

# Chapter 12

## Business models

### Introduction

Business models fundamentally are linked with technological innovation. They are used to describe and classify businesses, especially in an entrepreneurial setting, but they are also used by managers inside companies to explore possibilities for future development. Well-known business models can operate as 'recipes' for creative managers. This chapter shows that a business model is an abstract representation of an organisation, be it conceptual, textual and/or graphical, of all core interrelated architectural, cooperational and financial arrangements, designed and developed by an organisation presently and in the future, as well as all core products and/or services the organisation offers, or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives. The case study at the end of this chapter tells the story of how a firm developed a new tooth whitening product and the different business models possible to make money.

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## Learning objectives

**When you have completed this chapter you will be able to:**

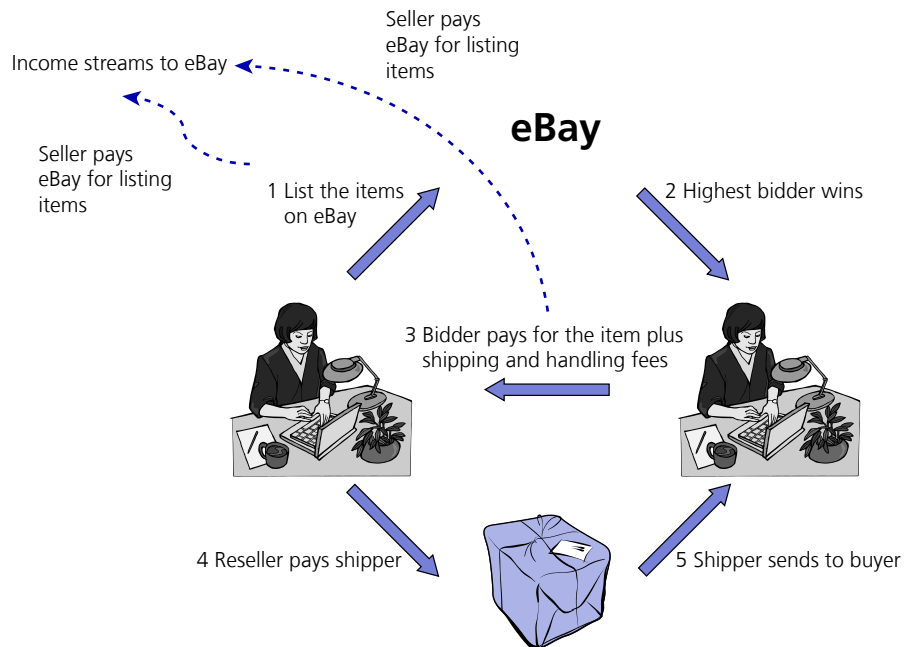
- understand how enterprises create value by applying business model thinking;
- understand strategic differentiation and the link between innovation and positioning;
- recognise different levels and perspectives of value;
- formulate and further refine a customer-centred value proposition; and
- recognise how to generate value from the licensing business model.

This chapter explores how businesses intend to make money from their technology. This may seem like an obvious question with an equally obvious answer, but it should not be overlooked, for there is much room for creativity for the entrepreneur. For example, it may be that the business believes it has developed a better product than the existing products in the market. It will, therefore, simply offer its product at a competitive price relative to the competition. But, this would overlook other possibilities for the business. Are there opportunities for leasing rather than simply selling? Can the business adopt a landlord business model? Famous examples abound where new business models have been developed by start-ups that challenge existing dominant business models in an industry. Table 12.1 shows a wide range of new services that have been created that also led to the creation of new business models. These range from eBay to Facebook. Figure 12.1 shows the eBay business model. Clearly, this model is dependent on a stable technology platform but, at its heart, is a simple transaction fee revenue model.

Business models are, fundamentally, linked with technological innovation, yet the business model construct is, essentially, separable from technology. According to Baden-Fuller and Haefliger (2013), business models mediate the link between technology and firm performance. Developing the right technology is a matter of a business model decision regarding openness and user engagement.

**Table 12.1 A range of new services that also create new business models**

Company	Industry sector	New service/new business model
eBay	Online auction	A new way of buying and selling through a community of individual users
Ryanair	Airline	A new way of consuming air travel with no-frills service and emphasis on economy
Netflix	Online movie and TV series rental	A monthly subscription service providing members with fast and easy access to movies and television programmes
Amazon	Retailer	A new way to buy goods – online retailer
Napster; iTunes	Music retailer	A new way to buy and download music
Google/Bing	Internet search engine	A fast way to search for information on the internet
PartyGaming	Online gambling, e.g. poker	Gambling and gaming from the comfort of your own home
Twitter/Facebook	Social networking	A community of users online who can chat and share music, images, news from their own home
YouTube	Online video and film archive	A community of users sharing home-made video clips plus recorded favourite clips from movies



**Figure 12.1** An overview of the eBay business model

## What is a business model?

A **business model** describes the value an organisation offers to its customers. It illustrates the capabilities and resources required to create, market and deliver this value and to generate profitable, sustainable revenue streams. It is the revenue stream that is key here. Where is the money going to come from and how much of it will the business be able to retain? It includes considering issues like margins, allocation of profits to those within the supply chain. For example, Apple is extremely profitable partly because its margins on its products are so much higher than its competitors. So, there is a key question that needs to be addressed: How will this business make money?

To answer this question, it is necessary to address a series of additional questions, such as:

- Who is the target customer?
- What customer problem or challenge does the business solve?
- What value does it deliver?
- How does it reach, acquire and keep customers?
- How does it define and differentiate its offering?
- How does it generate revenue?
- What is the cost structure?
- What is the profit margin?

In principle, a business model does not matter to customers; it is important to the company and the organisation of its business. The business model determines the

**Table 12.2** Parts of the business model

Parts of the business model	
<b>1 Value proposition</b>	A description of the customer problem, the product that addresses the problem and the value of the product from the customer's perspective
<b>2 Market segment</b>	The group of customers to target; sometimes the potential of an innovation is unlocked only when a different market segment is targeted
<b>3 Value chain structure</b>	The firm's position and activities in the value chain and how the firm will capture part of the value that it creates in the chain
<b>4 Revenue generation and margins</b>	How revenue is generated (sales, leasing, subscription, support, etc.), the cost structure and target profit margins
<b>5 Position in value network</b>	Identification of competitors, partners and any network effects that can be utilised to deliver more value to the customer
<b>6 Competitive strategy</b>	How the company will attempt to develop a sustainable competitive advantage, for example by means of a cost, differentiation or niche strategy

Sources: Chesbrough and Rosenbloom, 2002; Shafer et al., 2005; Watson, 2005.

external relationships with suppliers, customers and partners. However, it is focused primarily on the company's business processes. Table 12.2 explains the different component parts of a business model.

In a seminal article in *Long Range Planning* (a leading international journal for the field of strategic management), Professor David Teece argued that whatever the business enterprise, it either explicitly or implicitly employs a particular business model that describes the design or architecture of the value creation, delivery and capture mechanisms it employs. This provides a useful definition of a business model (see Teece, 2010).

The business model is the key factor that leads to success in start-ups. It provides the starting point that allows a company to maximise its profits – the sooner the business model is in place, the easier it will be for the start-up to obtain support and funding. Investors will be seeking to ensure that the model is scalable. This will help reassure them that the business can grow exponentially. Investors must be able to envisage a start-up's business model (from an organisational and process perspective) as the company grows.

Many of the business models that we see today are influenced by Michael Porter's **Value Chain** (Primary and Support activities) (Porter, 1980). To these key activities are added additional operational flows, such as: plan, create demand, produce, sale/fulfil order (satisfy demand), charge, bill and accrue revenue and the after-sales service (and reverse supply chain). There are many other key activities and factors that are not mentioned, even though they may be more important than items identified. For example, the enterprise interacts with many stakeholders in such fields as technology, labour and capital markets. It is also affected by such external factors as regulatory, competitors and new entrants. In the brewing industry, for example, a change in the excise applied to beer can dramatically alter revenues and profits. Indeed, some UK brewers are now producing low alcohol beers of less than 3 per cent alcohol by volume because the excise is half that for higher strength beer (*Economist*, February 2012).

There are many different styles of business model. There is also a wide variety of frameworks available to help firms develop their own business model

(Spieth et al. 2014). All business models are representations of an architecture because they consist of both *functions* in *flows* in interconnection. Business models typically exhibit a rather abstract process taxonomy that may not align well to the enterprise structure, end flows and existing systems. As such, these models have limited practical value for the business owner or manager. (For further explanation on this see Mason and Leek, 2008; Patzelt et al., 2008; Richardson, 2008; Shafer et al., 2005; Zott and Amit, 2007.)

## The business model and the business plan

The terms business model and business plan are similar but they are different. A business plan is a detailed document, typically 50 to 100 pages, with a lot of financial projections. To set up a new business and apply for a loan, the lending institution will demand a business plan. The lender wants to assess whether its customers will be able to repay the loan. A business model is much less detailed. A business model describes the specific way the business expects to make money. It should be on one page and it would be more clearly shown as a diagram. The business model itself is a single concept.

The concept of a business model is most useful for a new business (which explains the predominance of ecommerce-related references in recent years), and it is essential for a new business to establish a positive feedback loop. For example, word of mouth has to be effective and customers have to recommend other customers. Without that kind of acceleration, a business will never get off the ground. As many owners of websites found, in the early years of the worldwide web (mid-1990s), their original business model did not work and the business soon failed: a classic example of that was boo.com. Other businesses found that their customers adapted the products for a use that the businesses had not expected. This suggests that, when a business model is developed, it should be flexible and easily modified, should financial growth not meet expectations. It is, therefore, useful for the business model to include methods for its own evaluation. If a model is displayed as a series of ‘boxes and arrows’, the boxes represent activities, the arrows represent causal links between the boxes, and the strength of each link can be measured – or at least estimated. To help firms develop a business model, the following guidelines may help. The business model should contain:

- a graphical representation (usually in the form of a flow chart);
- a list of activities, on the part of both the business owner and potential customers;
- a likely sequence for those activities (which may later be altered in the light of customer behaviour); and
- a set of indicators or metrics for measuring the linkage between the activities.

Figure 12.2 illustrates a simple flow diagram that captures a series of activities that shows how a technology-based start-up uses its technical expertise and entrepreneurial skills to develop a product or service that is made available to the market. Revenues are then used to reinvest into the company and to further reinforce the firm’s advantage.

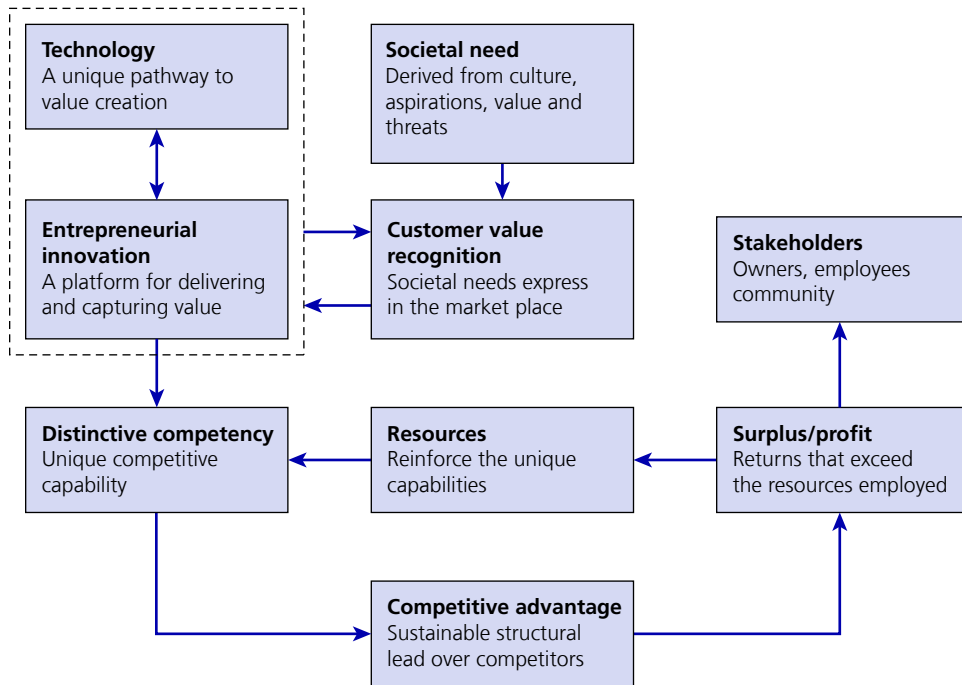


Figure 12.2 A business process showing how a firm uses its resources to create value

## The range of business models

Clearly, there is a wide range of different **business models** applicable across all industries. A useful classification is provided by Weill and Vitale (2001) (see Table 12.3). This shows 16 different business models, including models such as human trafficking, which clearly is illegal. It is worthy of note that those firms that innovate on a business-model level are able to experience greater growth rates than companies that focus on innovation in products and operations. For example, the list of firms in Table 12.1 shows a range of different industry sectors in which these firms were able to develop new business models. Johnson et al. (2008) illustrates how firms can reinvent business models. There are several methods that start-ups can use to create an innovative business model, including:

- **revenue/pricing model:** change how revenue is generated through new value propositions and new pricing models (to take advantage of economies of scale). This was the Ryanair approach to developing no-frills air travel.
- **enterprise model:** specialise and configure the business to deliver greater value by rethinking what is done in-house and through collaboration. For example, Innocent Drinks was able to compete with industry giants such as Coca-Cola and others by outsourcing production and distribution, and also through building effective relationships with retailers.
- **industry model:** redefine an existing industry, move into a new industry or create a new industry. Better Place is doing this with its electric vehicle infrastructure. It

**Table 12.3 The 16 detailed business model archetypes**

Basic business model archetype	What type of asset is involved?			
	Financial	Physical	Intangible	Human
<b>Creator</b>	1 Entrepreneur (serial entrepreneurs)	2 Manufacturer (VW automobiles)	3 Inventor (Trevor Bayliss)	4 Human creator (illegal)
<b>Distributor</b>	5 Financial trader (investment banks)	6 Wholesaler/retailer (Tesco, Amazon)	7 IP trader (Logicalis)	8 Human distributor (illegal)
<b>Landlord</b>	9 Financial landlord (banks, insurance companies)	10 Physical landlord (hotel, car rental)	11 Intellectual landlord (publisher, brand manager)	12 Contractor (Federal Express, management consultancy)
<b>Broker</b>	13 Financial broker (insurance brokers)	14 Physical broker (eBay; estate agents)	15 IP broker (3i)	16 HR broker (employment agent)

Sources: Trott (2011) and Weill and Vitale (2001), © 2005 from MIT Sloan Management Review/Massachusetts Institute of Technology, all rights reserved, distributed by Tribune Content Agency.

has developed a complete national electric vehicle infrastructure for Israel and has plans for Denmark and Australia.

## The sixteen business model archetypes

### 1. *Entrepreneur (serial entrepreneur)*

This first type of business model is based around the concept of entrepreneurs creating businesses and generating wealth. Such so-called serial entrepreneurs continuously come up with new ideas and start new businesses without necessarily staying with the business. One of the best known serial entrepreneurs is Sean Parker who cofounded the file-sharing computer service Napster and served as the first president of the social networking website Facebook.

### 2. *Manufacturer*

This business model is one of the simplest and most well-known. It involves creating physical products such as cars and mobile phones. Increasingly, manufacturers of physical products incorporate services within and around the product. The business model involves taking physical assets and assembling them to add value. Frequently this will include elements of the next archetype – inventor/creator.

### 3. *Inventor/creator*

With this business model individuals create or design products that can then be sold to generate money. So a simple example could be the clockwork radio designed by Trevor Bayliss or the British company ARM that designs computer chips. ARM Holdings plc (ARM) is a British multinational semiconductor and software design company. It is considered to be market dominant in the field of processors for mobile phones and tablet computers. Processors based on designs licensed from ARM, or designed by licensees of one of the ARM instruction set architectures, are used in all classes of computing devices such as microcontrollers in embedded systems – including real-time safety systems (cars' ABS).



#### *4. Human creator*

Given that the asset in this case is human any business model based around this concept is illegal. Science fiction stories have been written about the future where human beings are designed and created to meet requirements. The nearest existing similarity would be the so-called designer baby. This is the result of genetic screening or genetic modification. Embryos may be screened prior to implantation, or possibly gene therapy techniques could be used to create desired traits in a child. At present this is only done to avoid serious diseases being passed on to children.

#### *5. Financial trader*

This covers those activities involved in distributing finance. So investment banking is a good example here. An investment bank is a financial institution that assists individuals, corporations and governments in raising financial capital by underwriting or acting as the client's agent in the issuance of securities. An investment bank may also assist companies involved in mergers and acquisitions (M&A).

#### *6. Wholesaler/retailer*

Wholesaling is the sale of goods to anyone other than a standard consumer. It usually involves the resale (sale without transformation) of new and used goods to retailers, or involves acting as an agent or broker in buying merchandise, or selling merchandise. Wholesalers frequently physically assemble, sort and grade goods in large lots, then break bulk and repack and redistribute in smaller amounts. It is the task of retailers to make these products available to consumers; usually trying to offer the widest possible choice. Supermarkets play the role of wholesaler and retailer.

#### *7. IP trader*

Buying and selling intellectual property is not very different from buying and selling other goods. Usually the IP is in the form of a patent which can be licensed. Some IP trading companies specialise in the commercialisation of university intellectual property rights, such as IP group.

#### *8. Human distributor*

Such business models are illegal but exist. Human trafficking is the trade of humans, most commonly for the purpose of sexual slavery, forced labour or commercial sexual exploitation for the trafficker or others. Human trafficking is a crime against the person because of the violation of the victim's rights of movement through coercion and because of their commercial exploitation.

#### *9. Financial landlord*

Here the asset is money that is looked after by the landlord and used to generate more money. Banks collect money from consumers and then use it to lend to others. So a large part of retail banking is distributing money to consumers. Indeed, retail

banking is also known as consumer banking. It is the provision of services by a bank to individual consumers, rather than to companies, corporations or other banks. Services offered include savings and transactional accounts, mortgages, personal loans, debit cards and credit cards. All of which are used to generate money.

### *10. Physical landlord*

This is a well known business model where the physical asset is used to generate income. Hotels rent out rooms, car hire firms rent out cars. The essential model is the same.

### *11. Intellectual landlord*

A good example of an intellectual landlord is a publisher. A publisher does not create the literature or music and does not own it. This belongs to the author. Publishing is the process of production and dissemination of literature, music or information – the activity of making information available to the general public. The scope of publishing has expanded to include electronic resources such as the electronic versions of books and periodicals, as well as websites, blogs, video game publishers.

### *12. Contractor*

A contractor is an individual and possibly a tradesman, employed by the client on the advice of a specialist or the client him/herself if acting as the manager. A contractor is responsible for the overall coordination of a project. Management consultants are often hired to perform particular projects and will be contracted so to do. A contractor may hire specialist subcontractors to perform all or portions of the work.

### *13. Financial broker*

General insurance brokering is carried out today by many types of authorised organisations including traditional high street brokers and telephone or web-based firms. Peer-to-peer lending is the practice of lending money to individuals or businesses through online services that match lenders directly with borrowers. Since the peer-to-peer lending companies offering these services operate entirely online, they can run with lower overheads and provide the service more cheaply than traditional financial institutions.

Financial brokering is being threatened by price comparison websites such as moneysupermarket.com. These sites use a vertical search engine that shoppers use to filter and compare products based on price, features and other criteria.

### *14. Physical broker*

A broker is an independent agent used extensively in some industries. A broker's prime responsibility is to bring sellers and buyers together and thus a broker is the intermediary facilitator between a buyer and a seller. Estate agents perform this role in the property market. As we saw earlier, eBay has been successful in providing a market place for buyers and sellers of almost anything.

### 15. IP broker

An intellectual property broker mediates between the buyer and seller of intellectual property (IP) and may manage the many steps in the process of creating a deal with regard to the purchase, sale, license or marketing of intellectual property assets. This may include patents, trademarks or inventions (prototypes). An expert in this field is 3i Group plc, a multinational private equity and venture capital company. Because there is not a well defined market around the buying and selling of patents or other IP assets, if an inventor or patent owner wants to generate income from their asset, an intellectual property broker can help by serving to connect the inventor or patent owner with one or more interested buyers.

### 16. HR broker

An employment agency is an organisation that matches employers to employees. In all developed countries, there is a publicly funded employment agency and multiple private businesses which act as employment agencies.

### *Redefining the business: challenging your mental models and conventional wisdom*

New business models such as those developed by Ryanair or Facebook were created by challenging existing and conventional wisdom. The following series of questions may help you come up with new models:

- What are the main industry assumptions, when it comes to pricing, customers, products and services offered, delivery, etc.?
- Does the industry have a product-centric, customer-centric, or rather competency-centric approach? What would a change in approach entail?
- Do you let yourself be constrained by the assets and capabilities you possess?
- Are you trying to use the assets you have and simply leverage them, or are you continuously striving to build new assets?
- How many of your competitors do already possess the same or similar assets?
- Which of your assets are truly unique and cannot be imitated or substituted easily by others?
- Do companies without these assets face a cost disadvantage in obtaining them?
- Which assets would you build if you started anew?

### Revenue models

Revenue models often are mistaken for business models. However, revenue models are concerned specifically with the pricing element of the business model. It concerns establishing a price for the product and clearly will be dependent on reliable market intelligence. The ‘bait and hook’ revenue model is a good example of how firms can set a low price for part of their product to ensure that future substantial revenues are established (see Illustration 12.1). This model was clearly extremely successful for Gillette and Kodak. A wide range of revenue models are evident within online businesses. Table 12.4 illustrates five different such revenue models.

**Table 12.4 Online revenue models**

Type of revenue model	Approach	Examples
Advertising	Customers pay to be visible on your site/web pages	Google and Yahoo
Subscription	Customers pay a regular fee for access to information, content	<i>Economist</i> , adult porn sites
Transaction fee	Customers pay a commission fee for using your services	eBay, lastminute.com
Retail	Customers pay for goods similar to high street retailer	Amazon
Affiliate	Customers pay if you send traffic to their sites	Google

**Illustration 12.1****The bait and hook revenue model**

The *bait and hook* business model is also referred to as the ‘tied products business model’. It involves offering a basic product at a very low cost, sometimes at a loss (the ‘bait’), then charging compensatory recurring amounts for refills or associated products or services (the ‘hook’). Examples include: razor (bait) and blades (hook); cell phones (bait) and air time (hook); computer printers (bait) and ink cartridge refills (hook); and cameras (bait) and film (hook). An interesting variant of this model is Adobe, a software developer that gives away its document reader free of charge, but charges several hundred euros for its document writer.



Source: Joe Belanger/Alamy Images

For a useful overview of developing business models, see Johnson et al. (2008) ‘Reinventing your business model’.

**Enterprise models**

Enterprise models focus on redefining the internal and external boundaries of the organisation to create a new business model. This includes moving up or down the value chain, leveraging a network of partners or outsourcing non-core activities. In some cases, this requires migrating up the value chain, like Samsung with chips for cell phones, or moving down the value chain, like Apple with virtual (iTunes) and physical storefronts. Another option is for companies to find ways to leverage a network of partners that increases the effectiveness and efficiency of production, offering, distribution and sales. For example, Enterprise Car Rental has developed a network of insurance companies and car dealerships that help with sales and referrals. So, businesses have to look along their value chain and ask themselves: should I make this, collaborate with another company or outsource it? Do these choices create sustained value for us?

## Industry models

New industry models are rare. When one emerges, it creates much publicity and disruption. Examples include Google creating a new industry around search and Uber completely disrupting the taxi industry with its workforce of part-time drivers. Essentially, they redefine the industry value chain. So, often, they are the result of a new enterprise model being more widely adopted by an industry. Ryanair's enterprise model led to the emergence of the low-cost industry model, now used by many competing firms.

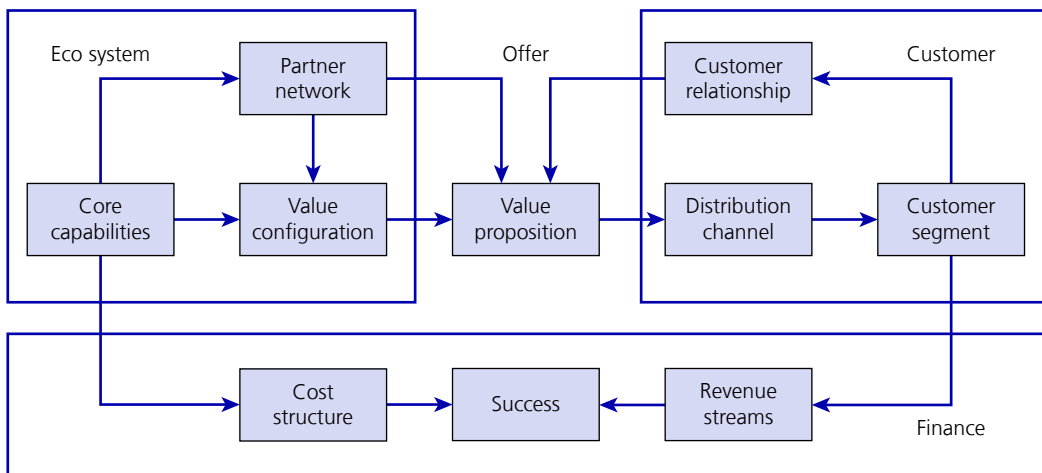
### The parts of the business model

A company's strategy defines the company's target market segment and customers, and determines the **value proposition** for the customer's business. The business model focuses on how a start-up captures some of the value for itself (i.e. how the company makes money). It determines the viability of the company. The business model focuses on coordinating internal and external processes to determine how the start-up interacts with partners, distribution channels and customers (Dubosson-Torbay et al., 2002).

According to Alex Osterwalder, there are four key aspects to any business model:

- the offering;
- the customer side;
- the infrastructure;
- the finances.

Start-up ventures need to consider each of these in turn and build their business model accordingly. Figure 12.3 illustrates the **business model framework**



**Figure 12.3 Business model framework**

Source: Adapted from Osterwalder (2004).

and shows how each part interrelates. The business model describes, as a system, how the components of the business (i.e. organisational strategy, business processes) fit together to produce a profit. It answers the key question for investors: How does this business work? The answer to the question consists of two parts:

- 1 It includes a description of the efforts that generate sales, which produce revenue. The value proposition is delivered to the target customer through a distribution channel. The flow and update of the value proposition is influenced by the relationship capital created through the company's marketing activities. Clearly, Mozilla has developed a unique value proposition through its development of open source software. It receives donations from satisfied users as well as income from other sites to which it sends traffic from its Firefox internet browser.
- 2 It includes a description of the value-generating parts that make up the cost structure. A company's value proposition is created through the application of its key functions and abilities, through a configuration of operational activities that includes inputs and interaction with partners. A simple example is Toyota and its web of suppliers with whom Toyota work closely to ensure incredible quality and reliability within its vehicles.

## The offering

The value proposition is the central piece that illustrates how the business plans to bind the supply side with the demand side. Value must always be considered from the buyer's perspective. Any functional, emotional or self-expressive value will vary, depending on the customer's specific situation. Understanding the customer's role (i.e., economic buyer, technical buyer, end user) as well as where the customer belongs on the technology adoption lifecycle (TALC) is critical when developing a value proposition. For the customer to consider buying a product, its value proposition must be superior to: 1) the competition; and 2) doing nothing. It must set it apart from the competition and focus on its product's unique benefits. The value proposition also requires an understanding of what your customers are trying to achieve through their strategy and actions (see Mason and Leek, 2008; Shafer et al., 2005; Richardson, 2008).

The value proposition statement consists of several key components:

- what is on offer and how is it offered to customers;
- what type of, and how much, value or benefit is associated with the offering (e.g., cost savings, time savings, revenue increase, customer/employee satisfaction);
- how the value is generated;
- why it is different from anything else on the market.

## The customer side

- *Target market segment:* Defining the value proposition leads naturally into a discussion about who is the target market segment and what characterises the ideal customer. Specifically, it should have a clear understanding of the target customer's motivation to buy.

- *Customer relationships:* The business needs to consider the kind of relationship it wants to have with each customer segment. Does the offering lend itself to a more transactional, one-off relationship, or will it be an ongoing relationship that should be organised with some sort of subscription or ongoing contract? Is repeat buying important for its success?
- *Distribution channels:* Keep in mind that the offering, in combination with the relationship the business would like to have with its target customer, has strong implications for the choice of distribution channel. The trade-off is usually about balancing the complexity of the solution with the complexity of the marketing.

## The infrastructure

- *Core capabilities:* List the business's core capabilities: the assets that it brings to the table when creating the offering. These include skills, patents, assets and expertise that make it unique and can be leveraged. Some of the strengths identified in a SWOT analysis can be considered a core capability.
- *Partners and allies:* Building the offering may involve third parties and suppliers who have key capabilities to complement it. Understanding how to integrate these in the offering and the processes is critical.
- *Value configuration:* Describe how all the components together create the product and serve customers. Explain the most important activities and processes needed to implement the business model, including critical tasks and timelines, the people and skills required, and the organisation's core processes.

## The finances

- *Revenue streams:* Evaluate the streams through which the business will earn revenues from value-creating and customer-facing activities. Is it possible to price the product in such a way that optimises the volume?
- *Cost structure:* Calculate the costs that will be incurred to run the business model as determined by its infrastructure (above). Does the cost structure offer a reasonable profit?

Examining the finances at the end of the process allows the business to ensure that it has a balanced business model that produces value for its customers and profits for its shareholders at the same time.

### Innovation in action

#### **Blackcircles.com, a new business model**

Mike Welch left school at 16, eager to make money. He started by fitting tyres at a garage, earning £50 a week. After six months he was made redundant. He then went into wholesaling tyres, but they made him redundant, too. With little option, he decided to make money for himself. In 1997, a £500 grant from the Prince's Trust for a computer helped him set up an online business selling tyres wholesale over the internet. In the eve-

nings, he did shifts at Tesco. Looking back, he believes the site was ahead of its time. Nobody else was doing it. The formula seemed right, but he could not scale it up because he did not have the money. He never made any money from the idea so, in 1999, he was lured by Kwik Fit to become its head of ecommerce. He lasted two years before leaving to set up Blackcircles.com, whose website today sells tyres of all sizes and works with about 1,400 garages that fit them.

At its headquarters in Peebles, in the Scottish Borders, Welch employs 55 staff. The business had sales in excess of £30 million in 2013. In the beginning, he ordered a copy of every *Yellow Pages* in the UK and contacted each garage to ask if they wanted to join the Blackcircles network.

In 2011, the former Tesco chief executive, Sir Terry Leahy, backed the business. Leahy and three others invested £400,000. He later became a non-executive director. Blackcircles now has eight shareholders, including Leahy. Welch owns 35 per cent.

In 2015, Welch sold Blackcircles to French giant Michelin in a deal worth £50 million. This will net Welch approximately £17 million.



Source: Mark Fagelson/Alamy Images

Another mapping approach comes from the concept of ‘component business modelling’. IBM has been an early leader in this area, and has filed patents on the method. Figure 12.4 shows a visual depiction of IBM’s view of a component business model. This modelling approach provides a practical way to experiment with alternative business models, by enabling firms to simulate various possibilities before committing to specific investments. It also provides the opportunity to visualise the processes underlying a business model. Thus, theoretical considerations of configuring elements of a business model here can become far more concrete (Chesbrough, 2010).



	Business Administration	New Business Development	Relationship Management	Servicing and Sales	Product Fulfillment	Financial Control and Accounting
Direct	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfilment Planning	Portfolio Planning
Control	Business Unit Tracking	Sector Management	Relationship Management	Sales Management	Fulfilment Planning	Compliance Reconciliation
	Staff Appraisals	Product Management	Credit Assessment			
Execute	Staff Administration	Product Delivery	Credit Administration	Sales	Product Fulfilment	Customer Accounts
	Product Administration	Marketing Campaigns		Customer Dialogue	Document Management	General Ledger
				Contact Routing		

**Figure 12.4** Visual depiction of IBM's view of a component business model

Source: Chesbrough (2010), copyright 2010, with permission from Elsevier.

## The business model dilemma of technology shifts

In 2001, Apple introduced the iPod with the iTunes store, revolutionising the music industry, creating a new market and transforming the company. But Apple was not the first to bring digital music players to market. Indeed, many people may still have a Creative MP3 player, which was market leader prior to the iPod. There were many other MP3 players on the market. So, why did the iPod succeed so spectacularly? The answer is that Apple developed a new business model – it made downloading digital music easy and convenient. It built a business model that combined hardware, software and service. This technology shift proved lethal to others in the music industry. Technology shifts are lethal to many manufacturing companies. Previous research indicates that this is not purely a problem of technological innovation, but is also closely related to the inertia of business models and business model innovation. Research by Tongur and Engwall (2014) shows that potential technology shift constitutes a business model dilemma for firms leading in the existing technology. They show why technology shifts are so difficult to master and that managing technology shifts does not require either technology or service innovation in order to create a viable business model, but instead a compound of both – as the Apple iPod case illustrates. Illustration 12.2 shows how technology shifts in the newspaper industry is having huge impact.

### Illustration 12.2

The newspaper industry and the digital revolution: what business model to use?

The technology for producing and supplying journalistic content has changed dramatically. Whilst digitalisation, along with socio-cultural and technological changes, threatened the established

newspaper business models, simultaneously it offered various opportunities to establish new business models, not least for quality journalism, which is crucial to a vital democracy.

Newspaper owners insist they are adapting their business models to make money online. The past 10 years have seen some titles disappear completely, whilst the rest deal with a new reality – a readership with the ability to find everything they need at the touch of a button. Newspapers are not giving up on their traditional formats, partly because they still have not quite figured out how to cope with this migration from offline to online and how to make a profit from it.

The shift of news consumption from traditional media to online news media is rapidly changing the media landscape. The news magazine *Der Spiegel* was able to reach a 1,000 per cent increase in e-paper sales in 2015 compared with sales in 2007. In addition to this, the Hamburg-based magazine was a pioneer in the digital news market: *Spiegel Online* (SPON) was launched as far back as 1994. Starting with selected articles from the print magazine, the editors anticipated only several months later that online readers are more interested in consuming unique content. Hence, the online division and the print magazine quickly began to work as separate operations. After providing free content to its users for more than 20 years, SPON is opting for a subscription-only solution.

A debate rages in the newspaper industry over the question of whether papers should charge for their content online or, as most papers now do, give it away for free in hopes of reaping faster overall revenue growth through internet advertising. Newspapers are taking a look at the option of charging readers – whether through subscriptions or article-by-article ‘micro-payments’ – for the content on their websites. For example, *The Huffington Post* integrates copyrighted content with its own original content. Online platforms, such as blogs, are readily able to take copyrighted content, whether news stories, magazine articles or pictures, and then republish that content on their own site without paying a licence or crediting the original pro-



Source: Andrew Holt/Alamy Images

ducer. Readers then opt to visit the blogs instead of the content of producers’ websites, thereby depriving the content producers of the full return on their investment.

At *The New York Times* (NYT), editors spend hours each day discussing what to put on page one of the paper, with much less discussion about digital distribution. Since the NYT newsroom runs to the print edition’s timetable, many articles go up online in the evening, whereas more people browse for news in the morning. Nearly 60 per cent of those reading NYT articles now do so on smartphones and tablets, often receiving them via Twitter, Facebook and other social networks, search engines and apps. That means fewer of them encounter the full package of reading that editors so painstakingly put together. Traffic to the NYT’s home page has fallen by half from its peak in 2011; only a third of readers of NYT articles ever visit it. This makes it a lot harder to persuade them to consume a broader range of the paper’s content, and to charge them for it.

Source: Rothmann, W. and Koch, J. (2014) Creativity in strategic lock-ins: The newspaper industry and the digital revolution, *Technological Forecasting and Social Change*, vol. 83, 66–83.

## Considerations in designing a business model

### Switching costs

The time, effort or money a customer has to spend to switch from one product or service provider to another is called **switching costs**. The higher the switching costs, the likelier a customer is to stick to one provider rather than to leave for the products or services of a competitor. Apple's introduction of the iPod in 2001 is also a great example of designing switching costs into a business model. Steve Jobs heralded his new product with the catchphrase 'thousand songs in a pocket'. Well, that was more than a product innovation focusing on storage. It was a business model strategy to get customers to copy all their music into iTunes and their iPod, which would make it more difficult for them to switch to competing digital music players. In a time when little more than brand preferences were preventing people from switching from one player to another, this was a smart move and laid the foundation for Apple's subsequent stronghold on music and later innovations.

### Scalability

**Scalability** describes how easy it is to expand a business model without equally increasing its cost base. Consultancy is a well-understood business model and can be attractive and lucrative for techno start-ups, but it suffers from limits on scalability. Of course, software- and web-based business models are naturally more scalable than those based on bricks and mortar but, even amongst digital business models, there are large differences. An impressive example of scalability is Facebook. With only a few thousand engineers, it creates value for hundreds of millions of users. Only a few other companies in the world have such a ratio of users per employee. A company that has pushed the limits even further is the social gaming company Zynga. By building games like FarmVille or CityVille on the back of Facebook, the world's largest social network, they could benefit from Facebook's reach (and scale) without having to build it themselves.

A company that quickly learned its lessons regarding scalability was peer-to-peer communication company Skype. Its customer relationship collapsed under the weight of large numbers, when it was signing up ten thousands of users per day. It had to adapt its business model quickly to become more scalable.

### Recurring revenues

**Recurring revenues** are best explained through a simple example. When a newspaper earns revenues from the sales at a news stand, they are transactional, whilst revenues from a subscription are recurring. Recurring revenues have two major advantages. First, the costs of sales incur only once for repetitive revenues. Second, with recurring revenues the business will have a better idea of how much it will earn in the future.

A nice example of recurring revenues is Red Hat, which provides open source software and support to enterprises based on a continuous subscription basis. In this

model, clients do not pay for new software versions, because it is continuously updated. In the world of software as a service, these types of subscriptions are now the norm. This contrasts with Microsoft, which sells most of its software in the form of licences for every major release.

However, there is another aspect to recurring revenues, which are additional revenues generated from initial sales. This is the ‘bait and hook’ revenue model. For example, when you buy a printer, you continue to spend on cartridges or, when you buy a game console, you will continue to spend on games. This revenue model has not gone unnoticed by large corporations such as Apple; whilst Apple still earns most of its revenues from hardware sales, the recurring revenues from content and apps is steadily growing.

## Cashflow

Specifically, the more the business can earn before spending, the better. Dell pioneered this model in the computer hardware manufacturing industry. By assembling on order after selling directly they managed to escape the terrible inventory depreciation costs of the hardware industry. Its impressive results showed how powerful it is to earn before spending.

## Getting others to do the work

This is probably one of the least publicised weapons of mass destruction in business model design. What could be more powerful than getting others to do the work whilst you earn the money? For example, IKEA gets us to assemble the furniture we buy from them. We do the work. They save money in transportation costs and storage costs. Similarly, eBay gets us to do the work of posting details of the items we want to sell and then they get paid for any sale. Another more obvious example is open source software, where firms generate cash from a community of users developing the software.

## Protecting the business from competitors

A great business model can provide a longer-term protection from competition than just a great product. An elaborate supply chain network, such as those developed by Toyota, offers it additional protection from competitors. Furthermore, Apple’s main competitive advantage arises more from its powerful business model than purely from its innovative products. It is easier for Samsung, for instance, to copy the iPhone than to build an ecosystem like Apple’s App Store, which caters to developers and users alike and hosts hundreds of thousands of applications.

## Changing the cost structure

Cutting costs is a long practised sport in business. Some business models, however, go beyond cost cutting by creating value based on a totally different cost structure. This is what Ryanair did with its no frills airline. The newspaper industry has also

changed the cost structure of its industry by making content available online and making people pay for access via a subscription charge. In addition, many daily newspapers are now given away free, with advertising paying for the production costs. Another example is Skype. It provides calls and communication almost like a conventional telecom company, but for free or for a very low cost. It can do this because its business model has a very different cost structure. In fact, Skype's model is based on the economics of a software company, whilst a telecom provider's model is based on the economics of a network company. The former's costs are mainly people; whilst the latter's cost include huge capital expenditures in infrastructure.

## Intellectual property is an asset

Intellectual property (IP) is a company asset and should be treated and managed as such. Owning and acquiring IP will not overcome poor business strategy and make a company successful. There are many examples of firms with exciting technology that failed to profit from it. Classic cases, such as the EMI scanner (MRI), are told to business students. This technology was developed by EMI, but it failed to develop a business model to exploit it. The licensing business model is well-understood and well-known, but the variety of ways the licensing arrangement is organised is almost limitless.

IP is a broad concept and includes many different intangibles, such as patents (inventions), copyright (works of authorship, software, drawings, etc.) know-how (e.g. expertise, skilled craftsmanship, training capability, understanding of how something works), trade secrets (a protected formula or method), trademarks (logos, distinctive names), industrial design (the unique external appearance) and semiconductor mask works (the physical design of semiconductor circuits).

## The technology licence and business relationships

Although not immediately apparent when reading an impressive looking licence agreement, it is quickly realised and understood by all businesses that, with a licence, must come other very practical agreements that will help both parties succeed. Let us take an example. Red Software Company decides to collaborate with Blue Software Company to develop a new computer game provisionally labelled Galaxywars. This will involve collaborating R&D activities. So, they sign a technology licence that gives each company rights to use each other's technology (software). In addition, they need to negotiate an R&D agreement to specify the terms of the collaboration. That is, length of time, level of investment required, resources that each company will have to make available, etc. Furthermore, what happens to all the outputs from the collaboration? Red Software Company may be able to utilise some of the outputs in its own range of computer games whereas Blue Software Company may be unable to use any of the outputs. Also, who is going to manufacture, market and distribute Galaxywars? An IP licence is interrelated to many other agreements.

## Continual adaptation of the business model

Developing a business model is all well and good, but sustained success comes from changing it and continually adapting it. Companies that manage to create value over extended periods of time successfully shape, adapt and renew their business models to fuel such value creation. One only has to consider General Electric, IBM or Apple and one quickly realises that the business model of these firms that is in place today is very different from the one in place 10 or 20 years ago. Achtenhagen et al. (2013) identify three critical capabilities to achieve this:

- an orientation towards experimenting with and exploiting new business opportunities;
- a balanced use of resources;
- coherence between leadership, culture and employee commitment.

## The licensing business model

A licence is a consent by the owner to the use of IP in exchange for money or something else of value (May, 2006). The owner of a licence is known as the licensor and the purchaser and user of the licence is known as the licensee.

Technology-based start-up ventures inevitably involve scientists and inventors who are interested in seeing their research or inventions commercialised for use. They are, usually, however, equally also interested in the intellectual challenge of the research. In such cases, licensing a technology idea might make good sense. Licensing allows technology producers to generate cash from their innovations by licensing them to other companies so that they may be integrated into an end product.

Licensing is most commonly applied to innovations that involve sophisticated technology protected by intellectual property (IP) agreements. The innovation itself may not be a complete product and may need to be integrated into a broader offering in order to create value for the end user. For example, the Blu-ray case study at the end of Chapter 8 illustrates how licensing can be used to secure dominance in an industry.

It is worthy of note and consideration for the start-up that technology-based licensing agreements rely on relatively intimate and long-term relationships with customers. This is because all parties must exchange certain (confidential) information and because the fundamental economics of a licensing arrangement are long-term in nature. The idea that business negotiations over licensing deals are won and lost through good and bad negotiations is overstated. There is a mutual interest in both parties surviving and thriving, hence most technology-based licensing deals are beneficial for both parties.

Bear in mind, however, it is possible that a potentially attractive licensing agreement can result in very poor results for a start-up. Such a situation could occur, for example, if a start-up signs an exclusive licence with a partner in order to secure a royalty stream. But then actions do not live up to the promises because, for example, the partner does not invest sufficiently in marketing or developing the technology. In

these situations, sales and income levels will be low. This could, in turn, prevent the company from moving forward with other more productive partnerships. An alternative solution might be a licensing agreement that clearly accounts for the above situation. See the 'Payments' section later in this chapter.

## Income from licensing

Licensing income usually involves a fee paid upfront to the inventor through a signed licensing agreement between the parties. These agreements also may include milestone payments that become due as the technology or innovation is commercialised and/or a royalty fee set at a percentage of the revenue or earnings from the eventual sale of products or services. The amount of the fee upfront, milestone payments and royalties are negotiated between the parties and generally reflect the effort and stage of commercialisation. In other words, the more developed a product or service, the higher the proceeds tend to be.

There exist a number of organisations interested in licensing innovative technology and inventions that complement their existing products and services for a specific purpose or market. The organisation that licenses the technology usually assumes all responsibility for subsequent costs of developing, marketing, selling and distributing the product or service.

## Marketing issues related to the licensing model

The goal of marketing technology for licensing is to drive a deep understanding of the potential applications of the innovation amongst key industry insiders. Successful marketing for technology licensing focuses on creating visibility for the technology through industry presentations, establishing a presence in academic and industry journals, authoring whitepapers and otherwise evangelising the innovation. For example, the pharmaceutical industry uses academic conferences to promote awareness of new drugs. Frequently, news organisations will select articles from key academic journals that have newsworthy stories (see Illustration 12.3).

### Illustration 12.3

#### *Drug trial results suggest help for cancer patients*

The findings from recent clinical trials provide hope for cancer patients suffering with leukemia. The exciting treatment involves genetically engineered T cells which seem to help destroy leukemia cells. Scientists report that some of the patients have now been cancer free for more than one year.

This research project was undertaken at the University of Pennsylvania. It involves developing

genetically engineered 'T cells' taken from patients. These are later reintroduced to the patient whereupon they have been shown to attack and destroy cancer cells. The trial was undertaken in advanced cases of leukemia. The researchers reported that two of the three patients have shown positive responses to the treatment and have now been free from cancer for over a year.

## Financial and strategic implications

Licensing revenues can be structured in different ways, with upfront payments by the licensee or with payments that are revenue-dependent. In order to license successfully, a company will require the funding necessary to develop their technology to the point where it becomes a suitable add-on to the offering of its licensee partner. If the licensed product is a tangible item, costs are the most important metric to monitor. Royalty fees may accompany licensing revenue on a per-unit-sale basis, or the parties may use some other transparent means of measuring usage of the licensed technology. For example, an important consideration in structuring licensing agreements is the portion of income derived from licensing revenue versus that deriving from royalties. Royalty revenue is dependent on the selling ability of the party integrating the licensed technology, and the size of the addressable market for the end product.

Strategically, licensing may run the risk of exposing IP to the party integrating the technology into their products. It is, therefore, important to ensure that patents are defensible and that other IP is protected.

## Costs and benefits of the licensing model

Licensing works well in situations where developing an entire product independently is not feasible. The trade-off is that, since the offering comprises only one element of a complete product, it may hinder the development of a strong company profile, unless an ‘Intel Inside’ co-branding option is available. It is not uncommon for very successful firms to go unrecognised by the public. ARM, a leading chip producer from the UK, is the world’s second largest developer of computer chips. Its microprocessors are found in all Apple iPhones and almost all smartphones. Yet, few people have heard of the company.

Within a licence agreement, the royalty rate may be interlinked with other factors, most notably minimum royalty commitments and decreased **royalty rates**, once certain volumes are reached. Minimum royalties are often a commitment for some form of exclusivity or access to the brand in a market. Decreasing royalty rates could be used to incentivise the licensee to achieve higher volumes as the unit cost of branded products then becomes less.

Licence agreements usually include a number of other considerations such as:

- definition of the brand being licensed;
- definition of the sales to which the royalty percentage is to be applied;
- a restriction of the use of the brand to specific products, channels and territories;
- a specific time period, say three years;
- brand use and authorisation procedures. This is to ensure that the use of the brand by the licensee is consistent with that of the brand owner;
- commitments by licensee to brand marketing. This can also be a percentage of sales or a fixed amount;
- other legal rights and obligations, such as necessary records and returns and access to audit each other’s accounts.

These factors will also influence, to a greater or lesser extent, the royalty rate. If a licensee agrees, for example, to contribute to brand marketing, then the royalty rate might be reduced to compensate for this.



**Table 12.5** Typical royalty rate in technology sectors

Industry	Royalty rate					
	0–2%	2–5%	5–10%	10–15%	15–20%	20–25%
Aerospace	50%	50%				
Chemical	16.5%	58.1%	24.3%	0.8%	0.4%	
Computer	62.5%	31.3%	6.3%			
Electronics		50%	25%	25%		
Healthcare	3.3%	51.7%	45%			
Pharmaceuticals	23.6%	32.1%	29.3%	12.5%	1.1%	0.7%
Telecom	40%	37.3%	23.6%			

Source: Parr (2007), republished with permission of Wiley, permission conveyed through Copyright Clearance Center, Inc.

Table 12.5 illustrates the wide range of royalty rates that exist across a broad range of different industries. The rates differ for a variety of reasons, including historical working practices. Usually, however, there is a link to typical length of time the licensor can earn income before the technology is superseded or becomes obsolete. Other influences can be the level of upfront R&D costs and volume of sales (few units of aircraft are sold compared to units of gaming software). In Table 12.5 we can see that the aerospace industry seems very conservative paying royalty rates of up to 5 per cent. Electronics, on the other hand, looks more lucrative with 25 per cent of royalties achieving a rate of between 10–15 per cent.

## Other strategic uses of licensing

A start-up business may consider licensing a technology or the right to use a technology in a specific field or geographic area as a means to obtain funding for its core product.

Life science companies, particularly those developing therapeutic products, generally use licensing as a sales and marketing strategy for their products due to the very significant costs of development and clinical trials, as well as the eventual marketing, sale and distribution of the product.

Licensing a technology may also be used as a way to create an exit for a business, if it becomes clear that the business cannot fund the marketing, sales and distribution of the product from existing resources and additional financing is not available. Generally in ‘stalled or failed’ technology businesses that have been backed with equity investment, the shareholders will request that management or a third party attempt to license or sell the technology in an effort to provide some return on investment to shareholders. Illustration 12.4 shows the power of licensing.

### Illustration 12.4

#### The infamous IBM-Microsoft MS-DOS licensing deal

Development of Microsoft Disk Operating System (MSDOS) began in October 1980, when

IBM began searching the market for an operating system for the yet-to-be-introduced IBM Personal

Computer. IBM originally had intended to use a simple system developed by respected firm: Digital Research. IBM then talked to a small company called Microsoft. Microsoft was a language vendor. Bill Gates and Paul Allen had written Microsoft BASIC and were selling it on punched tape or disk to early PC hobbyists. Prior to this, the company's original name and goal was Traf-O-Data, making car counters for highway departments.

Microsoft had no real operating system to sell, but quickly made a deal to license Seattle Computer Products' 86-DOS operating system, which had been written by Tim Paterson earlier in 1980 for use on that company's line of 8086 computers: 86-DOS (also called QDOS, for Quick and Dirty Operating System). Fortunately for Microsoft, Digital Research was showing no

hurry in introducing its operating system. Paterson's DOS 1.0 was approximately 4000 lines of assembler source. This code was quickly polished up and presented to IBM for evaluation. IBM found itself left with Microsoft's offering of 'Microsoft Disk Operating System 1.0'. An agreement was reached between the two, and IBM agreed to accept 86-DOS as the main operating system for its new PC. Microsoft purchased all rights to 86-DOS in July 1981, from Seattle Computer products and 'IBM Personal Computer DOS 1.0' was ready for the introduction of the IBM PC in October 1981. IBM subjected the operating system to an extensive quality-assurance program, reportedly found well over 300 bugs, and decided to rewrite the programs. This is why PC-DOS is copyrighted by both IBM and Microsoft.

## Case study

### Developing a new product for the teeth whitening market

Nestled alongside the Olympic Park in the heart of Munich's industrial district, to the north of the city, sits Munich Gases: a German industrial gas company with a long history of supplying gases and liquids to firms across Europe. Its product range is dominated by liquid oxygen, which it supplies to health-care markets and carbon dioxide, which it supplies to the drinks and beverages industry. With a market capitalisation of €10 billion, Munich Gases is one of the industry leaders. It also has a proud history of successful R&D, which has helped to maintain its dominant position over the past 80 years. This case study tells the story of how Munich Gases uncovered a multi-billion dollar market opportunity for whitening teeth and explored how best to exploit it.

#### A portfolio of R&D projects

Munich Gases employs almost 48,000 employees working in more than 100 countries worldwide. In the

2009 financial year, it achieved sales of €11.211 billion. The strategy of the group is geared towards 'sustainable earnings-based growth and focuses on the expansion of its international business with new forward-looking products and services'. Munich Gases offers a wide range of compressed and liquefied gases as well as chemicals and it is, therefore, an important and reliable partner for a huge variety of industries. Its products are used, for example, in the energy sector, in steel production, chemical processing, environmental protection and welding, as well as in food processing, glass production and electronics. It is also investing in the expansion of its fast-growing health care business, i.e. medical gases, and it is a leading global player in the development of environmentally friendly hydrogen technology. It has an annual R&D budget of €100 million. Recently, it faced the decision of whether to invest 10 per cent of this budget in a single project – teeth whitening.



Amongst over 100 R&D projects running within Munich Gases' R&D department was one that was exploring applications for the use of plasma as a cleaning agent. Plasma is the fourth matter. Matter can be solid, liquid, a gas or a fourth type, plasma, which is actually the most common in the universe. Plasma is an ionised gas capable of conducting electricity and absorbing energy from an electrical supply. Manmade plasma is, generally, created in a low-pressure environment. (Lightning and the aurora borealis are naturally occurring examples of plasma.) When a gas absorbs electrical energy, its temperature increases, causing the ions to vibrate faster and 'scrub' a surface. Plasma has been used for many years to clean surfaces, for example, in semiconductor processing, plasma cleaning is commonly used to prepare a wafer surface prior to wire bonding. Removing contamination (flux) strengthens the bond adhesion, which helps extend device reliability and longevity. Plasma, therefore, is an effective way to clean without using hazardous solvents. Since 2011, a research team at Munich Gases has been exploring the viability of incorporating plasma for cleaning and whitening teeth.

Artificial plasmas can be created when energy is added to a gas, perhaps using an electrical field or a laser. The resulting matter can behave differently when it comes into contact with other particles. Whilst many artificially created plasmas are extremely hot – for example, the flame on an arc welder – advances in recent years have allowed the creation of much cooler plasmas. This, in turn, has opened the possibility of using them on the human body, where they could offer a very precise way of targeting tiny areas. In this case, the properties of the plasma are harmful to bacteria, without affecting the surrounding tissue.

This project at Munich Gases was quickly established, following the uncovering of a patent submitted by the University of Southern California (USC) in 2009, which claimed scientists at the USC had used plasma to sterilise teeth and one of the side-effects was a whitening of the teeth. When Munich Gases uncovered and read it, they were so intrigued by the patent and its possibilities that they quickly established a team of researchers to explore whether the idea could be a viable business opportunity. The team was given 12 months and a budget of €1 million.



Source: kurhan. Shutterstock/Pearson Education Ltd

### The plasma teeth cleaning project

Twelve months had now passed and it was time for the research project to report its findings to a panel of senior management. The panel wanted to know whether this technology would be of interest to Munich Gases. The project had caused much discussion amongst the R&D personnel – some believing that the company was mad to spend €1 million on a crazy idea, and others simply curious as to whether plasma could, indeed, work.

The project leader Thomas Wolfgang presented the findings. He explained that, when thinking of plasma, the first thing that comes to mind is temperature. Most people know, and all scientists should know, that high temperatures are required to turn gas into this state. He finished his introduction by suggesting that the findings after 12 months confirmed that it is possible to use plasma to clean teeth. The panel were fascinated, they all smiled, full of excitement and anticipation. Wolfgang began to explain some basic principles about how plasma cleaning uses ion excitation as a cleaning process. He explained that, when a gas absorbs electrical energy, its temperature increases, causing the ions to vibrate faster. In an inert gas, such as argon, the excited ions can bombard a surface ('sandblast') and remove a small amount of material. In the case of an active gas, such as oxygen, ion bombardment as well as chemical reactions occur. As a result, organic compounds and residues volatilise and are removed.

Wolfgang went on to explain that his team recently had created a new plasma laboratory instrument, which uses the matter to destroy bacterial bio-films on teeth, the main cause of them turning yellow. The micro-organisms also contribute to bad breath. He explained

that it may be described as a tiny, plasma blowtorch that breaks apart the sticky bonds that holds plaque to a tooth. However, unlike the hot plasma at the centre of stars and lightning bolts, this plasma torch is no warmer than room temperature. At present, his research team had only used the torch to sterilise a tooth during a root canal but, according to Wolfgang, they already had some more exciting uses in mind. He showed the board a short film of some of the experiments. The laboratory instrument resembled a tiny purple blowtorch, with a pencil-sized jet of plasma coming out of it. Remarkably, it had the ability to annihilate bacteria with outstanding efficiency. In a study, experts show that bacteria tend to come together in a slimy matrix, which boosts their ability to resist attackers. However, the new instrument renders any kind of matrix completely useless to the micro-organisms and destroys them. In one experiment, bacterial colonies grown in the root canal of an extracted human tooth fell prey to the plasma tool so fast that, when the team analysed the surface of the canal using scanning electron microscopes, they found a near pristine surface. Heat sensors placed on the tooth also revealed that its temperature rose by only about five degrees during a ten-minute test fire with the plasma tool, which means that it remains well within tolerable pain limits for humans.

Wolfgang explained that there were real and perceived health risks; and these were considerably different. Given that this method was using essentially cold plasma, the risks were minimal. But, he acknowledged that the association of heat with plasma is so strong that there may be a negative reaction to the product, based on ignorance or lack of knowledge. Either way, this was a problem that would have to be addressed. It may mean that a part of the marketing communication budget will need to cover education.

Wolfgang saved his compelling arguments and convincing slides until last. This was a series of slides of teeth. The teeth were from pigs. As it was not possible to use or even get access to the teeth of humans, Wolfgang had to test the product on the nearest substitute, which was pigs' teeth. The slides revealed some dramatic changes in colour following exposure to the plasma. Discoloured yellow teeth noticeably changed to a shade of white. Wolfgang had to explain that white, like any other colour, has hundreds of different shades, including cream, off-white, ivory, brilliant white, etc., all of which are natural shades of teeth that can be found amongst the population of human beings.

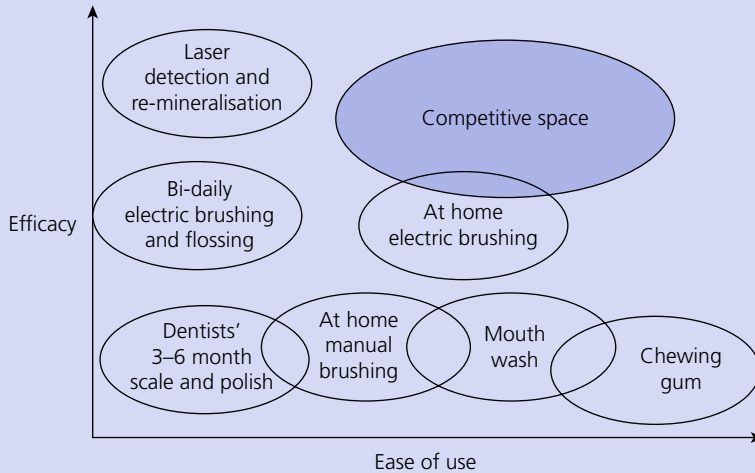
**Table 12.6 Project analysis**

Progress of project	% of analysis complete
Market overview	90
Market study	
Expert interviews	
Internal interviews	
Customer view	
Intellectual property	60
IP review	
Patent filing	
IP strategy	
Regulatory	100
Regulatory review	
Regulatory plan	
Technology/risk assessment	60
Assessment and mitigation	
Efficacy tests	
Risk plan	
Product development	95
Laboratory prototype	
Initial concepts/designs/proposition	
Route to market	70
Conceptualisation and road map	
Partners	
Value proposal	

The meeting had to consider whether to invest €10 million in this project. Such a decision would, of course, be at the expense of other projects not being funded. Munich Gases considered a commonly used framework for evaluating R&D projects. This was made up of six key areas, indicating how much of the analysis was complete (see Table 12.6).

### Market overview for plaque, periodontal (gum) disease and whitening

Wolfgang put up a slide showing the competitive space for a variety of products and techniques currently available and used by people to combat periodontal disease (see Figure 12.5). It seemed there was a clear need for an effective, simple cleaning product. For example, people were aware of the benefits of flossing, but few people actually regularly flossed their teeth because of the difficulty. Currently, there is a clear trade-off between ease of use and efficacy. Thus, things easy to use are not very effective. It was, however, the issue of teeth whitening that seemed to



**Figure 12.5** Competitor map: prevention and therapy of periodontal disease

be grabbing most people’s attention. Several members of the panel were amazed at the possibility that plasma could actually whiten teeth. And it was specifically this benefit that the marketing manager believed was of most interest. He argued that whitening was a growing and lucrative market. He also argued that there were few, if any, easy to use effective whitening products available. The dentist present confirmed that the most commonly used effective whitening was a bleach-based process, where users essentially bathed their teeth in a solution of bleach for a couple of hours a day. Products in this category typically were of the format of a plastic tray that is held around the teeth to ensure the solution/gel is in contact with the teeth.

The Marketing Manager was Thomas Haas. He gave some details of the world toothpaste market. First, he put up a slide showing how the market has a number of specific segments including: regular toothpaste, anti-caries toothpaste, children’s toothpaste, desensitising toothpaste, gum protection toothpaste, multi-benefit toothpaste, tartar control toothpaste, whitening toothpaste and others. He then went on to explain that toothpaste is one of the most dynamic segments of the oral care market:

*The frequency of product launches in existing segments of the market contributes to continuous evolution of the toothpaste market. Increase in sales of oral hygiene products in major markets worldwide has largely resulted from growing*

*awareness of hygiene and product innovation. New advancements have led to the launch of a variety of high-priced, value-added multifunctional products in several oral care categories such as toothpastes and toothbrushes. Whitening toothpastes and products offering multiple functions are driving growth in the dentifrices segment. Currently, for major toothpastes, averting tooth decay is not sufficient, which usually guarantee benefits such as fresher breath, healthier gums and whiter teeth. Technological advancements in recent years have altered the toothpaste segment to one that offers additional benefits besides just fighting cavities to customers. This made manufacturers roll out products with a lot of additional features that were not available previously.*

He cautioned that entry into this market or related markets would be difficult, given the extent of competitors and the fact that some of these firms are multinational firms with huge power, such as Colgate-Palmolive, GlaxoSmithKline, Henkel AG & Co., Johnson & Johnson, Procter & Gamble and Unilever.

Thomas then went on to argue that this power also presents opportunities, especially when it comes to licensing technology. Powerful brand management firms with international brands to defend are always looking for opportunities to steal a march on their competitors. Exclusive access to a unique technology would provide such an opportunity. This made all the panel smile.

Thomas then gave the panel an example of a small company of three employees based in Maine, USA, that developed a new product in the teeth cleaning market. The company launched the product in a few Wal-mart stores in the USA. Sales were impressive. Immediately, Procter & Gamble took an interest and approached the company with an offer. After several months of negotiation, the small company agreed to sell the business for a staggering \$165 million up-front with an 'earn-out' payment in three years, based on a formula pegged to financial results. The up-front payment alone was nearly four times annual sales of \$43 million. The deal required the three employees to work at developing the business inside P&G for three years.

### Consumer market or professional market

Discussions continued for another hour with a wide variety of views being expressed. The dental scientists felt more research was required to prove and fully explain precisely how the plasma was whitening teeth. Some of the business development managers felt that teeth whitening was a fad and that the product should be marketed specifically as a cleaning tool. There was one key issue that dominated the discussion towards the end of the meeting and that centred on whether to target the professional market, i.e. dentists, or the consumer market with a simple-to-use micro cylinder product. Such cylinders were incorporated commonly into pen-type torches, and were used in soldering in the jewellery industry.

In many ways, the professional market would be easier to reach and Munich Gases could work with a few lead users to develop the most appropriate product. Such a product would use much larger cylinders of plasma, as these would be in a regulated market used by professional dentists in their surgeries only.

The head of R&D tried to summarise the arguments:

*Look, both options are feasible. It seems to me that we need to examine the type of business model that we wish to build. The professional market offers less risk, we could also build in an annual service to the product. This may include replacement parts and filters, for example. It also offers the opportunity for repair and maintenance and an after sales service. We could also license the product to dentists without them necessarily having to pay upfront. This all sounds very attractive. On the other hand, the consumer market*

*does offer the potential for big riches. We all know the margins and mark-ups available on consumer products. I mean, hundreds of per cent. Also, we have the possibility of designing in replacement cartridges and following the Gillette razor model or the ink jet cartridge model. This is where the original product is sold at a minimal price, but where complimentary products, such as cartridges, are sold with significant margins. The major profits lie in the replacement cartridges.*

Smiles emerged all around the table. This was beginning to look like an opportunity to print money – lots of it.

Marcus Leitz was the Head of R&D. He explained that ink jet printer manufacturers have gone to extensive efforts to make sure that their printers are incompatible with lower cost after-market ink cartridges and cartridge refilling. This is because the printers often are sold at or below cost to generate sales of proprietary cartridges, which will generate profits for the company over the life of the equipment. Indeed, this business model is so successful that it has become known as the razor-cartridge business model.

### The licensing option

There was another option that the panel had to consider. This was simply licensing the technology without forming a business. A technology licensing agreement grants a licensee the right to utilise specific technologies, patents, software, know-how or product designs. In a typical technology licence agreement, a running royalty fee based on licensed product sales revenue is paid to the licensor on a periodic basis. Stephan Boch was Licensing Manager for Munich Gases and had an impressive track record of securing some very profitable licensing deals for Munich Gases. Unsurprisingly, he was enthusiastic about the licensing option. He explained how licensing would allow Munich Gases to gain revenue from its plasma technology by licensing it to other companies so that it may be integrated into an end product. He said that the success of the model rested on secure intellectual property protection, which he said Munich Gases had. This option would allow Munich Gases to exit at this stage of the development without any further additional costs. The innovation itself clearly was not yet a complete product and would need to be integrated into a product to be of value for

the end user (consumer or professional). Members of the panel were now interested in this option.

Stephan went on to explain that this was not a short-term solution; this would be a long-term agreement because all parties must exchange certain (confidential) information. Boch argued that any licensing arrangement can be structured in different ways, with upfront payments by the licensee or with payments that are revenue-dependent. In this case, Munich Gases could argue for funding to develop the technology to the point where it becomes a suitable addition to the offering of its licensee partner. Royalty fees may accompany licensing revenue on a per-unit-sale basis, or the parties may use some other transparent means of measuring usage of the licensed technology. An important consideration in structuring licensing agreements is the portion of income derived from licensing revenue versus that deriving from royalties. Royalty revenue is dependent on the selling ability of the party integrating the licensed technology, and the size of the addressable market for the end-product.

The R&D Manager was critical:

*My understanding is that licensing works well in situations where developing an entire product independently is not feasible. But, in our case it is feasible. The trade-off is that, since the product comprises only one element of a complete prod-*

*uct, it may hinder the development of a strong company profile for Munich Gases, unless a co-branding option is available.*

The room fell silent. The temperature in the room was rising and making a decision was not going to be easy. Some people were going to be angry and upset if the decision went against them.

Maria Klaus was Marketing Manager for Munich Gases. She had a different view of how the project should develop:

*I see things differently from Stephan. I think we can build a business around this technology. The consumer product offers the potential for big rewards. I can vision a hand-held small plasma toothbrush in bathrooms all over Europe; a product that is in addition to their existing toothbrush that the whole family can use to whiten and clean their teeth. We could build a brand that becomes synonymous with clean teeth. The business could extend the brand into other markets and become the market leader. Equally, the professional product also offers another route to a successful business. This offers less financial reward but, significantly for Munich Gases, this is less risky and less costly but, nonetheless, could raise huge profits for us, especially in the after-sales services.*

## Illustration 12.5

### Selecting a business model

- 1 **Value proposition** – a description of the customer problem, the product that addresses the problem, and the value of the product from the customer’s perspective.
- 2 **Market segment** – the group of customers to target, sometimes the potential of an innovation is unlocked only when a different market segment is targeted.
- 3 **Value chain structure** – the firm’s position and activities in the value chain and how the firm will capture part of the value that it creates in the chain.
- 4 **Revenue generation and margins** – how revenue is generated (sales, leasing, subscription, support, etc.), the cost structure, and target profit margins.
- 5 **Position in value network** – identification of competitors, partners and any network effects that can be utilised to deliver more value to the customer.
- 6 **Competitive strategy** – how the company will attempt to develop a sustainable competitive advantage, for example, by means of a cost, differentiation, or niche strategy.

*Source:* Chesbrough, H. and Rosenbloom, R.S. (2002) The role of the business model in capturing value from innovation: evidence from Xerox Corporation’s technology spin-off companies, *Industrial and Corporate Change*, vol. 11, no. 3, 529–55.

Maria went on to explain that, in her view, it was the business model that they constructed and selected that would, ultimately, influence the outcome of discussions. She put up a slide that identified six components of any business model (see the box above 'Selecting a business model'). A long discussion ensued about what type of business model would be desirable. Her second slide showed the theoretical options that could be constructed (see Table 12.3 earlier in the chapter). There were 16 business models, but there were three categories that were applicable for this business. Munich Gases can be classified as a creator and there were three types of assets involved: entrepreneur; manufacturer and inventor.

### Decision time

The R&D Manager was chairing the meeting and, after two hours, he decided to bring the panel members back to focus on the decision that was in front of them. 'We need a decision today,' he explained. 'The board will want to know our recommendation.

They will back our decision and release the €10 million, but we need to be clear and unambiguous, we cannot say we think "a" is right, but it could be "b".'

### Yes or no to an investment of €10 million? And which particular product, market and business model?

This case raises many questions and not all the information is available to answer them. Nonetheless, decisions have to be taken on the best available information at a given point in time. It is always possible to delay the decision until all the information you require is available, but this may cost the business in terms of losing a position of advantage to a competitor who decides to enter the market.

*Source:* Weill, P., Malone, T.W., D'Urso, V.T., Herman, G. and Woerner, S. (2005) *Do Some Business Models Perform Better than Others? A Study of the 1000 Largest US Firms*, Sloan School of Management, Massachusetts Institute of Technology, Working Paper No. 226.

### Questions

- 1 Should Munich Gases invest €10 million in this new product project?
- 2 What other factors may yet decide the fate of this project?
- 3 Which market should Munich Gases select: the consumer product market or professional/business market?
- 4 Sketch out five different possible business models. Of these, determine which is the most profitable and which is most likely to succeed.
- 5 How will the powerful toothpaste brand owners react?
- 6 Should Munich Gases secure an entry into the market with one of Europe's leading multiples (e.g. Lidl, Tesco, Carrefour, Aldi)?
- 7 Should Munich Gases secure the endorsement of one of Europe's leading toothpaste brands (e.g. Aquafresh, Signal, Macleans) before entering the market?
- 8 How can the firm reassure uneasy consumers about the safety of plasma in their mouths?

## Chapter summary

This chapter showed the importance of developing a clear business model for the enterprise. It is a simple powerful tool to remind entrepreneurs how their ideas will make money. It shows that business models are, fundamentally, linked with technological innovation, yet the business model construct is, essentially, separable from



technology. More importantly, developing the right technology is a matter of a business model decision regarding openness and user engagement. The licensing business model is common for technology-based ventures and all aspects of licensing was considered.

## Discussion questions

- 1 For start-ups, the need to scale up can be costly; discuss how business model design can help overcome this.
- 2 Selling a product is great, but generating recurring revenues is better. Discuss the value in developing a 'cell phone monthly subscription' business model.
- 3 Discuss the problems facing the newspaper industry and the options open to it to make money.
- 4 Is it possible to receive payment before incurring expenditure?
- 5 Why are switching costs useful to consider in the design of a business model?
- 6 Is it possible to limit the threat of competition within your business model?

## Key words and phrases

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**Industry model** 416

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**Licensing model** 432

**Royalty rates** 434

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## Further reading

For a more detailed review of the business models literature, the following develop many of the issues raised in this chapter:

- Achtenhagen, L., Melin, L. and Naldi, L. (2013) Dynamics of business models – strategizing, critical capabilities and activities for sustained value creation, *Long Range Planning*, vol. 46, 427–42.

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