans, some have survived at least one and sometimes multiple centuries. Looking at the experience of these ‘100 club’ members – firms like 3M, Corning, Procter and Gamble, Reuters, Siemens, Philips and Rolls-Royce – we can see that much of their longevity is down to having developed a capacity to innovate on a continuing basis. They have learnt, often the hard way, how to manage the process and, importantly, how to repeat the trick. Any organization can get lucky once but sustaining it for a century or more suggests there’s a bit more to it than that.

It’s the same with individuals: ‘serial entrepreneurs’ may start many different businesses and what they bring to the party is an accumulated understanding of how to do it better. They have learnt and built long-term capability into a robust set of skills.

Over the past hundred years, there have been many attempts to answer the question of whether we can manage innovation. Researchers have looked at case examples, at sectors, at entrepreneurs, at big firms and small firms, at success and failure. Practising entrepreneurs and innovation managers in large businesses have tried to reflect on the ‘how’ of what they do. The key messages come from the world of experience. What we’ve learnt comes from the laboratory of practice rather than some deeply rooted theory.

The key messages from this knowledge base are that successful innovators:

- explore and understand different dimensions of innovation (ways in which we can change things)
- manage innovation as a process
- create conditions to enable them to repeat the innovation trick (building capability)
- focus this capability to move their organizations forward (innovation strategy)
- build dynamic capability (the ability to rest and adapt their approaches in the face of a changing environment).

In the following sections we’ll explore each of these themes in a little more detail.

**Dimensions of Innovation: What Can We Change?**

One approach to finding an answer to the question of where we could innovate is to use a kind of ‘innovation compass’ exploring different possible directions.

Innovation can take many forms but we can map the options along four dimensions, as shown in Table 1.3.
For example, a new design of car, a new insurance package for accident-prone babies and a new home-entertainment system would all be examples of product innovation. And change in the manufacturing methods and equipment used to produce the car or the home-entertainment system, or in the office procedures and sequencing in the insurance case, would be examples of process innovation.

Sometimes the dividing line is somewhat blurred. For example, a new jet-powered sea ferry is both a product and a process innovation. Services represent a particular case of this where the product and process aspects often merge. For example, is a new holiday package a product or process change?

Innovation can also take place by repositioning the perception of an established product or process in a particular user context. For example, an old-established product in the UK is Lucozade, originally developed as a glucose-based drink to help children and invalids in convalescence. These associations with sickness were abandoned by the brand owner, Beechams (part of GlaxoSmithKline), when it relaunched the product as a health drink aimed at the growing fitness market, where it is now presented as a performance-enhancing aid to healthy exercise. In 2014, the brand was sold to Suntory for around $1.35bn. This shift is a good example of ‘position’ innovation. In similar fashion Häagen Dazs created a new market for ice cream, essentially targeted at adults, through position innovation rather than changing the product or core manufacturing process.

Sometimes opportunities for innovation emerge when we reframe the way we look at something. Henry Ford fundamentally changed the face of transportation not because he invented the motor car (he was a comparative latecomer to the new industry) or because he developed the manufacturing process to put one together (as a craft-based specialist industry car-making had been established for around 20 years). His contribution was to change the underlying model from one which offered a hand-made specialist product to a few wealthy customers to one which offered a car for Everyman at a price he could afford. The ensuing shift from craft to mass production was nothing short of a revolution in the way cars (and later countless other products and services) were created and delivered. Of course, making the new approach work in practice also required

### TABLE 1.3 Dimensions for innovation

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Type of change</th>
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<tbody>
<tr>
<td>Product</td>
<td>Changes in the things (products/services) an organization offers</td>
</tr>
<tr>
<td>Process</td>
<td>Changes in the ways these offerings are created and delivered</td>
</tr>
<tr>
<td>Position</td>
<td>Changes in the context into which the products/services are introduced</td>
</tr>
<tr>
<td>Paradigm</td>
<td>Changes in the underlying mental models which frame what the organization does</td>
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Video Clip about the Model T Ford is available on the Innovation Portal at [www.innovation-portal.info](http://www.innovation-portal.info)
extensive product and process innovation, for example in component design, in machinery building, in factory layout and particularly in the social system around which work was organized.

Examples of ‘paradigm’ innovation – changes in mental models – include the shift to low-cost airlines, the provision of online insurance and other financial services and the repositioning of drinks like coffee and fruit juice as premium ‘designer’ products. They involve a shift in the underlying vision about how innovation can create social or commercial value. The term ‘business model’ is increasingly used and this is another way of thinking about ‘paradigm innovation’. We explore this theme in detail in Chapter 16.

Table 1.4 gives some examples of paradigm innovation.

<table>
<thead>
<tr>
<th>Business model innovation</th>
<th>How it changes the rules of the game</th>
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<tr>
<td>‘Servitization’</td>
<td>Traditionally, manufacturing was about producing and then selling a product. But, increasingly, manufacturers are bundling various support services around their products, particularly for major capital goods. Rolls-Royce, the aircraft engine maker, still produces high-quality engines but it has an increasingly large business around services to ensure those engines keep delivering power over the 30-plus-year life of many aircraft. Caterpillar, the specialist machinery company, now earns as much from service contracts, which help keep its machines running productively, as it does from the original sale.</td>
</tr>
<tr>
<td>Ownership to rental</td>
<td>Spotify is one of the most successful music-streaming companies with around eight million subscribers. It shifted the model from people’s desire to own the music they listened to towards one in which they rented access to a huge library of music. In similar fashion, Zipcar and other car rental businesses have transformed the need for car ownership in many large cities.</td>
</tr>
<tr>
<td>Offline to online</td>
<td>Many businesses have grown up around the Internet and enabled substitution of physical encounters, for example in retailing, with virtual ones.</td>
</tr>
<tr>
<td>Mass customization and co-creation</td>
<td>New technologies and a growing desire for customization have enabled the emergence not only of personalized products but platforms on which users can engage and co-create everything from toys (e.g. Lego), clothing (e.g. Adidas) to complex equipment like cars (Local Motors).</td>
</tr>
</tbody>
</table>
Paradigm innovation can be triggered by many different things: new technologies, the emergence of new markets with different value expectations, new legal rules of the game, new environmental conditions (climate change, energy crises), etc. For example, the emergence of Internet technologies made possible a complete reframing of how we carry out many businesses. In the past, similar revolutions in thinking were triggered by technologies like steam power, electricity, mass transportation (via railways and, with motor cars, roads) and microelectronics. And it seems very likely that similar reframing will happen as we get to grips with new technologies like nanotechnology or genetic engineering.

**From Incremental to Radical Innovation...**

Another thing to think about is the degree of novelty involved. Clearly, updating the styling on our car is not the same as coming up with a completely new concept car which has an electric engine and is made of new composite materials as opposed to steel and glass. Similarly, increasing the speed and accuracy of a lathe is not the same thing
as replacing it with a computer-controlled laser forming process. There are degrees of novelty in these, running from minor, incremental improvements right through to radical changes, which transform the way we think about and use them. Sometimes these changes are common to a particular sector or activity, but sometimes they are so radical and far-reaching that they change the basis of society, for example the role played by steam power in the Industrial Revolution or the ubiquitous changes resulting from today’s communications and computing technologies.

...to Components and Systems

Innovation is often like a set of Russian dolls: we can change things at the level of components or we can change a whole system. For example, we can put a faster transistor on a microchip on a circuit board for the graphics display in a computer. Or we can change the way several boards are put together into the computer to give it particular capabilities – a games box, an e-book, a media PC. Or we can link the computers into a network to drive a small business or office. Or we can link the networks to others into the Internet. There’s scope for innovation at each level – but changes in the higher-level systems often have implications for lower down. For example, if cars, as a complex assembly, were suddenly designed to be made out of plastic instead of metal, it would still leave scope for car assemblers but would pose some sleepless nights for producers of metal components!

Figure 1.1 illustrates the range of choices, highlighting the point that such change can happen at the component or sub-system level or across the whole system.
A Process Model for Innovation and Entrepreneurship

Rather than the cartoon image of a light bulb flashing on above someone’s head, we need to think about innovation as an extended sequence of activities – as a process. Whether we are looking at an individual entrepreneur bringing their idea into action or a multi-million-dollar corporation launching the latest in a stream of new products, the same basic framework applies.

We can break it down to the four key steps we mentioned earlier:

- recognizing the opportunity
- finding the resources
- developing the idea
- capturing value.

Figure 1.2 illustrates this model.

Recognizing the Opportunity

Innovation triggers come in all shapes and sizes and from all sorts of directions. They could take the form of new technological opportunities or changing requirements on the part of markets. They could be the result of legislative pressure or competitor action. They could be a bright idea occurring to someone as they sit, Archimedes-like, in their bathtub. They could come as a result of buying in a good idea from someone outside the organization. Or they could arise from dissatisfaction with social conditions or a desire to make the world a better place in some way.
The message here is clear: if we are going to pick up these trigger signals then we need to develop some pretty extensive antennae for searching and scanning around us – and that includes some capability for looking into the future.

Finding the Resources

The trouble with innovation is that it is by its nature a risky business. You don’t know at the outset whether what you decide to do is going to work out or even that it will run at all. Yet you have to commit some resources to begin the process. So how do you build a portfolio of projects which balance the risks and the potential rewards? (Of course, this decision is even tougher for the first-time entrepreneur trying to launch a business based on his or her great new idea – the choice there is whether to go forward and commit what may be a huge investment of personal time, the mortgage, family life, etc. Even if they succeed, there is then the problem of trying to grow the business and needing to develop more good ideas to follow the first.)

So this stage is very much about strategic choices. Does the idea fit a business strategy, does it build on something we know about (or where we can get access to that knowledge easily) and do we have the skills and resources to take it forward? And if we don’t have those resources, which is often the case with the lone entrepreneur at start-up, how will we find and mobilize them?

Developing the Idea

Having picked up relevant trigger signals, made a strategic decision to pursue some of them and found and mobilized the resources we need, the next key phase is actually turning those potential ideas into some kind of reality. In some ways this implementation phase is a bit like making a kind of ‘knowledge tapestry’, by gradually weaving the different threads of knowledge (about technologies, markets, competitor behaviour, etc.) into a successful innovation.

Early on it is full of uncertainty but gradually the picture becomes clearer – but at a cost. We have to invest time and money and find people to research and develop ideas and conduct market studies, competitor analysis, prototyping, testing, etc. in order to gradually improve our understanding of the innovation and whether it will work. Eventually, it is in a form which can be launched into its intended context – an internal or external market – and then further knowledge about its adoption (or otherwise) can be used to refine the innovation. Developing a robust business plan which takes all of this into consideration at the outset is one of the key elements in entrepreneurial success.

Throughout this implementation phase, we have to balance creativity – finding bright ideas and new ways to get around the thousand and one problems which emerge and get the bugs out of the system – with control – making sure we keep to some kind of budget on time, money and resources. This balancing act means that skills in project management around innovation, with all its inherent uncertainties, are always in high demand! This phase is also where we need to bring together different knowledge sets from many different people – so combining them in ways which help rather than hinder the process and raise big questions around teambuilding and management.

It would be foolish to throw good money after bad, so most organizations make use of some kind of risk management as they implement innovation projects. By installing a series of ‘gates’ as the project moves from a gleam in the eye to an expensive commitment of time and money, it becomes possible to review and if necessary redirect or even stop something which is going off
the rails. For the solo entrepreneur it is in this stage that judgement is needed – and sometimes the courage to know when to stop and move on, to let go and start again on something else.

Eventually, the project is launched into some kind of marketplace: externally, people who might use the product or service or, internally, people who make the choice about whether to buy into the new process being presented to them. Either way, we don’t have a guarantee that just because the innovation works and we think it the best thing since sliced bread they will feel the same way. Innovations diffuse across user populations over time. Usually, the process follows some kind of S-curve shape. A few brave souls take on the new idea and then gradually, assuming it works for them, others get on the bandwagon until finally there are just a few diehards (laggards) who resist the temptation to change. Managing this stage well means we need to think ahead about how people are likely to react and build these insights into our project before we reach the launch stage – or else work hard at persuading them after we have launched it!

**Capture Value**

Despite all our efforts in recognizing opportunities, finding resources and developing the venture, there is no guarantee we will be able to capture the value from all our hard work. We also need to think about, and manage, the process to maximize our chances – through protecting our intellectual property and the financial returns if we are engaged in commercial innovation or in scaling and spreading our ideas for social change so that they are sustainable and really do make a difference. We also have an opportunity at the end of an innovation project to look back and reflect on what we have learnt and how that knowledge could help us do things better next time. In other words, we could capture valuable learning about how to build our innovation capability.

**The Context of Success**

It's all very well putting a basic process for turning ideas into reality in place. But it doesn’t take place in a vacuum. It is subject to a range of internal and external influences that shape what is possible and what actually emerges. This process doesn’t take place in a vacuum; it is shaped and influenced by a variety of factors. In particular, innovation needs:

- **Clear strategic leadership and direction**, plus the commitment of resources to make this happen. Innovation is about taking risks, about going into new and sometimes completely unexplored spaces. We don’t want to gamble, simply changing things for their own sake or because the fancy takes us. No organization has resources to waste in that scattergun fashion: innovation needs a strategy. But, equally, we need to have a degree of courage and leadership, steering the organization away from what everyone else is doing or what we’ve always done and towards new spaces.

  In the case of the individual entrepreneur this challenge translates to one in which a clear personal vision can be shared in ways which engage and motivate others to buy into it and to contribute their time, energy, money, etc. to help make it happen. Without a compelling vision, it is unlikely the venture will get off the ground.

- **An innovative organization** in which the structure and climate enables people to deploy their creativity and share their knowledge to bring about change. It’s easy to find prescriptions for innovative organizations which highlight the need to eliminate stifling bureaucracy, unhelpful structures, brick walls blocking communication and other factors stopping good ideas getting through. But we must be careful not to fall into the chaos trap. Not all
innovation works in organic, loose, informal environments or ‘skunk works’; indeed, these types of organization can sometimes act against the interests of successful innovation. We need to determine appropriate organization, that is the most suitable organization given the operating contingencies. Too little order and structure may be as bad as too much.

This is one area where start-ups often have a major advantage – by definition they are small organizations (often one-person ventures) with a high degree of communication and cohesion. They are bound together by a shared vision and they have high levels of cooperation and trust, giving them enormous flexibility. But the downside of being small is a lack of resources, and so successful start-ups are very often those which can build a network around them through which they can tap into the key resources they need. Building and managing such networks is a key factor in creating an extended form of organization.

- **Proactive links** across boundaries inside the organization and to the many external agencies who can play a part in the innovation process: suppliers, customers, sources of finance, skilled resources and of knowledge, etc. Twenty-first-century innovation is most certainly not a solo act but a multiplayer game across boundaries inside the organization and to the many external agencies who can play a part in the innovation process. These days it’s about a global game and one where connections and the ability to find, form and deploy creative relationships is of the essence. Once again, this idea of successful lone entrepreneurs and small-scale start-ups as network builders is critical. It’s not necessary to know or have everything to hand but to know where and how to get it.

Figure 1.3 shows the resulting model: what we need to pay attention to if we are going to manage innovation well.
How Can We Make Change Happen?

What are the actions involved in innovation and how can we use this understanding to help us manage the process better? What comes into our minds when we think of innovation taking place?

INNOVATION IN ACTION 1.10

Making Ideas Happen

If someone asked you, ‘When did you last use your Spengler?’ they might well be greeted by a quizzical look. But if they asked you when you last used your ‘Hoover’, the answer would be fairly easy. Yet it was not Mr Hoover who invented the vacuum cleaner in the late 19th century but one J. Murray Spengler. Hoover’s genius lay in taking that idea and making it a commercial reality. In similar vein, the father of the modern sewing machine was not Mr Singer, whose name jumps to mind and is emblazoned on millions of machines all round the world. It was Elias Howe, who invented the machine in 1846 and Singer who brought it to technical and commercial fruition. Perhaps the godfather of them all in terms of turning ideas into reality was Thomas Edison, who during his life registered over 1000 patents. Products for which his organization was responsible include the light bulb, 35mm cinema film and even the electric chair. Many of the inventions for which he is famous weren’t in fact invented by him – the electric light bulb, for example – but were developed and polished technically and their markets opened up by Edison and his team. More than anyone else Edison understood that invention is not enough – simply having a good idea is not going to lead to its widespread adoption and use.

One of the problems we have in managing anything is that how we think about it shapes what we do about it. So if we have a simplistic model of how innovation works, for example that it’s just about invention, that’s what we will organize and manage. We may end up with the best invention department in the world, but there is no guarantee that people will ever actually want any of our wonderful inventions! If we are serious about managing innovation, we need to check on our mental models and make sure we’re working with as complete a picture as possible. Otherwise, we run risks like those in Table 1.5.

Configuring the Innovation Process: Building Capability

Whatever their size or sector, all organizations are trying to find ways of managing this process of growth and renewal. There is no right answer: every organization needs to aim for the most appropriate solution for its particular circumstances. They develop their own particular ways of doing things and some work better than others. Any organization can get lucky once but the real skill in innovation management is being able to repeat the trick. And while there
are no guarantees, there is plenty of evidence to suggest that firms can and do learn to manage the process for success, by consciously building and developing their innovation capability.

These issues apply across the board, though solutions to them may take us in different directions depending on where we start from. A start-up business may not need much in the way of a formal and structured process for organizing and managing innovation. But a firm the size of Nokia will need to pay careful attention to structures and procedures for building a strategic portfolio of projects to explore and for managing the risks as the project moves from ideas into technical and commercial reality. Equally, a large firm may have extensive resources to build a global set of networks to support its activities, whereas a start-up may be vulnerable to threats from elements in its environment it simply didn’t know about, never mind being connected to.

This core process runs through any successful innovation, from a lone entrepreneur right up to IBM or GlaxoSmithKline. Of course, making the model work in practice requires configuring it for different situations, for example in a large company ‘recognizing the opportunity’ may involve a large R&D department, a market research team, a design studio, etc.,

TABLE 1.5 The problem with partial models

<table>
<thead>
<tr>
<th>If innovation is only seen as...</th>
<th>...the result can be</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong R&amp;D capability</td>
<td>Technology which fails to meet user needs and may not be accepted: ‘the better mousetrap nobody wants’</td>
</tr>
<tr>
<td>The province of specialists in white coats in the R&amp;D laboratory</td>
<td>Lack of involvement of others, and a lack of key knowledge and experience input from other perspectives</td>
</tr>
<tr>
<td>Meeting customer needs</td>
<td>Lack of technical progression, leading to inability to gain competitive edge</td>
</tr>
<tr>
<td>Technological advances</td>
<td>Producing products the market does not want or designing processes which do not meet the needs of the user and are opposed</td>
</tr>
<tr>
<td>The province of large firms</td>
<td>Weak small firms with too high a dependence on large customers</td>
</tr>
<tr>
<td>Breakthrough changes</td>
<td>Neglect of the potential of incremental innovation. Also an inability to secure and reinforce the gains from radical change because the incremental performance ratchet is not working well</td>
</tr>
<tr>
<td>Associated with key individuals</td>
<td>Failure to utilize the creativity of the remainder of employees, and to secure their inputs and perspectives to improve innovation</td>
</tr>
<tr>
<td>Internally generated</td>
<td>The ‘not invented here’ effect, where good ideas from outside are resisted or rejected</td>
</tr>
<tr>
<td>Externally generated</td>
<td>Innovation becomes simply a matter of filling a shopping list of needs from outside and there is little internal learning or development of technological competence</td>
</tr>
</tbody>
</table>
whereas all of this could go on in a lone entrepreneur’s head. Finding the resources may involve bringing different departments together in a large organization, but a lone innovator will have to create networks. Attracting support may involve a lone entrepreneur making a pitch to venture capitalists, whereas in a large organization the business case may be put to a monthly project portfolio meeting.

Allowing for the fact that we will organize and manage in different ways depending on different kinds of organizations, it is still possible to identify some generic recipes or conditions that help the innovation process to happen effectively. As we mentioned earlier, there has been plenty of research around this question and the Further Reading and Resources section at the end of the chapter lists some good examples of these studies. But one of the most important points to make at the outset is that organizations and individuals aren’t born with the capability to organize and manage this process: they learn and develop it over time, and mainly through a process of trial and error. They hang on to what works and develop their capabilities in that—and they try to drop those things which don’t work.

For example, successful innovation correlates strongly with how a firm selects and manages projects, how it coordinates the inputs of different functions, how it links up with its customers, etc. Successful innovators acquire and accumulate technical resources and managerial capabilities over time; there are plenty of opportunities for learning—through doing, using, working with other firms, asking the customers, etc.—but they all depend upon the readiness of the organization to see innovation less as a lottery than as a process which can be continuously improved.

Another critical point to emerge from research is that innovation needs managing in an integrated way; it is not enough just to be good at one thing. It’s less like running a 100-metre sprint than developing the range of skills to compete effectively in a range of events in the pentathlon.

What, Why and When: The Challenge of Innovation Strategy

Building a capability to organize and manage innovation is a great achievement, but unless that capability is pointed in a suitable direction the organization risks being all dressed up with nowhere to go! And for entrepreneurs starting a new venture the challenge is even greater: without a clear sense of direction, a vision you can share with others to excite and focus them, the whole thing may never take off.

So the last theme we need to consider is where and how innovation can be used to strategic advantage. Table 1.6 gives some examples of the different ways in which this can be achieved, and you may like to add your own ideas to the list.
## Table 1.6 Strategic advantages through innovation

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Strategic advantage</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novelty in product or service offering</td>
<td>Offering something no one else can</td>
<td>Introducing the first (Walkman, fountain pen, camera, dishwasher, telephone bank, online retailer, etc.) to the world</td>
</tr>
<tr>
<td>Novelty in process</td>
<td>Offering it in ways others cannot match – faster, cheaper, more customized, etc.</td>
<td>Pilkington’s float glass process, Bessemer’s steel process, Internet banking, online bookselling, etc.</td>
</tr>
<tr>
<td>Complexity</td>
<td>Offering something others find difficult to master</td>
<td>Rolls-Royce and aircraft engines (only a handful of competitors can master the complex machining and metallurgy involved)</td>
</tr>
<tr>
<td>Legal protection of intellectual property</td>
<td>Offering something others cannot do unless they pay a licence or other fee</td>
<td>Blockbuster drugs like Zantac, Prozac, Viagra, etc.</td>
</tr>
<tr>
<td>Add/extend range of competitive factors</td>
<td>Move basis of competition (e.g. from price of product to price and quality, or price, quality, choice)</td>
<td>Japanese car manufacturing, which systematically moved the competitive agenda from price to quality, to flexibility and choice, to shorter times between launch of new models, and so on – each time not trading these off against each other but offering them all</td>
</tr>
<tr>
<td>Timing</td>
<td>First-mover advantage (being first can be worth significant market share in new product fields)</td>
<td>Amazon.com, Yahoo – others can follow, but the advantage sticks to the early movers</td>
</tr>
<tr>
<td></td>
<td>Fast-follower advantage (sometimes being first means you encounter many unexpected teething problems, and it makes better sense to watch someone else make the early mistakes and move fast into a follow-up product)</td>
<td>Personal digital assistants (iPads) and smartphones have captured a huge and growing share of the market. In fact, the concept and design were articulated in Apple’s ill-fated Newton product some five years before Palm launched its successful Pilot range – but problems with software and especially handwriting recognition meant it flopped. By contrast, Apple’s success with iPod as an MP3 player came because it was quite late into the market and could learn and include key features into its dominant design</td>
</tr>
</tbody>
</table>
### TABLE 1.6 (Continued)

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Strategic advantage</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robust/platform design</td>
<td>Offering something which provides the platform on which other variations and generations can be built</td>
<td>Sony’s original Walkman architecture which has spawned several generations of personal audio equipment (minidisk, CD, DVD, MP3, iPod)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boeing 737 (over 30 years old, the design is still being adapted and configured to suit different users) remains one of the most successful aircraft in the world in terms of sales</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intel and AMD with different variants of their microprocessor families</td>
</tr>
<tr>
<td>Rewriting the rules</td>
<td>Offering something which represents a completely new product or process concept – a different way of doing things – and makes the old ones redundant</td>
<td>Typewriters vs. computer word processing, ice vs. refrigerators, electric vs. gas or oil lamps</td>
</tr>
<tr>
<td>Reconfiguring the parts of the process</td>
<td>Rethinking the way in which bits of the system work together (e.g. building more effective networks, outsourcing and coordination of a virtual company)</td>
<td>Zara and Benetton in clothing, Dell in computers, Toyota in its supply chain management</td>
</tr>
<tr>
<td>Transferring across different application contexts</td>
<td>Recombining established elements for different markets</td>
<td>Polycarbonate wheels transferred from application market like rolling luggage into children’s toys – lightweight micro-scooters</td>
</tr>
<tr>
<td>Others</td>
<td>Innovation is all about finding new ways to do things and to obtain strategic advantage – so there will be room for new ways of gaining and retaining advantage</td>
<td>Napster began by writing software which would enable music fans to swap their favourite pieces via the Internet – the Napster program essentially connected person-to-person by providing a fast link. Its potential to change the architecture and mode of operation of the Internet was much greater, and although Napster suffered from legal issues followers developed a huge industry based on downloading and file sharing</td>
</tr>
</tbody>
</table>
The problem isn’t the shortage of ways of gaining competitive advantage through innovation but rather which ones to choose and why. It’s a decision all organizations have to take, be it a start-up deciding the (relatively) simple question of go/no go in terms of trying to enter a hostile marketplace with its new idea or a giant firm trying to open up new market space through innovation. And it’s not just about commercial competition. The same idea of strategic advantage plays out in public services and social innovation. For example, police forces need to think strategically about how to deploy scarce resources to contain crime and maintain law and order, while hospital managements are concerned to balance limited resources against the increasing demands of healthcare expectations.

Creating an Innovation Strategy

Putting an innovation strategy together involves three key steps, pulling together ideas around core themes and inviting discussion and argument to sharpen and shape them. These are:

- Strategic analysis: what could we do?
- Strategic selection: what are we going to do, and why?
- Strategic implementation: how are we going to make it happen?

Let’s look at each of these in more detail.

Strategic Analysis

Strategic analysis begins with exploration of innovation space: where could we innovate and why would it be worth doing so? A useful place to start is to build some sense of the overall environment, to explore the current threats and opportunities and the likely changes to these in the future. Typically, questions here relate to technologies, to markets, to underlying political trends, to emerging customer needs, to competitors and to social and economic forces. It’s also useful to add to this map some sense of who the players are in the environment: the particular customers and markets, the key suppliers and the number and type of competitors.

Within this framework it’s also important to reflect on what resources the organization can bring to bear. What are its relative strengths and weaknesses and how may it build and sustain a competitive advantage?

(It’s important to remember that these are tools to help start a discussion – not accurate measuring devices. There are real limitations to how much we can know about an environment which is complex, interactive and constantly changing, and there are often wide differences about where the strengths and weaknesses actually lie.)

Having explored this environment, we need to understand the range of possibilities. Where can we innovate to advantage? What kinds of opportunities exist for use to create something different and capture value from bringing those ideas into the world?

We can think about strategy as a process of exploring the space defined by our four innovation types – the
4Ps mentioned earlier. Each of our 4Ps of innovation can take place along an axis running from incremental through to radical change; the area indicated by the circle in Figure 1.4 is the potential innovation space within which an organization can operate.

Where it actually explores and why – and which areas it leaves alone – are all questions for innovation strategy. And for new-entrant entrepreneurs this can provide a map of explored and unexplored territory, showing where there is open opportunity, where and how to tackle existing players, etc. It also provides a useful map for social innovation: where could we create new social value, where is there unexplored territory, where and how could we do things differently?

Table 1.7 gives some examples of innovations mapped onto this 4Ps model.

**FIGURE 1.4 Exploring innovation space**

Strategic Selection

The issue here is choosing out of all the things we could do which ones we will do – and why? We have scarce resources so we need to place our bets carefully, balancing the risks and rewards across a portfolio of projects. There are plenty of tools to help us do this, from simple financial measures like payback time or return on investment through to complex frameworks which compare projects across many dimensions. We look more closely at this toolkit and the different ways we can make decisions under uncertainty in Chapter 8.
### TABLE 1.7 Some examples of innovations mapped onto the 4Ps model

<table>
<thead>
<tr>
<th>Innovation type</th>
<th>Incremental: do what we do but better</th>
<th>Radical: do something different</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Product’: what we offer the world</td>
<td>Windows 7 and 8 replacing Vista and XP, essentially improving existing software</td>
<td>New to the world software (e.g. the first speech-recognition program)</td>
</tr>
<tr>
<td></td>
<td>New versions of established car models (e.g. the VW Golf essentially improving on established car design)</td>
<td>Toyota Prius’s hybrid engines (bringing a new concept) and the Tesla high-performance electric car</td>
</tr>
<tr>
<td></td>
<td>Improved performance incandescent light bulbs</td>
<td>LED-based lighting (using completely different and more energy efficient principles)</td>
</tr>
<tr>
<td></td>
<td>CDs replacing vinyl records (essentially improving on storage technology)</td>
<td>Spotify and other music-streaming services (changing the pattern from owning to renting a vast library of music)</td>
</tr>
<tr>
<td></td>
<td><strong>Process: how we create and deliver that offering</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improved fixed-line telephone services</td>
<td>Skype and other VOIP systems</td>
</tr>
<tr>
<td></td>
<td>Extended range of stock-brokering services</td>
<td>Online share trading</td>
</tr>
<tr>
<td></td>
<td>Improved auction house operations</td>
<td>eBay</td>
</tr>
<tr>
<td></td>
<td>Improved factory operations efficiency through upgraded equipment</td>
<td>Toyota Production System and other ‘lean’ approaches</td>
</tr>
<tr>
<td></td>
<td>Improved range of banking services delivered at branch banks</td>
<td>Online banking and now mobile banking in Kenya and the Philippines (using phones as an alternative to banking systems)</td>
</tr>
<tr>
<td></td>
<td>Improved retailing logistics</td>
<td>Online shopping</td>
</tr>
<tr>
<td></td>
<td>Häagen Dazs changing the target market for ice cream from children to consenting adults</td>
<td>Addressing underserved markets – for example the Tata Nano aimed at emerging but relatively poor Indian market with car priced around $2000</td>
</tr>
<tr>
<td></td>
<td>Airlines segmenting service offering for different passenger groups – Virgin Upper Class, BA Premium Economy, etc.</td>
<td>Low-cost airlines opening up air travel to those previously unable to afford it (create new market and disrupt existing one)</td>
</tr>
</tbody>
</table>
### TABLE 1.7  *(Continued)*

<table>
<thead>
<tr>
<th>Innovation type</th>
<th>Incremental: do what we do but better</th>
<th>Radical: do something different</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paradigm: how we frame what we do</strong></td>
<td>Dell and others segmenting and customizing computer configuration for individual users</td>
<td>Variations on the ‘One laptop per child’ project (e.g. Indian government $20 computer for schools)</td>
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<td>Online support for traditional higher education courses</td>
<td>University of Phoenix and others building large education businesses via online approaches to reach different markets</td>
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<td>Banking services targeted at key segments (e.g. students, retired people)</td>
<td>‘Bottom of the pyramid’ approaches using a similar principle but tapping into huge and very different high-volume/low-margin markets (e.g. Aravind Eye Clinics, Cemex construction products)</td>
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<td>Bausch &amp; Lomb moved from ‘eye wear’ to ‘eye care’ as its business model, effectively letting go of the old business of spectacles, sunglasses (Raybans) and contact lenses, all of which were becoming commodity businesses and moved into newer high-tech fields like laser surgery equipment, specialist optical devices and research in artificial eyesight</td>
<td>Grameen Bank and other microfinance models (rethinking the assumptions about credit and the poor)</td>
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<td>Dyson redefining the home appliance market in terms of high-performance engineered products</td>
<td>iTunes platform (a complete system of personalized entertainment)</td>
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<td>Rolls-Royce (from high-quality aero engines to becoming a service company offering 'power by the hour')</td>
<td>Amazon, Google, Skype (redefining industries like retailing, advertising and telecoms through online models)</td>
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<td>IBM (from being a machine maker to a service and solution company, selling off its computer making and building up its consultancy and service side)</td>
<td>Linux, Mozilla, Apache (moving from passive users to active communities of users co-creating new products and services)</td>
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The challenge is for individuals and organizations to be aware of the extensive space within which innovation possibilities exist and to try to develop a strategic portfolio which covers this territory effectively, balancing risks and resources. So how can we choose which options will make sense for us? It’s helpful to consider two complementary themes in answering this question:

- What is our overall business strategy (where we are trying to go as an organization) and how will innovation help us get there?
- Do we know anything about the direction we want to go in – does it build on something we have some competence in (or have access to)?

Of course, competencies may become superseded by shifts in the technological area. Sometimes they can destroy the basis of competitiveness (competence-destroying), but they can also be reconfigured to enhance a competitive position (competence enhancing). A famous study by Tushman and Anderson gives a wide range of examples of these types of change.

But it isn’t just technical knowledge. Google’s expertise is based not only on a powerful search engine but also on using the data that helps it build to offer services in advertising. Major retailers like Tesco and Wal-Mart have rich and detailed understanding of customers and their shopping preferences and behaviour.

Strengths can also come from specific capabilities, things which an organization has learnt to do to help it stay agile and able to move into new fields. Virgin as a group of companies is represented across many different sectors but the underlying approach is essentially the original entrepreneurial one which Richard Branson used when setting up his music business.

**Assessing Competencies and Assets**

Richard Hall is an experienced coach and researcher on innovation and entrepreneurship. He distinguishes between intangible assets and intangible competencies. Assets include intellectual
Strategic Implementation

Having explored what we could do and decided what we are going to do, the third stage in innovation strategy development is to plan for implementation. Thinking through what we are going to need and how we will get these resources, who we may need to partner with, what likely roadblocks may we find on the way – all of these questions feed into this step.

Of course, it isn’t a simple linear process. In practice, there will be plenty of discussion of these issues as we explore options and argue for particular choices, But that’s the essence of strategy: a conversation and a rehearsal, imagining and thinking forward about uncertain activities into the future.

To help do this we have a number of tools, again ranging from the simple to the complex. We could, for example, make a simple project plan which sets out the sequence of activities we need to carry out to make our innovation come alive. That would help us identify which resources we need and when and could also highlight some of the potential trouble spots so we could think through how we would deal with them. Many tools add a dimension of ‘What if?’ planning to such project models – trying to anticipate key difficulties and take a worst-case view so suitable contingency plans can be made.

It’s also worth thinking through and challenging the underlying strategic concept – the business case for doing whatever it is we have in mind. Once again, building a business case or thinking through the underlying business model provides a powerful way of making our assumptions explicit and opening them up for discussion and challenge. (We look in detail at the role of business models as a way of capturing value in Chapter 16, but the tools for working with these ideas are very helpful at this early strategic planning stage.)
Beyond the Steady State: The Challenge of Discontinuous Change and the Need for Dynamic Capability

Most of the time innovation takes place within a set of rules of the game which are clearly understood, and involves players trying to innovate by doing what they do (product, process, position, etc.) but better. Some manage this more effectively than others do, but the rules of the game are accepted and do not change.

But occasionally something happens which dislocates this framework and changes the rules of the game. By definition, these are not everyday events but have the capacity to redefine the space and the boundary conditions. They open up new opportunities but also challenge existing players to reframe what they are doing in the light of new conditions. Taking advantage of the opportunities – or seeing the threats early enough and doing something different to help deal with them – requires an entrepreneurial approach which new entrants have but which may be difficult to revive in an established organization. So under these conditions we often see disruption of the old market and technological order and new rules of the game.

The important message is that under such conditions (which don’t emerge every day) we need different approaches to organizing and managing innovation. If they try to use established models which work under steady-state conditions, organizations are likely to find themselves increasingly out of their depth and risk being upstaged by new and more agile players. The risk is clear if organizations fail to keep pace: there are plenty of examples of major corporations which began with an innovative flourish but ended up beaten by their failure to innovate fast enough or in the right directions. The examples of great photographic pioneers Kodak and Polaroid are graphic reminders that competitive advantage doesn’t always last even if you are a major spender on R&D and have powerful marketing skills.

That raises a general point. We have spent a long time in this chapter talking about building innovation management capability. But in a changing world we also need to be able to step back and review our position, looking at our capability and fine-tuning it. There are some behaviours which we should keep on with, maybe increasing our commitment to them. And there may be others which worked in the past but are no longer so relevant. Importantly, there will always be new tricks to learn, new skills to acquire. (Think about the ways in which the Internet has changed the innovation game, opening up many more players, allowing rich links and connections, enabling knowledge flows. That simply wasn’t the case thirty years ago and an organization trying to manage innovation today using its recipe book from back then would be in deep trouble!)

This idea of reviewing and resetting our innovation management approaches is termed dynamic capability and building it is a core theme which will run through the book.

Finally, it’s worth remembering some useful advice from an old but wise source. In his famous book *The Prince* Niccolò Machiavelli gave a warning to would-be innovators.

It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to management than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institution and merely lukewarm defenders in those who gain by the new ones.
Chapter Summary

• Innovation is about growth, about recognizing opportunities for doing something new and implementing those ideas to create some kind of value. It could be business growth; it could be social change. But at its heart is the creative human spirit, the urge to make change in our environment.

• Innovation is also a survival imperative. If an organization doesn’t change what it offers the world and the ways in which it creates and delivers its offerings, it may well be in trouble. And innovation contributes to competitive success in many different ways: it’s a strategic resource to getting the organization where it is trying to go, be it delivering shareholder value for private sector firms, providing better public services or enabling the start-up and growth of new enterprises.

• Innovation doesn’t just happen. It is driven by entrepreneurship. This powerful mixture of energy, vision, passion, commitment, judgement and risk taking provides the motive power behind the innovation process. It’s the same whether we are talking about a solo start-up venture or a key group within an established organization trying to renew its products or services.

• Innovation doesn’t happen simply because we hope it will. It’s a complex process which carries risks and needs careful and systematic management. Innovation isn’t a single event, like the light bulb going off above a cartoon character’s head. It’s an extended process of picking up on ideas for change and turning them through into effective reality. The core process involves four steps:
  o recognizing opportunities
  o finding resources
  o developing the venture
  o capturing value.

The challenge comes in doing this in an organized fashion and in being able to repeat the trick.

• This core process doesn’t take place in a vacuum. We also know that it is strongly influenced by many factors. In particular, innovation needs:
  o clear strategic leadership and direction, plus the commitment of resources to make this happen
  o an innovative organization in which the structure and climate enables people to deploy their creativity and share their knowledge to bring about change
  o proactive links across boundaries inside the organization and to the many external agencies who can play a part in the innovation process (suppliers, customers, sources of finance, skilled resources and of knowledge, etc.).

• Research repeatedly suggests that if we want to succeed in managing innovation we need to:
  o explore and understand different dimensions of innovation (ways in which we can change things)
manage innovation as a process
create enabling conditions to enable them to repeat the innovation trick (building capability)
focus this capability to move their organizations forward (innovation strategy)
build dynamic capability (the ability to rest and adapt their approaches in the face of a changing environment).

Innovation can take many forms but they can be reduced to four directions of change:
- **product innovation**: changes in the things (products/services) an organization offers
- **process innovation**: changes in the ways in which they are created and delivered
- **position innovation**: changes in the context in which the products/services are introduced
- **paradigm innovation**: changes in the underlying mental models which frame what the organization does.

Within any of these dimensions innovations can be positioned on a spectrum from ‘incremental’ (doing what we do but better) through to ‘radical’ (doing something completely different). And they can be stand-alone (**component innovations**) or form part of a linked ‘architecture’ or system which brings many different components together in a particular way.

Building a capability to organize and manage innovation is a great achievement, but we also need to consider where and how innovation can be used to strategic advantage. Putting an innovation strategy together involves three key steps, pulling together ideas around core themes and inviting discussion and argument to sharpen and shape them.

These are:
- Strategic analysis: what could we do?
- Strategic selection: what are we going to do, and why?
- Strategic implementation: how are we going to make it happen?

Any organization can get lucky once but the real skill in innovation management is being able to repeat the trick. So if we want to manage innovation we ought to ask ourselves the following check questions:
- Do we have effective enabling mechanisms for the core process?
- Do we have strategic direction and commitment for innovation?
- Do we have an innovative organization?
- Do we build rich, proactive links?
- Do we learn and develop our innovation capability?

Most of the time innovation takes place within a set of rules of the game which are clearly understood, and involves players trying to innovate by doing what they do (product, process, position, etc.) but better. But occasionally something happens which changes the rules of the game (e.g. when radical change takes place along the technological frontier or when completely new markets emerge). When this happens, we need different approaches to organizing and managing innovation. If we try to use established
models which work under steady-state conditions we find ourselves increasingly out of our depth and risk being upstaged by new and more agile players.

• For this reason, a key skill lies in building ‘dynamic capability’ (the ability to review and reset the approach which the organization takes to managing innovation in the face of a constantly shifting environment).

Key Terms Defined

Component innovation changes at the level of components in a bigger system, for example a faster transistor in a microchip in a computer.

Creating value implementing an idea which makes an economic or social difference.

Discontinuous innovation radical innovations which change the rules of the game and open up a new game in which new players are often at an advantage.

Dynamic capability the ability to review and reset the approach which the organization takes to managing innovation in the face of a changing environment.

Entrepreneurship the powerful mixture of energy, vision, passion, commitment, judgement and risk taking which provides the motive power behind the innovation process.

Incremental innovation small improvements to existing products, services or processes – ‘doing what we do but better’.

Innovation the process of translating ideas into useful new products, processes or services.

Invention coming up with a new idea.

Paradigm innovation changes in the underlying mental models which frame what the organization does.

Position innovation changes in the context in which the products/services are introduced.

Process innovation changes in the ways in which products/services are created and delivered.

Product innovation changes in products/services an organization offers.

Radical innovation significantly different changes to products, services or processes – ‘doing something completely different’.

Discussion Questions

1. Is innovation manageable or just a random gambling activity where you sometimes get lucky? If it is manageable, how can firms organize and manage it – what general principles could they use?
2. ‘Build a better mousetrap and the world will beat a path to your door!’ Will it? What are the limitations of seeing innovation simply as coming up with bright ideas? Illustrate your answer with examples drawn from manufacturing and services.

3. What are the key stages involved in an innovation process? And what are the characteristic sets of activities which take place at each stage? How could such an innovation process look for:
   a. a fast food restaurant chain?
   b. an electronic test equipment maker?
   c. a hospital?
   d. an insurance company?
   e. a new entrant biotechnology firm?

4. Fred Bloggs was a bright young PhD scientist with a patent on a new algorithm for monitoring brainwave activity and predicting the early onset of a stroke. He was convinced of the value of his idea and took it to market having sold his car, borrowed money from family and friends and taken out a large loan. He went bankrupt despite having a demonstration version which doctors he showed it to were impressed by. Why might his failure be linked to having a partial model of how innovation works – and how could he avoid making the same mistake in the future?

5. How does innovation contribute to competitive advantage? Support your answer with illustrations from both manufacturing and services.

6. Does innovation matter for public services? Using examples, indicate how and where it can be an important strategic issue.

7. You are a newly appointed director for a small charity which supports homeless people. How could innovation improve the ways in which your charity operates?

8. Innovation can take many forms. Give examples of product/service, process, position and paradigm (mental model) innovations.

9. The low-cost airline approach has massively changed the way people choose and use air travel – and has been both a source of growth for new players and a life-threatening challenge for some existing players. What types of innovation have been involved in this?

10. You have been called in as a consultant to a medium-sized toy manufacturer whose range of construction toys (building bricks, etc.) has been losing market share to other types of toys. What innovation directions would you recommend to this company to restore its competitive position? (Use the 4Ps framework to think about possibilities.)

11. Innovation is about big leaps forward, eureka moments and radical breakthroughs – or is it? Using examples from manufacturing and services, make a case for the importance of incremental innovation.
12. Describe, with examples, the concept of platforms in product and process innovation and suggest how such an approach could help spread the high costs of innovation over a longer period.

13. What are the challenges managers could face in trying to organize a long-term steady stream of incremental innovation?

Further Reading and Resources

Peter Drucker’s famous *Innovation and Entrepreneurship* (1985) provides an accessible introduction to the subject, but perhaps relies more on intuition and experience than on empirical research. A number of writers have looked at innovation from a process perspective; good examples include Keith Goffin and Rick Mitchell’s *Innovation Management* (Pearson, 2010), Paul Trott’s *Innovation and New Product Development* (Pearson, 2011) and Andrew Van de Ven’s *Innovation Journey* (Oxford University Press, 1999). Case studies provide a good lens through which this process can be seen and there are several useful collections including Bettina von Stamm’s *Innovation, Design and Creativity* (2nd edn, John Wiley & Sons Ltd, 2008), Roland Kaye and David Hawkridge’s *Case Studies of Innovation* (Kogan Page, 2003) and Roger Miller and Marcel Côté’s *Innovation Reinvented: Six Games that Drive Growth* (University of Toronto Press, 2012).

Some books cover company histories in detail and give an insight into the particular ways in which firms develop their own bundles of routines, for example David Vise’s *The Google Story* (Pan, 2008), Graham and Shuldiner’s *Corning and the Craft of Innovation* (Oxford University Press, 2001) and Gundling’s *The 3M Way to Innovation: Balancing People and Profit* (Kodansha International, 2000).

Autobiographies and biographies of key innovation leaders provide a similar, if sometimes personally biased, insight into this, for example Richard Brandt’s *One Click: Jeff Bezos and the Rise of Amazon.com* (Viking, 2011), Walter Issacson’s *Steve Jobs: The Authorized Biography* (Little Brown, 2011) and James Dyson’s *Against the Odds* (Texere, 2003). In addition, several websites – such as the Product Development Management Association (www.pdma.org) and www.innovationmanagement.se – carry case studies on a regular basis.

Many books and articles focus on particular aspects of the process, for example on technology strategy, Burgelman et al.’s *Strategic Management of Technology* (McGraw-Hill Irwin, 2004). On product or service development, Robert Cooper’s *Winning at New Products* (Kogan Page, 2001), Rosenau et al.’s *The PDMA Handbook of New Product Development’* (John Wiley & Sons Ltd, 1996) and Tidd and Hull’s *Service Innovation: Organizational Responses to Technological Opportunities and Market Imperatives* (Imperial College Press, 2003). On process innovation, Lager’s *Managing Process Innovation* (Imperial College Press, 2011), Zairi and Duggan’s *Best Practice Process Innovation Management*


Websites such as AIM (www.aimresearch.org), NESTA (www.nesta.org) and ISPIM (http://ispim.org/) regularly report academic research around innovation. Others explore the challenges posed to future entrepreneurs. The site www.thefutureofinnovation.org offers the views of nearly 400 researchers in the area of future challenges, while www.innovation-futures.org presents a number of different scenarios for the future, each with significant innovation and entrepreneurship challenges.

References


**Deeper Dive** explanations of innovation concepts and ideas are available on the Innovation Portal at [www.innovation-portal.info](http://www.innovation-portal.info)

**Quizzes** to test yourself further are available online via the Innovation Portal at [www.innovation-portal.info](http://www.innovation-portal.info)
### Summary of online resources for Chapter 1 – all material is available via the Innovation Portal at www.innovation-portal.info

<table>
<thead>
<tr>
<th>Cases</th>
<th>Media</th>
<th>Tools</th>
<th>Activities</th>
<th>Deeper Dives</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Dyson</td>
<td>Model T Ford</td>
<td>4Ps for innovation strategy</td>
<td>Incremental and radical innovation</td>
<td>Servitization</td>
</tr>
<tr>
<td>Zara</td>
<td>Finnegan’s Fish Bar</td>
<td>Innovation Fitness Test</td>
<td>Strategic advantage through innovation</td>
<td></td>
</tr>
<tr>
<td>Model T Ford</td>
<td>Tim Jones</td>
<td>PEST analysis</td>
<td>Mapping the strategic environment</td>
<td></td>
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<tr>
<td>Alibaba</td>
<td></td>
<td>Rich pictures</td>
<td>Harvesting knowledge crops</td>
<td></td>
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<tr>
<td>Taobao</td>
<td></td>
<td>SWOT</td>
<td>Strategic planning for implementation</td>
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<td>Karolinska</td>
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<td>Five forces strategic analysis</td>
<td>Dragons’ Den</td>
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<td>Competency mapping</td>
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<td>Aravind Eye</td>
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<td>Potential problem analysis</td>
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<td>Business model canvas</td>
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<td>Kumba Resources</td>
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<td>Cybercrime</td>
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