INNOVATION MANAGEMENT

Context, strategies, systems and processes

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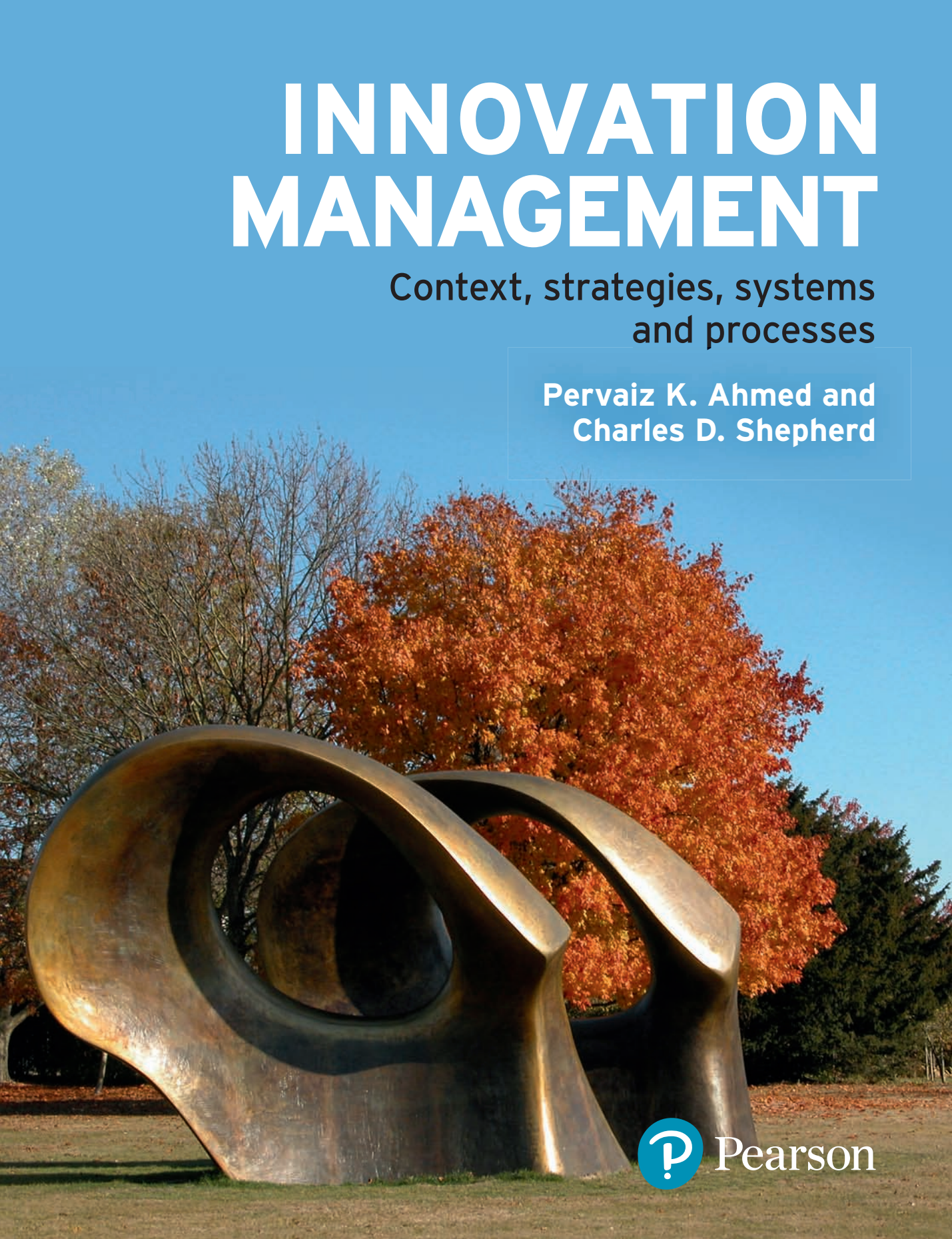

Pearson

INNOVATION MANAGEMENT

Utility patents
Utility patents are the most common form of patent, and most often spring to mind in common discourse. There are five classes of utility patent: (i) a process, (ii) a machine, (iii) an article of manufacture, (iv) a composition of matter, (v) an improvement of any of the other four classifications that results in a useful outcome. Typical patent protection period: 17–20 years.

Design patents
Design patents offer protection to design (lines, images, configuration, etc.) that gives uniqueness to the form of an article. The key factor of determination in a design patent is appearance. Design patents can be requested for different time frames: 3.5, 7 or 14 years. The fees for the patent depend on the time requested by the patentee.

Plant patents
Plant patents emerged primarily with the advent of biotechnology. These patents protect invention of distinct and new asexually propagated plant variants not found in nature.

Business method patents
Until 1998, patent protection was not available for methods of doing business because it was deemed that abstract ideas are not patentable. In 1998, the US Federal Court presiding over *State Street Bank & Trust vs Signature Financial Group Inc.* upheld a patent for a computer software program that was used to allocate assets in mutual funds. This paved the way for statutory recognition of business method patents. From that point onward business method patent, especially internet-based patent, activity rose frenetically. Business method patents include new and non-obvious methods of performing business functions, such as accounting, financial, inventory control, management, distribution and other such functions (Alderucci and Maskoff, 2000). Unfortunately, some of the rise in business method patents has been from frivolous applications. For example, Priceline.com has more than 60 business process patents and another 400 pending. Among the patented techniques are ways to automatically bill subscribers for magazine renewals they do not want, or relieve fast-food customers of their spare change (Preston, 2000). Another similar example is of Amazon.com. Amazon.com has secured a business method patent for a shopping process that allows returning customers to buy items without having to re-enter credit card or shipping information. This form of frivolous activity has led to some controversy over internet patents. The concern is that many people are receiving patents for ideas that are not new or original, but simply old ideas re-devised for the internet. Of course, the counter-argument is that should this be the case then these internet patents can be attacked in court based on 'prior art' (i.e. the invention is not original or is obvious). However, the problem with this line of argument is that it takes on average £0.5 million to mount a challenge against the validity of a patent. It is often cheaper to pay royalties than try and establish that the patent isn't deserved.

Patent process

The time period of a patent varies from nation to nation. Typically, the time period varies between 14 and 25 years, and also depends on the type of patent. For example, a general patent in the US and Japan is normally for 20 years, whereas in the UK it varies between 14 and 21 years.

To be eligible for a patent, the innovation must meet three criteria:

- ***Novelty***: The invention must be different from *prior art* (past inventions).

- ***Non-obviousness***: The invention must not be anticipated or a simple extension of prior art.
- ***Utility***: The invention must be useful to society.

In arriving at a decision to grant a patent the government office takes the above criteria, especially the first two, into account. In particular, the invention must not be known or be disclosed within the nation in which the application is being made. Patents are nation-specific, and currently there is no such thing as a world patent. It is necessary to apply for a patent on a nation-by-nation basis. This has obvious cost implications. At the moment, there is a harmonised patent system in Europe, administered by the European Patent Office, and there is on-going debate over the development of a global patent. Whether this can be made a reality depends on whether significant progress in international law takes place.

The patent process starts off with a patent application. The application usually carries a processing fee (in the UK, this is currently around £200–300). In most countries the first to file applicant is given the patent rights. The exception is the US, where the inventor is given priority, i.e. even if the inventor is second to file for a patent they will receive the patent. Nevertheless, even in the US the inventor must make a timely application. In all cases, if the inventor makes public the invention they must file for a patent within a year, failure to do so loses their right to patent the invention. To file for a patent, documentation and drawings of the invention must be provided and must be certified by independent witnesses. The help of a legal advisor may be necessary to ensure the disclosure document is valid and secure. Being systematic at this stage is important in defending against any ownership claims later on from other parties.

Once lodged with the Patent Office, the claim is assigned to an appropriate category and examined by a group whose role is to search for prior art and literature to determine if the invention is original. If the decision is approved then the patent is granted, and the patent fee must be paid. This fee varies. In the UK, it is in the region of £1000–2000. If the patent application is rejected it is possible to revise and re-submit, or even take the matter to a Board of Appeal.

Patent strategies

Taking out a patent is just the starting point. Companies must protect and use their IP strategically. The first step in this process of managing IP is to check that the assets fit with long-term strategic plans. This can be done by vigorous scrutiny of the assets along the following lines (Tao et al., 2005):

- Which internal patents support your current business? Which ones are key?
- Which external patents could block you, now and in the future?
- Which internal patents can block your competitors, now or in the future?
- Which intellectual assets (internal or external) provide you with *freedom to practise* (the legal ability to practise its technology without infringing other IP rights)?
- Which assets drive or protect market share in your business now, and which in the future?
- What IP or know-how can be acquired externally?
- What is the total value contributed by your intellectual assets in your protected products, services, licensing revenues, joint ventures etc.?

Companies should aim to build IP asset portfolios that support the firm's technology roadmap. By so doing they will enhance their competitive position, maximise returns, block

competition, and be aligned to market needs. A number of IP strategies can be adopted. These are elaborated next.

Defensive IP strategies

In this strategy the firm accumulates patents to prevent direct competition in related or even unrelated areas. The company builds a firewall of patents that it can use to establish a strong competitive position. This strategy requires the company to continuously patent, as well as improve upon its current patent to ensure that they are updated and sustained. For example, as part of its IP strategy, Intel has erected a thicket of patents to protect its large-scale investments in state-of-the-art wafer production plants (Hall and Zeidonis, 2001).

Prospective IP strategy (or development)

This is an outwardly focussed IP strategy in which the firm monitors innovations and developments occurring in the external environment. One activity under this format is 'bibliometrics'. In bibliometrics a statistical scan of patents and scientific papers is made to sift out the most important ones. A second activity commonly used in this approach is benchmarking of competition and non-competition. This is used to build appreciation of potential opportunity areas to focus research and development energies. The prospective strategy monitors the external environment to assess potential ways to develop as well as leverage the firm's patent portfolio.

Co-operative IP strategies: cross-licensing

Co-operative strategies involve a cross-licensing of patents. In this strategy patents are shared between companies. This is a particularly effective strategy to follow if the aim is to establish a design or article as a standard. Cross-licensing speeds the diffusion process as well as adding organisational muscle (investment and marketing) behind a particular technology.

Large-scale cross-licensing can lead to monopolistic positions over a technology or format. The Japanese companies Sony, Matsushita and JVC extensively cross-licensed dual-deck VCR technology, at nominal royalties between them, and so were able to exclude any newcomers for a considerable period of time.

Market-based IP strategies: licensing

A company can extend its invention by licensing out its invention to others for a royalty payment. The motive for this strategy may be purely pecuniary or strategic. When a patent is of little direct use to the firm it may capitalise on the patent by selling it in exchange for royalties. On the other hand, licensing, much like cross-licensing, can allow the company to build market presence and dominance of a particular technology. Dominant presence may be critical in establishing the product/technology as the standard format. Becoming an industry standard or the most visible technology in the market can lead to high returns into the future for all the firms in the licence network. In following this strategy the firm must take care to ensure that it devises a licensing contract that best allows the firm to maximise upon its objectives.

Pioneering companies such as Texas Instruments, IBM, Fairchild have used licensing and cross-licensing strategies very successfully. They allow other companies to use their technologies in return for access to their future technologies or licence fees. IBM's annual revenue from licensing patents alone in 2001 was over $1 billion: a growth of 2000 per cent from the position in 1988 (Sandburg, 2001).

Aggressive IP strategies

In the past many companies adopted a passive attitude toward patents. However, the cut and thrust of modern-day competition has changed all this. This strategy adopts an aggressive

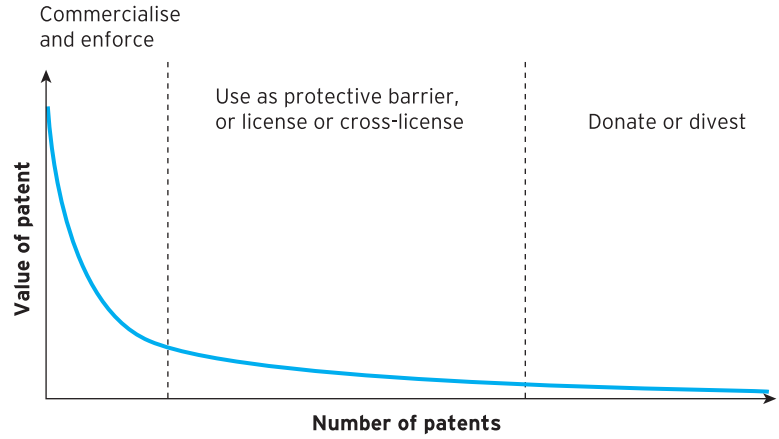

FIGURE 4.14 Generic strategic options for patents

litigation stance. This strategy is one in which the patented technology is not necessarily used by the company for production of its own products, but is 'hired out' to manufacturers of consumer products. These aggressive companies try and sign up as many companies as they can and make money from this. What is an interesting feature of this strategy is the combined use of licensing, or cross-licensing, with a strong litigious approach by a company to lever its products into other companies' final products. Predatory companies with large patent portfolios threaten competitors and non-competitors alike with costly litigation, with the hope of at least getting some royalties fees. Attacked companies find it difficult and very expensive to defend against continuous aggressive litigation. One way of avoiding fees and preventing continued aggression is to arrange some form of cross-licensing agreement. However, this means that the attacked companies must have patents in the quiver to offer in exchange. Faced with high levels of predatory action many companies have started to build defensive portfolios. For example, Autodesk (the fourth largest PC software developer), after experiencing attacks by large systems companies, decided to build a strong portfolio of patents to protect itself in case of any future attack. The defensive portfolio took years to build but gave Autodesk the potential to negotiate cross-licensing agreements with any aggressors (Roberts, 1998).

By clever use of these basic IP strategies it is possible to favourably shape and alter the industry structure and competitive positions (Reitzig, 2004).

In arriving at a decision as to what type of strategy to employ, firms should first assess the nature and value of patents. In most patent portfolios the Pareto principle is applicable, with the first 10–20 per cent of patents accounting for a vast proportion (80–90 per cent) of the total value. On the basis of value and fit with strategic priorities it is possible to devise generic options for patents (see Figure 4.14). The first 10–20 per cent of patents that comprise the major patent value should be exploited in the marketplace and patents strongly enforced and defended. The next tranche of patents have value but perhaps are of nominal value or non-direct value. The approach to these should be to license them out or use them as a defensive hedge. The final group of low-value patents can be divested or donated to bodies such as universities that are able to make use of them.

The importance of knowledge management, in the context of patents, cannot be overstated, as the case study below exemplifies.

Conclusion

Technology is a fundamental force in human progress. For quite some time the management of technology was treated as a black box phenomenon, and left alone to manage itself. Increasingly, firms have found that they cannot leave technology unmanaged since the repercussions of doing so are manifold. Technology development has important consequences for firm innovation at all levels: product, process, administration and strategic.

Technology development follows a life-cycle pattern over which different strategies and approaches to management need to be adopted. The chapter delves into the implications of these. Technology is rarely developed or used by itself. More often than not it is developed and fused with other technology to develop new innovations.

It is normally assumed that the best technology or new product is the one that survives in the marketplace. This chapter has shown that this is not always case since a large number of factors, other than technological or product functionality, come into play in determining market dominance. This makes the systematic management of technology even more important. Strategic management of technology requires firms to acquire, manage and exploit technology cleverly and astutely so as to build sustainable positions of advantage. The chapter has elucidated the process of technology strategy formulation under stable and dynamic conditions. Assessment of the firm's position through construction of a technology portfolio coupled with assessment of future trends through forecasting was elaborated. The technique of roadmapping was amplified to show how the present can be linked to the future. The chapter examined the technology investment decision through discussion of options pricing techniques. Finally, technology protection strategies were elaborated by developing a discussion of patent strategies.

QUESTIONS

1. Describe the main stages of the technology life cycle. What are sibling S-curves? Think of an example of sibling curves.
2. What is the difference between specific technology, a generic technology and a technology bundle? Provide an example of each.
3. Explain why the best technology does not always succeed in the marketplace.
4. Describe the main tasks in the formulation of a technology strategy. What are the shortcomings of this model in dynamic environments? How can these shortcomings be overcome?
5. Why are technology investments difficult to assess? Discuss a method of developing such an assessment.
6. What forms of intellectual property exist in a firm? Discuss the types of protection strategies available to the firm, and consider the types of circumstances in which each should be deployed.

CASE STUDY

Going mobile: Velti builds global footprint for clients' campaigns

It takes determination to sustain a high-technology start-up in Greece, where the government has been slow to update labour and tax regulations and offers few incentives for entrepreneurs. Yet Alex Moukas, a software scientist with a master's degree from MIT, decided there was enough talent at home to justify the risk. 'There are a lot of smart people here plus other advantages – a reasonable cost of living and the availability of European Union funding', Mr Moukas says.

However, about 90 per cent of Velti's business comes from abroad. 'Many of our clients are multinationals so we've developed a global footprint', Mr Moukas says. Velti opened offices last year in New Delhi, Shanghai, San Francisco and Moscow to support local clients.

Velti handles mobile advertising campaigns in more than 30 countries. It works with leading operators, among them Vodafone, Wind, Orange and MTS, which controls Russia's biggest network.

In a fragmented marketplace, it has become a leading force thanks to a proprietary marketing platform that handles the planning, execution and monitoring of multiple-level campaigns across different mobile formats and channels.

The latest version of the platform offers 70 'templates' that businesses seeking to cut costs can use for mobile marketing campaigns. Customers also make savings under a software-as-a-service arrangement, or a revenue-sharing deal for a campaign run by Velti, rather than licensing and hosting the platform themselves.

'This is a new market that moves fast and there aren't so many businesses with resources to buy a software platform', Mr Moukas says.

Despite its potential, mobile advertising has been slow to take off, partly because usage is still low compared with the fixed internet. But increasing numbers of advertisers are including mobile in their media mix.

Simple campaigns using SMS messaging to run competitions or offer product discounts to subscribers have proved effective, Mr Moukas says.

According to industry forecasts, the global market is set to grow from around $4bn last year to almost $20bn by 2012. By then mobile subscriptions are expected to reach almost 4bn, covering just over half the world's population.

Velti claims a bigger reach than its competitors thanks to a joint venture with Interpublic, a leading holding group of international advertising agencies.

Recent projects included building a mobile community for Johnson & Johnson, the healthcare manufacturer; promoting content sponsored by Vodafone Live! for Disney, the entertainment group; running an SMS contest for cash prizes for MTS; and a campaign for Argos, the UK retailer, allowing consumers to check prices and reserve items using SMS texts.

'Innovation is key', Mr Moukas says. As well as spending heavily on research and development, Velti has started to consolidate its position by acquiring smaller competitors using cutting-edge technologies.

(*Source*: Based on K. Hope, 'Going mobile: Velti builds global footprint for clients' campaigns', *FT*, 4 June 2009)

QUESTIONS

1. What are major challenges of managing technology in a globally disperse organisation such as Velti?
2. What is the logic of Velti's approach?
3. How could Velti ensure that it stays at the forefront of global innovations in this market?