

CHAPTER 12

Capturing learning from innovation

One of the common metaphors used to describe innovation is that of a journey – a complex, fitful travel through uncertain territory involving false starts, wrong directions, blind alleys and unexpected problems. Successful innovation implies the completion of this risky adventure and – through widespread adoption and diffusion of the new idea as a product, service or process – a happy ending with valuable returns on the original investment. But it also provides an opportunity to reflect on the journey and to take stock of the knowledge acquired through an often difficult experience. It's worth doing this because the knowledge gained through such reflection can provide a powerful resource to help with the next innovation journey.

Not all innovation is, of course, successful – but the opportunities for learning from failure are also considerable. Understanding what doesn't work on a technological level, or recognizing the difficulties in a particular marketplace that led to non-adoption is useful information to take stock of and use when planning the next expedition. Experience is an excellent teacher – but its lessons will only be of value if there is a systematic and committed attempt to learn them.

This chapter reviews the ways in which learning can be captured from the innovation experience.

12.1 What have we learned about managing innovation?

It will be useful to briefly take stock of the key themes we have been covering in the book. We can summarize these as follows:

- Learning and adaptation are essential in an inherently uncertain future – thus innovation is an imperative.
- Innovation is about interaction of technology, market and organization.
- Innovation can be linked to a generic process which all enterprises have to find their way through.
- Different firms use different routines with greater or lesser degrees of success. There are general recipes from which general suggestions for effective routines can be derived – but these must be customized to particular organizations and related to particular technologies and products.
- Routines are learned patterns of behaviour which become embodied in structures and procedures over time. As such they are hard to copy and highly firm-specific.
- Innovation management is the search for effective routines – in other words, it is about managing the learning process towards more effective routines to deal with the challenges of the innovation process.

We have also argued that innovation management is not a matter of doing one or two things well, but about good all-round performance. There are no, single, simple magic bullets but a set of learned

behaviours. In particular we have identified four clusters of behaviour which we feel represent particularly important routines:

- Successful innovation is strategy-based.
- Successful innovation depends on effective internal and external linkages.
- Successful innovation requires enabling mechanisms for making change happen.
- Successful innovation only happens within a supporting organizational context.

In the *strategy* domain there are no simple recipes for success but a capacity to learn from experience and analysis is essential. Research and experience point to three essential ingredients in innovation strategy:

1. The *position* of the firm, in terms of its products, processes, technologies and the national innovation system in which it is embedded. Although a firm's technology strategy may be influenced by a particular national system of innovation it is not determined by it.
2. The technological *paths* open to the firm given its accumulated competencies. Firms follow technological trajectories, each of which has distinct sources and directions of technological change and which define key tasks for strategy.
3. The organizational *processes* followed by the firm in order to integrate strategic learning across functional and divisional boundaries.

Within the area of *linkages*, developing close and rich interaction with markets, with suppliers of technology and other organizational players, is of critical importance. Linkages offer opportunities for learning – from tough customers and lead users, from competitors, from strategic alliances and from alternative perspectives. The theme of 'open innovation' is increasingly becoming recognized as relevant to an era in which networking and inter-organizational behaviour is the dominant mode of operation.

In order to succeed organizations also need *effective implementation mechanisms* to move innovations from idea or opportunity through to reality. This process involves systematic problem solving and works best within a clear decision-making framework, which should help the organization to stop as well as to progress development if things are going wrong. It also requires skills in project management and control under uncertainty and parallel development of both the market and the technology streams. And it needs to pay attention to managing the change process itself, including anticipating and addressing the concerns of those who might be affected by the change.

Finally, innovation depends on having a *supporting organizational context* in which creative ideas can emerge and be effectively deployed. Building and maintaining such organizational conditions are a critical part of innovation management, and involve working with structures, work organization arrangements, training and development, reward and recognition systems and communication arrangements. Above all, the requirement is to create the conditions within which a learning organization can begin to operate, with shared problem identification and solving and with the ability to capture and accumulate learning about technology and about management of the innovation process.

Throughout the book we have tried to consider the implications of managing innovation as a generic process but also to look at the ways in which approaches need to take into account two key challenges in the twenty-first century – those of managing 'beyond the steady state' and 'beyond boundaries'. The same basic recipe still applies but there is a need to configure established approaches and to learn to develop new approaches to deal with these challenges.

12.2 How can we continue to learn to manage innovation?

To answer this question we need to focus on two dimensions of learning. First there is the acquisition of new knowledge to add to the stock of knowledge resources which the organization possesses. These can be technological or market knowledge, understanding of regulatory and competitive contexts, etc. As we've seen throughout the book, innovation represents a key strategy for developing and sustaining competitiveness in what are increasingly 'knowledge economies' – but being able to deploy this strategy depends on continuing accumulation, assimilation and deployment of new knowledge. Firms that exhibit competitive advantage – the ability to win and to do so continuously – demonstrate *'timely responsiveness and rapid product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competencies'*.¹

And second there is knowledge about the innovation process itself – the ways in which it can be organized and managed, the bundle of routines which enable us to plan and execute the innovation journey. We have been speaking throughout the book about the idea of *'innovation capability'* – the ability to organize and manage the process. Figure 12.1 reminds us of the model we have been using as an explanatory framework and *'innovation capability'* refers to our ability to create and operate such a framework in our organizations.

But in a constantly changing environment that capability may not be enough – faced with moving targets along several dimensions (markets, technologies, sources of competition, regulatory rules of the game) we have to be able to adapt and change our framework. This process of constant modification and development of our innovation capability – adding new elements, reinforcing existing ones and sometimes letting go of older and no longer appropriate ones – is the essence of what is called *'dynamic capability'*.¹

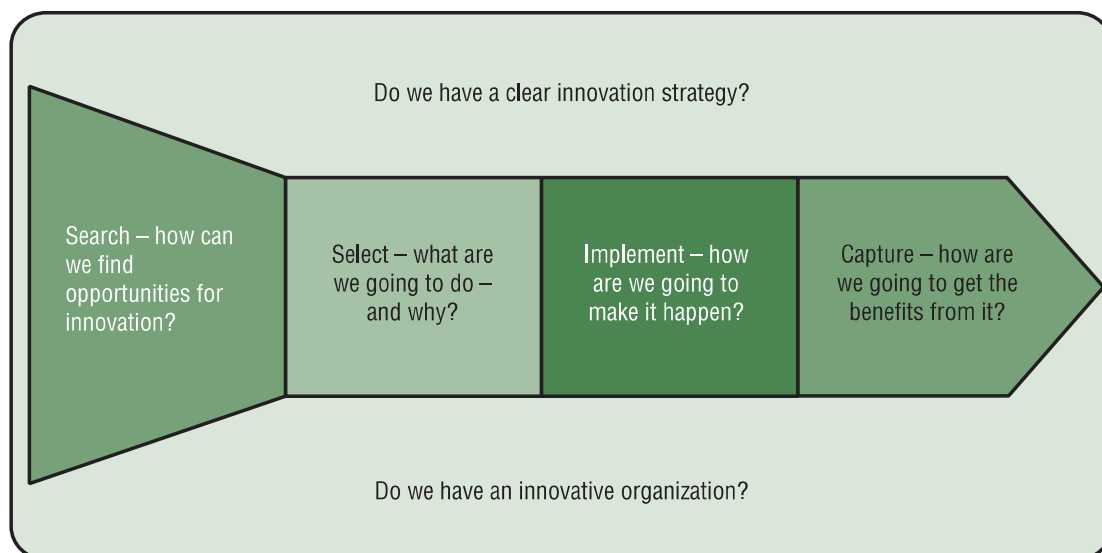


FIGURE 12.1: Simplified model of the innovation process

The lack of such capability can explain many failures, even amongst large and well-established organizations. For example:

- The failure to recognize or capitalize on new ideas that conflict with an established knowledge set – the ‘not-invented-here’ problem.²
- The problem of being too close to existing customers and meeting their needs too well – and not being able to move into new technological fields early enough.³
- The problem of adopting new technology – following technological fashions – without an underlying strategic rationale.⁴
- The problem of lack of codification of tacit knowledge.⁵

The costs of not managing learning – of lacking the dynamic capability – can be high. At the least it implies a blunting of competitive edge, a slipping against previously strong performance. For example, 3M was for many years in the top three of *Business Week’s* list of innovative companies, but following a change in CEO and a shift in emphasis away from breakthrough innovation and towards incremental improvement linked to a ‘six sigma’ programme, their position fell to seventh in 2006 and 22nd in 2007. This prompted significant debate both within the company and in its wider stakeholder community and a refocusing of efforts around developing their core innovation capabilities further. In some cases the fall accelerates and eventually leads to terminal decline – as the fate of companies like Digital, Polaroid or Swissair, once feted for their innovative prowess, indicates.

So we need to look hard at the ways in which organizations can learn – and learn to learn in conscious and strategic fashion. This is why routines play such an important role in managing innovation – they represent the firm-specific patterns of behaviours that enable a firm to solve particular problems.⁶ In other words, they embody what an organization (and the individuals within it) has learned about how to learn.

12.3 Learning to manage innovation

We can think of the innovation process in Figure 12.1 as a learning loop – picking up signals which trigger a response. In that sense it is an ‘adaptive’ learning system, helping the organization survive and grow within its environment. But making sure that this adaptive system works well also requires a second learning loop, one which can ‘re-program’ the system to tune it better to a changing environment and as a result of lessons learned about how well it works. (It’s a little like a central heating or air conditioning system – there is an adaptive loop which responds when the temperature gets hotter or colder in the room by modifying the output of the heater or air conditioning unit. But we also need someone to think about – and reset – the thermostat to suit the changing conditions.) This kind of ‘double loop’ or generative learning is at the heart of the innovation management challenge.^{7–9}

All of this argues strongly that firms should undertake some form of review of innovation projects in order to help them develop both technological and managerial capability.¹⁰ One way of representing the learning process that can take place in organizations is to use a simple model of a learning cycle (Figure 12.2). Here learning is seen as requiring:¹¹

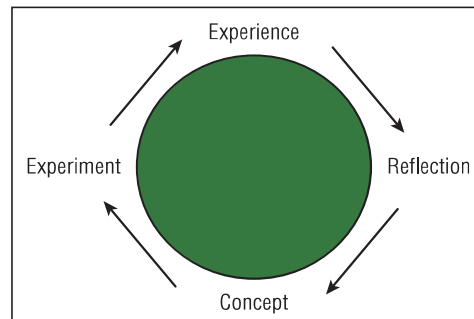


FIGURE 12.2: Kolb's cycle of experiential learning

- Structured and challenging reflection on the process – what happened, what worked well, what went wrong, etc.
- Conceptualizing – capturing and codifying the lessons learned into frameworks and eventually procedures to build on lessons learned.
- Experimentation – the willingness to try and manage things differently next time, to see if the lessons learned are valid.
- Honest capture of experience (even if this has been a costly failure) – so we have raw material on which to reflect.

Effective learning from and about innovation management depends on establishing a learning cycle around these themes.

We should also recognize the problem of *unlearning*. Not only is learning to learn a matter of acquiring and reinforcing new patterns of behaviour – it is often about forgetting old ones.¹² Letting go in this way is by no means easy, and there is a strong tendency to return to the status quo or equilibrium position – which helps account for the otherwise surprising number of existing players in an industry who find themselves upstaged by new entrants taking advantage of new technologies and emerging markets of new business models. Managing discontinuous innovation requires the capacity to cannibalize and look for ways in which other players will try and bring about ‘creative destruction’ of the rules of the game. Jack Welch, former CEO of General Electric is famous for having sent out a memo to his senior managers asking them to tell him how they were planning to destroy their businesses! The intention was not, of course, to execute these plans but rather to use the challenge as a way of focusing on the need to be prepared to let go and rethink – to unlearn.¹³

12.4 Tools to help capture learning

If we are to extract useful learning from successful – or unsuccessful – innovation activities, then we need to look at the range of tools which might help us with the task. In the following section we’ll look briefly at some of the possible approaches to this task.

Post-project reviews (PPRs) are structured attempts to capture learning at the end of an innovation project – for example, in a project debrief. This is an optional stage and many organizations fail to carry



out any kind of review, simply moving on to the next project and running the risk of repeating mistakes made in previous projects. Others do operate some form of structured review or post-project audit, however, this does not of itself guarantee learning since emphasis may be more on avoiding blame and trying to cover up mistakes.

On the positive side, they work well when there is a structured framework against which to examine the project, exploring the degree to which objectives were met, the things which went well and those which could be improved, the specific learning points raised and the ways in which they can be captured and codified into procedures which will move the organization forward in terms of managing technology in the future.¹⁴

Such reviews depend on establishing a climate in which people can honestly and objectively explore issues that the project raises. For example, if things have gone badly the natural tendency is to cover up mistakes or try and pass the blame around. Meetings can often degenerate into critical sessions with little being captured or codified for use in future projects.

The other weakness of PPRs is that they are best suited to distinct projects, for example, developing a new product or service or implementing a new process.¹⁵ They are not so useful for the smaller scale, regular incremental innovation which is often the core of day-to-day improvement activity. Instead we need some form of *systematic capture*. Variations on the standard operating procedures approach can be powerful ways of capturing learning – particularly in translating it from tacit and experiential domains to more codified forms for use by others.¹⁶ They can be simple, for example, in many Japanese plants working on ‘total productive maintenance’ programmes, operators are encouraged to document the operating sequence for their machinery. This is usually a step-by-step guide, often illustrated with photographs and containing information about ‘know-why’ as well as ‘know-how’. This information is usually contained on a single sheet of paper and displayed next to the machine. It is constantly being revised as a result of continuous improvement activities, but it represents the formalization of all the little tricks and ideas which the operators have come up with to make that particular step in the process more effective.¹⁷

On a larger scale, capturing knowledge into procedures also provides a structured framework within which to operate more effectively. Increasingly organizations are being required by outside agencies and customers to document their processes and how they are managed, controlled and improved, for example, in the quality area under ISO9000, in the environmental area under ISO14000 and in an increasing number of customer/supplier initiatives such as Ford’s QS9000.

Once again there are strengths and weaknesses in using procedures as a way of capturing learning. On the plus side there is much value in systematically trying to reflect on and capture knowledge derived from experience – it is the essence of the learning cycle. But it only works if there is commitment to learning and a belief in the value of the procedures and their subsequent use. Otherwise the organization simply creates procedures which people know about but do not always observe or use. There is also the risk that, having established procedures, the organization then becomes resistant to changing them – in other words, it blocks out further learning opportunities.

Benchmarking is the general name given to a range of techniques which involve comparisons – for example, between two variants of the same process or two similar products – so as to provide opportunities for learning.^{18–20} Benchmarking can, for example, be used to compare how different companies manage the product development processes: where one is faster than the other there are learning opportunities in trying to understand how they achieve this.

Benchmarking works in two ways to facilitate learning. First, it provides a powerful motivator since comparison often highlights gaps which – if they are not closed – might well lead to problems in competitiveness later. In this sense it offers a structured methodology for learning and is widely used by external agencies who see it as a lever with which to motivate particularly smaller enterprises



to learn and change.²¹ It provides a powerful focus for the operation of 'learning networks' (described in Chapter 6) since it offers a framework around which shared learning can be targeted and monitored and across which experiences can be exchanged.²²

Benchmarking also provides a structured way of looking at new concepts and ideas. It can take several forms:

- Between similar activities within the same organization.
- Between similar activities in different divisions of a large organization.
- Between similar activities in different firms within a sector.
- Between similar activities in different firms and sectors.

The last group is often the most challenging since it brings completely new perspectives. By looking at, for example, how a supermarket manages its supply chain a manufacturer can gain new insights into logistics. Looking at how an engineering shop can rapidly set up and changeover between different products can help a hospital use its expensive operating theatres more effectively.

For example, Southwest Airlines achieved an enviable record for its turnaround speed at airport terminals. It drew inspiration from watching how industry carried out rapid changeover of complex machinery between tasks – and, in turn, those industries learned from watching activities like pit-stop procedures in the Grand Prix motor racing world. In similar fashion Kaplinsky reports on dramatic productivity and quality improvements in the healthcare sector, drawing on lessons originating in inventory management systems in manufacturing and retailing.²³

Building on the success of benchmarking as an organizational development tool there has been increasing use of what can be termed 'capability maturity models'.²⁴ The auditing and reviewing process central to benchmarking does not necessarily have to be done in comparison with another organization but can usefully be done against ideal-type or normative models of good practice. This found particular expression during the 'quality revolution' of the 1990s where benchmarking frameworks such as the Malcolm Baldrige Award in the USA, the Deming Prize in Japan and the European Quality Award all used sophisticated benchmarking frameworks.²⁵ The approach has been extended to a number of other domains – for example, software development processes, project management, IT implementation and new product development.²⁴ In the UK a framework for benchmarking and auditing manufacturing performance was developed and offered as a national service, with special emphasis on assisting smaller firms improve their performance.^{26,27}



12.5 Innovation auditing

Such capability/maturity auditing offers another structured way of reflecting on the process of innovation and how it is managed. The analogy can be drawn with financial auditing where the health of the company and its various operations can be seen through auditing its books. The principle is simple: using what we know about successful and unsuccessful innovation and the conditions which bring it about, we can construct a checklist of questions to ask of the organization. We can then score its performance against some model of 'best practice' and identify where things could be improved.

This auditing approach has considerable potential relevance for the practice of innovation management and a number of frameworks have been developed to support it. Back in the 1980s the UK

National Economic Development Office developed an ‘innovation management tool kit’ which has been updated and adapted for use as part of a European programme aimed at developing better innovation management amongst small- and medium-sized enterprises (SMEs). Another framework, originally developed at London Business School, was promoted by the UK Department of Trade and Industry and led to the development of a series of frameworks including the ‘living innovation’ model which was jointly promoted with the Design Council.^{26,28} Francis offers an overview of a number of these.²⁹ Other frameworks have been developed which cover particular aspects of innovation management, such as creative climate, continuous improvement and product development.^{30–32} With the increasing use of the Internet have come a number of sites which offer interactive frameworks for assessing innovation management performance as a first step towards organization development.

In each case the purpose of such auditing is not to score points or win prizes but to enable the operation of an effective learning cycle through adding the dimension of structured reflection. It is the process of regular review and discussion that is important rather than detailed information or exactness of scores. The point is not simply to collect data but to use these measures to drive improvement of the innovation process and the ways in which it is managed. As the quality guru, W. Edwards Deming, pointed out, *‘If you don’t measure it you can’t improve it!’* (see Box 12.1).

In reviewing innovative performance we can look at a number of possible measures and indicators – as Box 12.1 indicates. We can look at measures of specific outputs of various kinds, for example, patents and scientific papers as indicators of knowledge produced, or number of new products introduced (and percentage of sales and/or profits derived from them) as indicators of product innovation success.³³ And we can use measures of operational or process elements, such as customer satisfaction surveys to measure and track improvements in quality or flexibility.³⁴ We can also try to assess the strategic impact where the overall business performance is improved in some way and where at least some of the benefit can be attributed directly or indirectly to innovation, for example, growth in revenue or market share, improved profitability, higher value added.³⁵

We could also consider a number of more specific measures of the internal workings of the innovation process or particular elements within it. For example, we could monitor the number of new ideas (product/service/process) generated at the start of the innovation system, failure rates – in the development process, in the marketplace or the number or percentage of overruns on development time and cost budgets. In process innovation we might look at the average lead time for introduction or use measures of continuous improvement, for example, suggestions per employee, number of problem-solving teams, savings accruing per worker, cumulative savings.

BOX 12.1**Measuring innovation**

The problem with audit frameworks and benchmarks of this kind is that they often provide an indication of how a system and its components are performing but they fail to take into account the final piece of the puzzle – why are they successful? For example, in the total quality field in the USA much interest was shown in the self-assessment framework surrounding the Malcolm Baldrige Award, and many firms used this benchmarking and assessment framework to improve their quality performance. However, one of the winners, Florida Power and Light, whilst undoubtedly doing many of the right things, was none the less forced into receivership; this prompted the addition of a performance category to the assessment framework.

There is also scope for measuring some of the influential conditions supporting or inhibiting the process, for example, the 'creative climate' of the organization or the extent to which strategy is clearly deployed and communicated. And there is value in considering *inputs* to the process, for example, percentage of sales committed to R&D, investments in training and recruitment of skilled staff.

VIEWS FROM THE FRONT LINE

Key lessons learned about managing innovation

- Innovation capability is difficult to create and easy to destroy. It is not a 'fix and forget' thing. It needs constant nourishment and protection when operating in a business environment that is focused on exploitation and where compliance with rules is seen as paramount. It also needs constant attention to keep the momentum going – as if it were an aeroplane, always needing to keep moving forward in order to remain in the air. Managing innovation requires an innovative approach.

Do:

- Be very visible and very active in promoting innovation.
- Encourage senior management to take an active role in promoting innovation.
- Encourage people to challenge and question.
- Allow experimentation.
- Allow individuality to take over at times.
- Protect from the corporate bureaucracy.
- Remember that it takes time to develop an innovation capability.
- Continuously monitor innovation performance.
- Make sure that the team has a clear objective, an end point rather than a tightly specified outcome.
- Allow the people involved latitude to try things out for themselves.
- Promote innovation across the whole business.

Don't:

- Lose focus on the objective – what is the innovation for?
- Use your innovation capability and resource as a quick fix in cost reduction situations.
- Be prescriptive in how results have to be achieved.
- Force conformity on the innovation team.
- Allow excess resource or time, as this will dilute the pressure to come up with a solution.
- Try to manage innovation with a rule book.

Patrick McLaughlin, Managing Director, Cerulean

Do:

- Build a project-based organization.
- Build a good portfolio management structure.
- Build a funnel or stage-gate system, with gates where projects pass through.
- Ensure a large enough human resource base allocated to innovation-related activities.

Don't:

- Put people in functional positions only.
- Lose track of whether projects are rightly being continued in the innovation funnel.

Wouter Zeeman, CRH Insulation Europe

- Don't over-manage people, people generally want to do a good job.
- Get the best team that you can around you in particular people that are better than you.
- Learn from your team, don't be afraid for them to learn from you.
- Look for the simple, not the complex. Things often don't need to be so difficult.
- Don't try and measure everything: the key is customer first all else is secondary.

John Tregaskes, Technical Specialist Manager, Serco

- Focus on a clearly articulated 'outcome', i.e. the result you are trying to achieve, and channel the scarce resources and creative talent you have toward finding innovative ways of delivering on this outcome.

Do:

- Leverage and institutionalize the use of tools.
- Make it fun.
- Engage diverse groups of people.
- Get off-site if you can.
- Value and encourage contributions, keep it simple to begin with.
- Focus on innovation driven from large programmes as well as bottom-up engagement of the line.
- Deliver some early successes and publicize the hell out of them to gain management attention and traction.
- Have a creative process in mind and a means of narrowing to get to solution.

Don't:

- Just put a mechanism in place and expect miracles.
- Let our interpretation of regulatory constraints get in the way (be compliant, but explore the interpretation we have made of the underlying regulations).
- Sit in your office – get out there.
- Underestimate the impact of peer pressure.
- Personal risk taking/willingness to think outside the box.

John Gilbert, Head of Process Excellence, UBS

- Front end of innovation process must be detached from standard development process, e.g. stage-gate model.
- Dedicated people for dedicated tasks to reduce the risk of 'fluffiness'.
- Difficult to maintain full attention from senior management on innovation projects over several years and acceptance from senior management that radical innovation projects will have a higher risk than incremental projects.

John Thesmer, Managing Director, Ictal Care, Denmark

- **Do** talk frequently with end users of your technology and understand the other constraints that might make your innovation less than practical for them.

- My biggest lesson with regards to managing innovation – at least in the oil and gas industry – is that the human issues and change management dimensions of technology deployment are much bigger than most people think. This tends to be the ‘Achilles’ heel’ that dooms many innovations to failure in this sector. One has to remember that most of the people working in an average *Fortune 500* company are focused on making money for their company by using today’s technologies and methods. When an innovator shows up with a new gizmo, the deployment process is typically perceived by many as an intrusion to their day-to-day workflows and procedures. Innovators seem to be born with an instinct that new technologies are inherently better than whatever they are replacing, but this is not a perspective that one’s co-workers will always share. Accordingly, getting a new technology deployed into the energy industry takes a surprising amount of salesmanship, convincing other people, and tenacity. The ‘big lesson,’ therefore, is that most of your non-R&D colleagues won’t necessarily look at new technologies through the same lens as you do.
- **Don’t** assume that people will naturally want to use your innovation. It may take years before they feel this way.
- **Do** everything in your power to make a technology successful, but **don’t** feel like a failure if it doesn’t take root. If you’re never failing, you’re not pushing the envelope.

Rob Perrons, Shell Exploration, USA

12.6 Developing innovation management capability

A great deal of research effort has been devoted to the questions of what and how to measure in innovation. The risk is that we become so concerned with these questions that we lose sight of the practical objective, which is to reflect upon and improve the management of the process. Having established in this book some of the factors which appear to influence success and failure in innovation in the experience of others, we can begin to develop a tool for assessing and developing innovative performance in organizations. We might begin with a simple checklist of factors and assign a score to each of them so as to develop a profile of innovation performance.

So, for example, an organization with no clear innovation strategy, with limited technological resources and no plans for acquiring more, with weak project management, with poor external links and with a rigid and unsupportive organization would be unlikely to succeed in innovation. By contrast, one that was focused on clear strategic goals, had developed long-term links to support technological development, had a clear project management process, which was well supported by senior management and which operated in an innovative organizational climate, would have a better chance of success.

An example of such a scale might be:

- 1 = Innovation not even thought about, rarely happens.
- 2 = Some awareness but random and occasional responses, informal systems.
- 3 = Awareness and formal systems in place – but could still be improved.
- 4 = Highly developed and effective systems including provision for improvement and development.

Of course no organization starts with a perfectly developed capability to organize and manage innovation. It goes through the process of trial and error learning, slowly finding out which behaviours work and which do not and gradually repeating and reinforcing them into a pattern of 'routines'. Developing innovation capability involves establishing and reinforcing those routines, and reviewing and checking that they are still appropriate or whether they need replacing or modifying. Key questions are:

- What do we need to do more of, strengthen?
- What do we need to do less of, or stop?
- What new routines do we need to develop?

We saw in Chapter 2 that innovation capability could be represented as a series of stages in development and we can make use of this model as a 'road-map' for considering the question of *how* organizations can learn to manage innovation better (Figure 12.3).

Box 12.2 gives an example of an outline 'innovation audit' which could be used to focus attention on some of the issues flagged in this book and help begin the process of auditing innovation management capability. The responses to these questions describe 'the way we do things around here' – the pattern of behaviour which describes how the organization handles the question of innovation. These represent the tip of an iceberg but can help focus attention on areas where there is room for further development and where more detailed questions need to be asked.

Based on the model we have used throughout the book, any organization needs to ask itself questions in five key areas:

- Do we have effective enabling mechanisms for the innovation process – to search, to select, to implement and to capture?

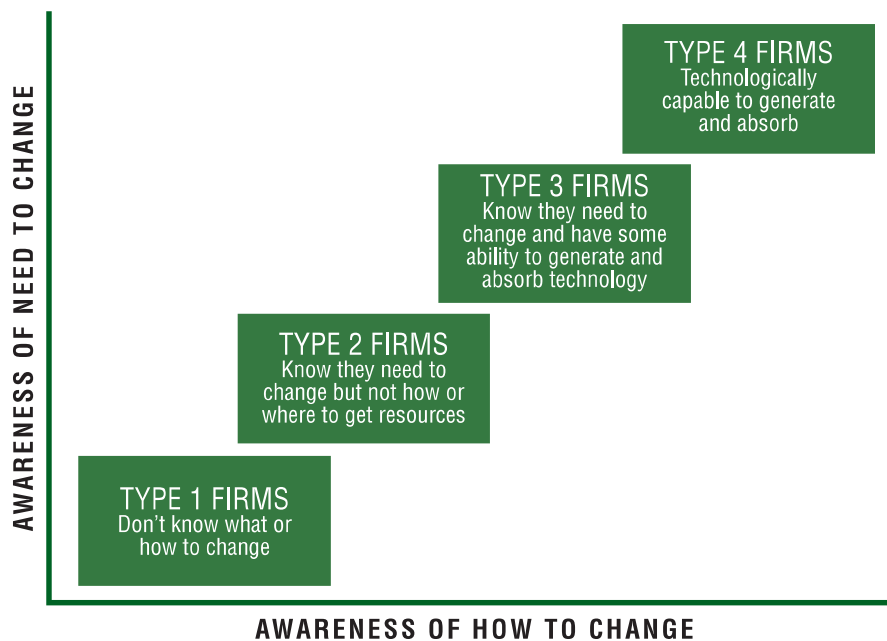


FIGURE 12.3: Groups of firms according to innovation capability

- Do we have a clear innovation strategy and is it communicated and deployed effectively?
- Do we have an innovative organization, one which provides a supportive climate for innovation?
- Do we build and manage rich external linkages to enable 'open innovation'?
- Do we capture learning to help us develop improved innovation management capability?

Kao, Electroco, 3M and Corning provide examples of companies mapped on to this framework.

In carrying out auditing of this kind there is clearly no such thing as an absolute score. None the less it is possible to develop a number of indicators which give some underpinning to what will otherwise be rather subjective judgements about the innovation management capability of a company. For example, a firm that spends 10% of its turnover on R&D is likely to be better on resourcing innovation than one that does no R&D at all.


Box 12.2

How well do we manage innovation?

This simple self-assessment tool focuses attention on some of the important areas of innovation management. Below you will find statements which describe 'the way we do things around here' – the pattern of behaviour that describes how the organization handles the question of innovation. For each statement simply put a score from 1 (= not true at all) to 7 (= very true).
Around here . . .


Statement
Score (1 = not true at all to 7 = very true)

1. People have a clear idea of how innovation can help us compete
2. We have processes in place to help us manage new product development effectively from idea to launch
3. Our organization structure does not stifle innovation but helps it to happen
4. There is a strong commitment to training and development of people
5. We have good 'win-win' relationships with our suppliers
6. Our innovation strategy is clearly communicated so everyone knows the targets for improvement
7. Our innovation projects are usually completed on time and within budget
8. People work well together across departmental boundaries
9. We take time to review our projects to improve our performance next time

Statement	Score (1 = not true at all to 7 = very true)
10. We are good at understanding the needs of our customers/end users	
11. People know what our distinctive competence is – what gives us a competitive edge	
12. We have effective mechanisms to make sure everyone (not just marketing) understands customer needs	
13. People are involved in suggesting ideas for improvements to products or processes	
14. We work well with universities and other research centres to help us develop our knowledge	
15. We learn from our mistakes	
16. We look ahead in a structured way (using forecasting tools and techniques) to try and imagine future threats and opportunities	
17. We have effective mechanisms for managing process change from idea through to successful implementation	
18. Our structure helps us to take decisions rapidly	
19. We work closely with our customers in exploring and developing new concepts	
20. We systematically compare our products and processes with other firms	
21. Our top team have a shared vision of how the company will develop through innovation	
22. We systematically search for new product ideas	
23. Communication is effective and works top-down, bottom-up and across the organization	
24. We collaborate with other firms to develop new products or processes	
25. We meet and share experiences with other firms to help us learn	
26. There is top management commitment and support for innovation	
27. We have mechanisms in place to ensure early involvement of all departments in developing new products/processes	
28. Our reward and recognition system supports innovation	
29. We try to develop external networks of people who can help us, e.g., with specialist knowledge	

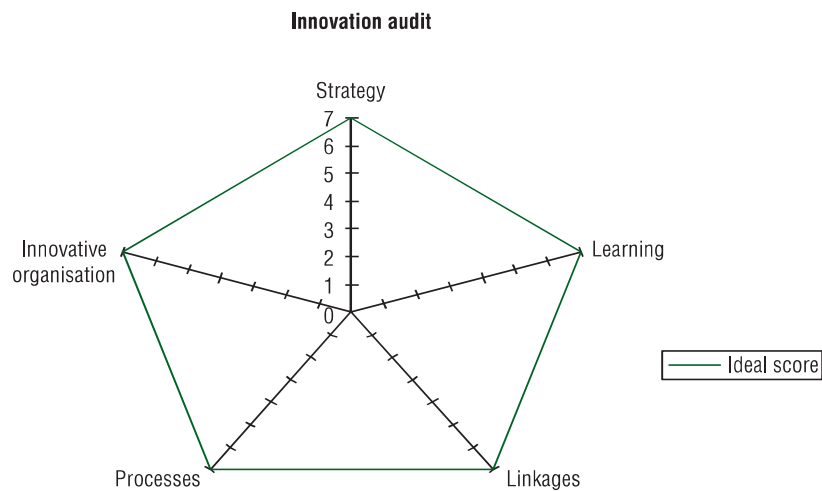
Statement	Score (1 = not true at all to 7 = very true)
30. We are good at capturing what we have learned so that others in the organization can make use of it	
31. We have processes in place to review new technological or market developments and what they mean for our firm's strategy	
32. We have a clear system for choosing innovation projects	
33. We have a supportive climate for new ideas – people don't have to leave the organization to make them happen	
34. We work closely with the local and national education system to communicate our needs for skills	
35. We are good at learning from other organizations	
36. There is a clear link between the innovation projects we carry out and the overall strategy of the business	
37. There is sufficient flexibility in our system for product development to allow small 'fast-track' projects to happen	
38. We work well in teams	
39. We work closely with 'lead users' to develop innovative new products and services	
40. We use measurement to help identify where and when we can improve our innovation management	

When you have finished, add the totals for the questions in the following way:

Quest. no.	Scores	Quest. no.	Scores	Quest. no.	Scores	Quest. no.	Scores	Quest. no.	Scores
1		2		3		5		4	
6		7		8		10		9	
11		12		13		14		15	
16		17		18		19		20	
21		22		23		24		25	

Quest. no.	Scores	Quest. no.	Scores	Quest. no.	Scores	Quest. no.	Scores	Quest. no.	Scores
26		27		28		29		30	
31		32		33		34		35	
36		37		38		39		40	
Sum									
Total									
Divide by 8									
Total score for									
	Strategy		Processes		Organization		Linkages		Learning

Now plot a profile for the five dimensions.



12.7 Using the framework

This simple audit provides a framework and a brief checklist of questions which might enable an assessment of innovation management to be undertaken. It is not exhaustive, but it does indicate the balance of facts and subjective judgements which would need to be considered to make a realistic response to the question, 'How

well does this organization manage innovation?'. The website contains several cases which illustrate how firms have used innovation auditing to develop their capability, specifically Coloplast and Cerulean.



The format of the particular tool is not important – what is needed is the ability to use it to make a wide-ranging review of the factors affecting innovation success and failure, and how management of the process might be improved. Innovation audits of this kind offer:

- An audit framework to see what you did right and wrong in the case of particular innovations or as a way of understanding why things happened the way they did.
- A checklist to see if you are doing the right things.
- A benchmark to see if you are doing them as well as others.
- A guide to continuous improvement of innovation management.
- A learning resource to help acquire knowledge and provide inspiration for new things to try.
- A way of focusing on subsystems with particular problems and then working with the owners of those processes and their customers and suppliers to see if the discussion cannot improve on things.

(The website contains further detail to help you interpret your particular scores and think about what you might do next in terms of organizational development for innovation.)



12.8 Variations on a theme

Throughout the book we have stressed that whilst the challenge in innovation management is generic there are specific issues around which specific responses need to be configured. We might, for example, look at the case of service innovation and focus our audit questions around themes that might be particularly relevant in thinking about managing such innovation. See Box 12.3.

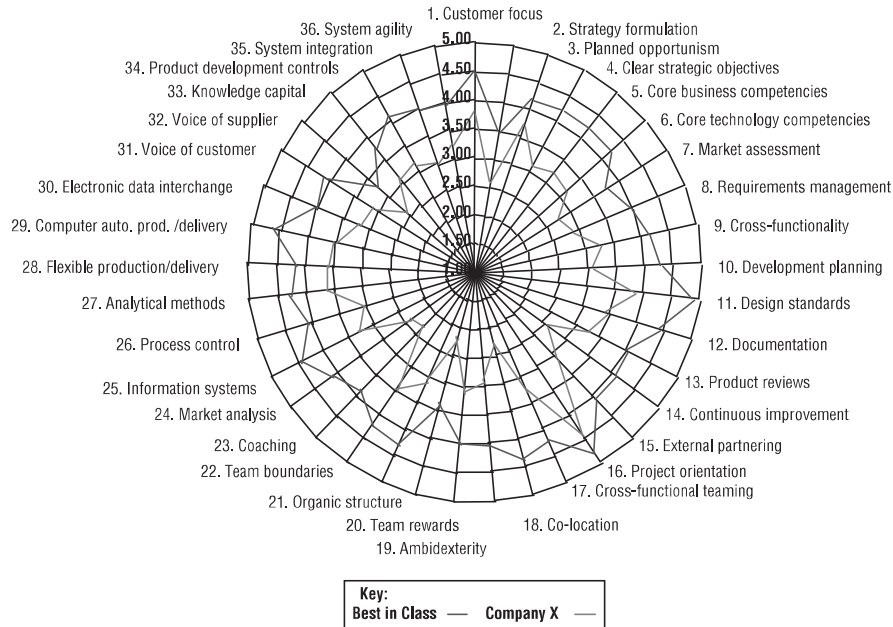
Box 12.3

Measuring service innovation

The organization and management of new service development and delivery can be assessed by five components: strategy, process, organization, tools/technology and system (SPOTS). This framework has been developed and tested by analysing more than 100 firms in the USA and the UK, and validated during the course of conducting a total of 27 cases studied from 18 companies.

Each of the five factors plays a different role in the performance of service innovation. *Strategy* provides focus; *process* provides control; *organization* provides coordination of people; *tools and technologies* provide transformation/transaction capabilities, and *system* provides integration. Performance is analysed as a total index and as three subscales: (i) innovation and quality; (ii) time compression in development and cost reduction in development/delivery; and (iii) service delivery. The first two factors roughly correspond to generic strategic alternatives, differentiation versus cost. The third factor is conceptually important because it distinguishes the service delivery process from product features. Delivery processes often comprise a significant proportion of value added by services, especially if interpersonal exchanges are involved.

The scores and comparisons with those of other companies in the database allow a company to identify its strengths and weaknesses. For example:



Source: Tidd, J., and F. Hull, eds (2003) Service innovation: Organizational responses to technological opportunities and market imperative. Imperial College Press: London.

Similarly we have been arguing that there are conditions – beyond the steady state – where we need to take a different approach to managing innovation and to introduce new or at least complementary routines to those helpful in dealing with ‘steady-state’ innovation. Again we can develop specific audit questions to help facilitate this kind of reflection. Box 12.4 gives an example, using the same approach as we saw earlier.

Box 12.4

How well do we manage discontinuous innovation?



As with the ‘steady-state’ audit, simply put a score from 1 (= not true at all) to 7 (= very true) against each statement. The same score sheet and profile can be used.

Around here . . .

Statement	Score (1 = not true at all to 7 = very true)
1. We deploy ‘probe and learn’ approaches to explore new directions in technologies and markets	
2. We actively explore the future, making use of tools and techniques like scenarios and foresight	

Statement	Score (1 = not true at all to 7 = very true)
3. Our organization allows some space and time for people to explore 'wild' ideas	
4. We make connections across industry to provide us with different perspectives	
5. We make regular use of formal tools and techniques to help us think 'out of the box'	
6. We have alternative and parallel mechanisms for implementing and developing radical innovation projects which sit outside the 'normal' rules and procedures	
7. We have capacity in our strategic thinking process to challenge our current position – we think about 'how to destroy the business!'	
8. We have mechanisms to bring in fresh perspectives, e.g., recruiting from outside the industry	
9. We make use of formal techniques for looking and learning from outside our sector	
10. We focus on 'next practices' as well as 'best practices'	
11. We have mechanisms for managing ideas that don't fit our current business, e.g., we license them out or spin them off	
12. We use some form of technology scanning/intelligence gathering – we have well-developed technology antennae	
13. We have mechanisms to identify and encourage 'intrapreneurship' – if people have a good idea they don't have to leave the company to make it happen	
14. We have extensive links with a wide range of outside sources of knowledge – universities, research centres, specialized agencies – and we actually set them up even if not for specific projects	
15. We make use of simulation, etc. to explore different options and delay commitment to one particular course	
16. We work with 'fringe' users and very early adopters to develop our new products and services	
17. We allocate a specific resource for exploring options at the edge of what we currently do – we don't load everyone up 100%	
18. We have reward systems to encourage people to offer their ideas	

Statement	Score (1 = not true at all to 7 = very true)
19. We have well-developed peripheral vision in our business	
20. We use technology to help us become more agile and quick to pick up on and respond to emerging threats and opportunities on the periphery	
21. We have 'alert' systems to feed early warning about new trends into the strategic decision-making process	
22. We have strategic decision-making and project selection mechanisms which can deal with more radical proposals outside of the mainstream	
23. We value people who are prepared to break the rules	
24. We practice 'open innovation' – rich and widespread networks of contacts from whom we get a constant flow of challenging ideas	
25. We learn from our periphery – we look beyond our organizational and geographical boundaries	
26. We are organized to deal with 'off-purpose' signals (not directly relevant to our current business) and don't simply ignore them	
27. We deploy 'targeted hunting' around our periphery to open up new strategic opportunities	
28. We have high involvement from everyone in the innovation process	
29. We have an approach to supplier management which is open to strategic alliances	
30. We are good at capturing what we have learned so that others in the organization can make use of it	
31. We have processes in place to review new technological or market developments and what they mean for our firm's strategy	
32. Management create 'stretch goals' that provide the direction but not the route for innovation	
33. Peer pressure creates a positive tension and creates an atmosphere to be creative	
34. We have active links into a long-term research and technology community – we can list a wide range of contacts	

Statement	Score (1 = not true at all to 7 = very true)
35. We create an atmosphere where people can share ideas through cross-fertilization	
36. There is sufficient flexibility in our system for product development to allow small 'fast-track' projects to happen	
37. We are not afraid to 'cannibalize' things we already do to make space for new options	
38. Experimentation is encouraged	
39. We recognize users as a source of new ideas and try and 'co-evolve' new products and services with them	
40. We regularly challenge ourselves to identify where and when we can improve our innovation management	

We can also develop audits for particular aspects of the innovation process, for example, is there a 'creative climate' within which ideas can flourish and be built upon? Or are there structures and processes in place to enable high involvement of employees in the innovation process? Are there conditions – beyond the steady state – where we need to take a different approach to managing innovation and to introduce new or at least complementary routines to those helpful in dealing with 'steady state' innovation? A variety of frameworks exist and more details and downloadable versions can be found on the website.



12.9 Final thoughts

We have repeatedly said that innovation is complex, uncertain and almost (but not quite) impossible to manage. That being so, we can be sure that there is no such thing as the perfect organization for innovation management; there will always be opportunities for experimentation and continuous improvement. In the end innovation management is not an exact or predictable science but a craft, a reflective practice in which the key skill lies in reviewing and configuring to develop dynamic capability.

Throughout the book we have tried to consider the implications of managing innovation as a generic process but also to look at the ways in which approaches need to take into account two key challenges in the twenty-first century – those of managing 'beyond the steady state' and 'beyond boundaries'. The same basic recipe still applies but there is a need to configure established approaches and to learn to develop new approaches to deal with these challenges.

Summary and further reading

In this chapter we have looked at the ways in which organizations can capture learning and build capability in innovation management. The major requirement is for a commitment to undertake such learning but it can also be enabled by the use of tools and reflection aids. In particular the chapter looks at various approaches to innovation auditing and offers some templates for reviewing and developing capability across the process as a whole and in particular key areas.

A wide range of books and online reviews of innovation now offer some form of audit framework including the Pentathlon model from Cranfield University (K. Goffin and R. Mitchell, *Innovation Management*, Pearson, 2005). For other examples see M. Dodgson *et al.*, *The Management of Technological Innovation*, Oxford University Press, 2008; P. Trott, *Innovation Management and New Product Development*, Fourth Edition Prentice-Hall, 2006; B. Von Stamm, *The Innovation Wave*, 2003 and *Managing Innovation, Design and Creativity*, 2008, John Wiley & Sons, Ltd. Websites include www.innovationdoctor.htm, www.thinksmart.htm, www.jpbc.com/services/audit.php, www.innovation-triz.com/innovation/, www.cambridgestrategy.com/page_c5_summary.htm, and www.innovationwave.com/

Web links

Here are the full details of the resources available on the website flagged throughout the text:



Case studies:

- Kao
- Electroco
- 3M
- Corning
- Coloplast
- Cerulean



Tools:

- Post-project reviews
- Benchmarking
- Business Excellence models
- Capability maturity models
- Innovation audits (various)

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