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BUSINESS MODEL REVIEW

by

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Abstract:

This document presents a review of alternative business models from a variety of industries and markets. It complements the Month 27 deliverable [Olofsson and Farr, 2006] on tools and methods for business model evaluation, and the Month 30 deliverable [Scott et al, 2006] from Rolls-Royce that discusses business models for the provision of aero engines and supporting services in particular.

Herein, a taxonomy of business models is presented, and a broad range of alternatives are considered, showing how companies have defined a target market, and differentiated their products and/or services, implemented plans for activities such as promotion and distribution, and ultimately pursued a profit. The applicability to these models to the aerospace sector is discussed.

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EXECUTIVE SUMMARY

To examine the business model of a company is to formally identify the processes that contribute to the performance of the company. The process of examination need not lead to change, but it will establish a common understanding of the purpose of activities that otherwise take place on a more ad-hoc basis such as “because it’s common sense” or “because that’s the way we always do things”.

Examining the business model closely, and comparing it to that of competitors – and indeed businesses in completely different industries – may yield opportunities for differentiating the business offerings, and prompt the development of innovative products and services.

Since the beginning of the 1990’s we have seen an explosion in the variety of new business models, many of these enabled by the IT technology then emerging. The term, ‘business model’ is contemporary with the companies of the ‘Dot Com’ era., although it has outlived many of them. Hundreds of companies failed, some spectacularly following the “stock market correction” of April 2000 [Thornton and Marche, 2003], but lessons can be learned from their experiments, and *some* of the surviving companies achieved meteoric growth as a result of their new approaches.

In this document, a representative sample of present-day business models are reviewed, their key components are identified, and their applicability to the market for aero engines and supporting services is discussed.

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GLOSSARY OF TERMS

Airframer:	Prime contractor engaged in the development, construction and supply of aircraft.
Business model:	See the text of Section 1 for definitions.
Functional product:	A combination of a tangible product and an appropriate set of supporting services.
MRO:	Maintenance, repair and overhaul.
OEM:	Original Equipment Manufacturer.
Ontology:	Common structure or language for discussing or communicating something.
PMA:	Parts Manufacture Authority. Identifies licensed replacement parts, approved for use instead of those obtained via the OEM.
Prime:	The prime contractor, such as an airframer or engine manufacturer.
Value Chain:	The sequential set of primary and support activities that an enterprise performs to turn inputs into value-added outputs for its external customers.

1. INTRODUCTION

Part of the strategy that the directors of a company choose to employ can be called a business model – the way that business aims to operate, including the way it finds new customers, retains them, delivers value and returns a profit for the stakeholders. (The business model should *not* be confused with a company's overall strategy, which may include initiatives such as cost reduction. Although this could alter the scale of payments made and received, it does not cause the business to change radically in terms of who does what, who receives what products or services, when, and how these are paid for.)

Formal discussions of the 'business model' (named as such) have really only appeared during the last decade, although many of the company practices that may be described in this way are much older. By formally adopting a business model, managers are ensuring that they agree upon the rationale of the firm. This allows the operations of the firm to be visualised, and communicated throughout the business to ensure understanding at all levels. It may also allow analysis and simulation.

Before proceeding to analyse business models, it is necessary to establish a definition of the term, for use in the remainder of the document. Osterwalder [2004] describes a business model as:

“...a conceptual tool that contains a set of elements and their relationships and allows expressing a company's logic of earning money. It is a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams.”

Osterwalder's work in this area has been of considerable utility in the preparation of this deliverable. Based upon a wide-ranging literature review, the various aspects and applications of the business model were grouped together into four 'pillars' (product, customer interface, infrastructure management and financial aspects), comprising nine 'building blocks' between them [Osterwalder, 2004]. Most of the other literature tends to concentrate upon a more limited set of business model elements. For example, McClure [2004] defines a business model thus:

“Quite simply, the business model is how the company makes money. It also explains the sources of the company's revenues, how much these sources pay and how often.”

This interpretation does not take into account the less directly quantifiable elements of the business model, such as relationship building and the formation of partnerships. Osterwalder [2004] offers a map of the nine principal elements, of which the revenue stream is just one, as Figure 1 shows:

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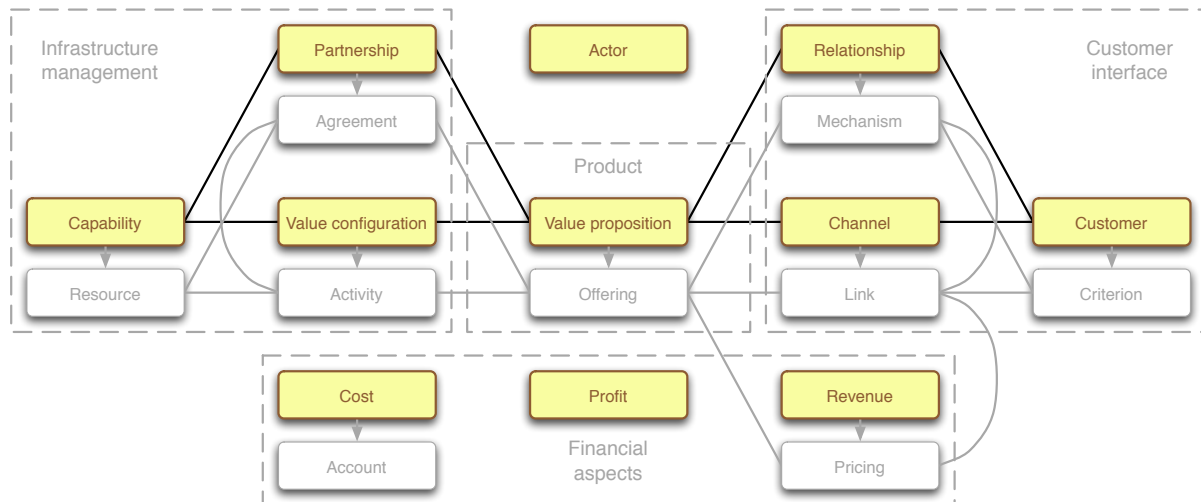


Figure 1: Business Model Ontology [Osterwalder, 2004]

This approach was adopted as the business modelling methodology in the Month 27 deliverable from this work package [Olofsson and Farr, 2006]. It continues to provide a useful framework for the alternative business models to be discussed within this document.

1.1 AIMS OF THIS WORK

The research detailed in this document is one part of the activity taking place under VIVACE Task 2.1.2, a set of activities meant to define and evaluate potential product and service offerings and their associated business operations.

Future extended enterprises and business offers may need to change, to remain competitive, so this activity includes a study of existing business models from sectors other than the aerospace industry. The work began with a state-of-the-art review on business models and methods [Olofsson and Farr, 2006] and continues in this document by applying the identified approaches to present-day business models used commercially in the provision of a range of products and services. Sectors such as automotive, communications, software, advertising, consultancy, financial services, electronics, travel, entertainment and healthcare may yield innovative ideas for future aerospace industry business models. For this reason, a broad range of business models are reviewed, with the purpose of identifying key elements that can then be discussed in terms of the alternative options that they might offer within the value chain for aerospace components, systems and supporting services throughout the product lifecycle.

1.2 STRUCTURE OF THE REMAINDER OF THE DOCUMENT

This document is organised into seven chapters. In Chapter 2, a brief review of some common business models is presented. Chapter 3 describes the methodology that has been adopted for their analysis, allowing alternatives to be compared, and Chapter 4 details the business model key characteristics that have been identified. Chapter 5 discusses the application of these characteristics within a structured mapping methodology, and Chapter 6 discusses the relevance of these business model elements to the market for air transport, and its enabling manufacturing and servicing activities. Chapter 7 presents conclusions and suggestions for further work.

2. REVIEW OF COMMON BUSINESS MODELS

There are a huge number of different business models, and we have certainly not seen the end of inventiveness in this area. It is therefore very difficult to discuss all the different business models that exist, and their areas of application. Instead, this chapter presents a representative sample, showing something of the breadth of options available. They should by no means be considered exhaustive.

This required the use of an appropriate analysis framework, for which Osterwalder's approach was chosen. If we had used McClure's [2004] business model definition, as presented in Chapter 1, we would have considered only how the business obtains money. While income is the lifeblood of the business, there *are* other key elements, as Osterwalder's [2004] ontology suggests, including such issues as the customer interface. Osterwalder's more inclusive approach makes it possible to discuss these less directly quantifiable aspects of the business model; this approach was therefore adopted, and has been used in the analysis of each of the present-day business models described in the sections that follow.

Each is a successful model, although their market and means of application vary. They provide anecdotal evidence of how a business model might be configured, but they can also be analysed to identify key components that might be applied under other circumstances.

2.1 CAPTIVE-PRODUCT PRICING

This business model involves a functional product offering with more than one component. One component – the one that the buyer obtains first – is subsidised, and may actually be a loss leader¹. Once bought, however, it locks the customer into providing the vendor with a revenue stream. This is sometimes referred to as the 'bait and hook' business model, but Koetler et al [2005] call it *captive-product pricing*.

Good examples of this business model include the sale of colour printers (with expensive ink cartridges), razors (with an ongoing need for replacement blades), mobile telephones (and talk time)... and jet engines for large civil aircraft (typically sold at less than cost, with the losses recouped through the sale of spares and services during the engine's life).

Obsolescence, requiring the customer to make periodical mid-life upgrades, is another way in which to obtain a revenue stream of this kind. The ongoing revenue may be in the form of occasional, discretionary purchases, or it might take the form of a service contract subscription (as described in Section 2.2).

The break-even point is of critical importance in any consideration of a business model of this kind, and it should be noted that this business model can be 'broken' if a third party begins offering substitutes that win a share of the continuing revenue stream. With some products, technology may provide a means of locking out the competition, such as by adopting non-standard interfaces between components, by patenting a key feature, or simply by offering products that no competitor can match economically.

Captive-product pricing features many of the elements of Osterwalder's business model ontology [2004]; the *value proposition* must be sufficiently attractive – and/or sufficiently well promoted to convince *customers* to accept exposure to an ongoing *relationship* in which subsequent payments will be made. In cases where the purpose of the ongoing

¹ A 'loss leader' is a product that is sold at a loss, for promotional purposes or (as here) in order to lock the customer into a continuing relationship.

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relationship is to provide services, a *partnership* may be necessary, to deliver those services at places that suit the customer. The result is a source of *revenue* for the business. Thus, figure 2 shows the primary elements of this business model:

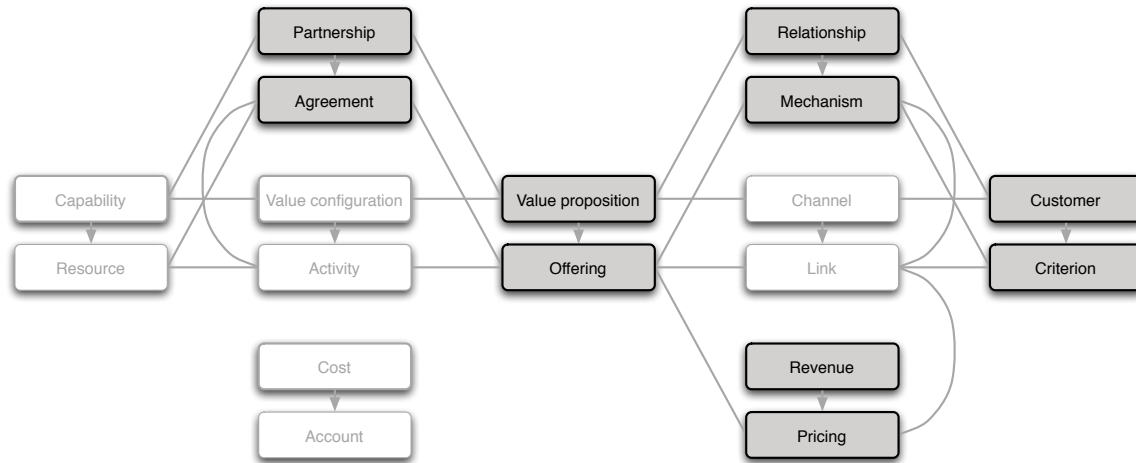


Figure 2: Primary elements in captive-product pricing

2.2 THE SUBSCRIPTION BUSINESS MODEL

As with Captive Product Pricing in the previous section, selling subscriptions is a way to lock a customer in so that they will have an ongoing relationship with a business. With often-quoted statistics showing how it costs much more to win a new customer than to keep an existing one (for example the statement in Reicheld and Sasser [1990] that “Companies can boost profits by almost 100% by retaining just 5 per cent of their customers.”), there is a powerful argument in favour of such practices... although the relative importance of customer retention will vary from industry to industry.

Stone et al [1996] maintain that a continuing relationship with customers should be pursued actively in order to increase the *lifetime value* of the customer relationship, in terms of reduced customer recruiting costs and reduced cost of sales, as existing customers are usually more responsive.

Subscriptions can take a variety of forms, however, and do not necessarily offer the continuing revenue stream discussed in Section 2.1; a magazine subscription, for example, gives the customer one copy of each issue for a defined period, but the publisher receives a one-off payment. Conversely, a membership subscription to a fitness centre would typically be paid monthly, and would normally allow the customer unlimited access during that period. Alternative subscription-based business models are discussed in the subsections that follow:

2.2.1 SUPPLIER OBLIGATION BY SUBSCRIPTION

Suppliers must sometimes commit themselves to providing an ongoing service long after they have received most or all of the income from a sale. The publisher of a magazine may choose to offer a discount of 25% or so for a one-year subscription. Naturally, the magazines must be designed, printed and shipped at regular intervals during the year. Thus, the publisher is taking on a risk (their own costs may increase, etc.), while also giving a discount, in exchange for locking the customer into a year-long relationship. The

customer can no longer forget or choose not to buy the magazine, nor choose a different one. They also take on a small risk, since they are funding a publisher on the assumption that they will remain in business and meet their obligations throughout the year.

Major purchases of equipment often come with a similar supplier obligation. Today’s computer software comes with an implicit guarantee that any problems with the product itself (or any new threats in the form of viruses, etc.) will be addressed for a period. No further money is paid by the ‘subscriber’. The householder encounters this in the form of manufacturers’ warranties, and the duration of any warranty and the additional cost of an extended support phase will have been calculated with care as a part of the business model. On a different scale, the manufacturer that equips a military system may be obliged to offer spares and supporting services for as much as fifty years. (Despite continuing to receive money for the products and services supplied under contract, this can be an *unpleasant* form of continuing relationship, becoming increasingly difficult because of the arrival of new technologies, requiring the manufacturer to hold contingency stocks and keep production equipment ‘mothballed’. Skills retention may also be a critical problem in this scenario.)

Where capital equipment is to be supported, there may well be some fee associated with the ongoing support phase, in exchange for services such as the provision of information and testing to ensure safety. The cost structuring of this support phase does not necessarily guarantee that it is desirable to the provider; it may or may not be a profitable phase. Offering low-cost or free upgrades may be a preferred route out of an onerous support phase.

Subscription-based business models require a *value proposition* that is desirable to the *customer* (different customers have different attitudes to this). They also emphasise the *channel* in Osterwalder’s [2004] ontology, since this is the means by which the continuing relationship delivers its offerings (Figure 3).

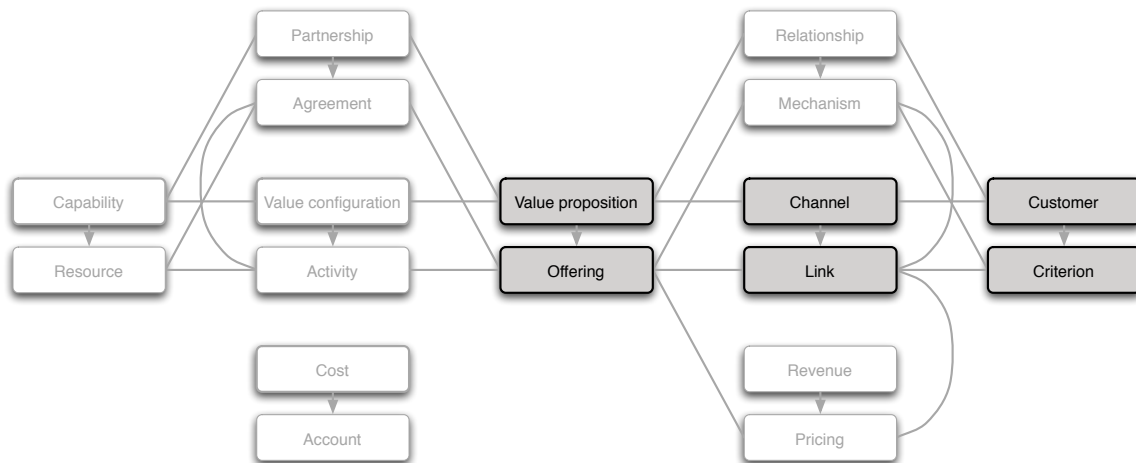


Figure 3: Primary elements in a supplier obligation subscription

2.2.2 REGULAR INSTALMENTS SUBSCRIPTION

Paying for a product or service by regular instalments is attractive to some customers, because it spreads out the cost of ownership. The structure of the instalments scheme can be visualised as a scale, with pure leasing at one extreme (a simple fee for the

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period) and regular instalments leading to ultimate ownership at the other (a “hire purchase” agreement). In between are options such as fractional ownership. In Osterwalder’s [2004] ontology, the *pricing* and the *relationship* with the *customer* are differentiating factors.

Subscription-based models of this kind will be at their best when they can take advantages of reduced transactional *cost* (since an ongoing, customer relationship ought to be easier to manage). Many customers are wary of becoming locked in to a series of payments, however, and bad experiences with such schemes in the past may mean that the most mutually satisfactory approach is to involve a third party to provide credit and absorb risk, this being their speciality. In Osterwalder’s map, such a third party would be considered to be a component of the *partnership*, their presence altering the *channel* to the *customer*. Figure 4 shows the corresponding business model map:

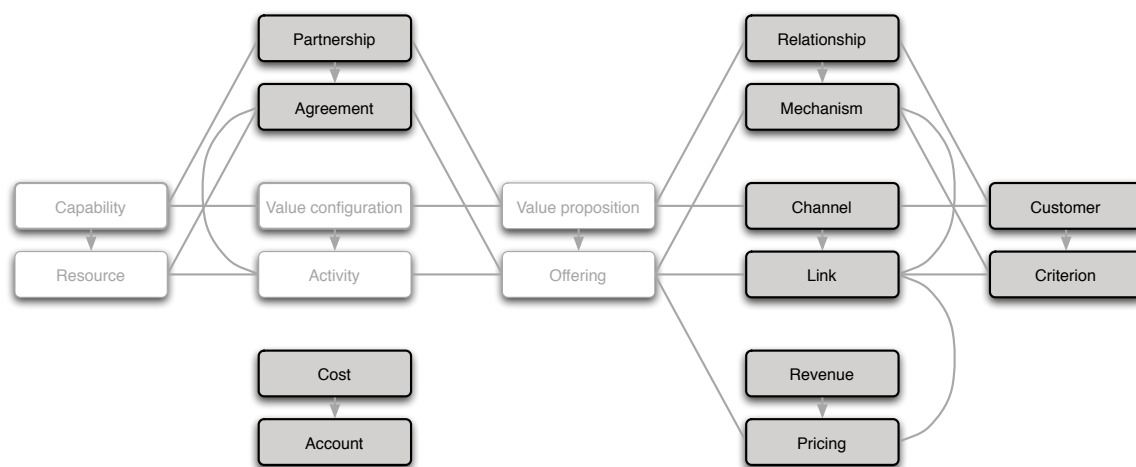


Figure 4: Primary elements in a system of payment by regular instalments

2.2.3 THE ‘PAY AS YOU GO’ SUBSCRIPTION

Another way for customers to avoid a substantial initial purchase is the ‘pay as you go’ form of subscription. In its pure form, customers are under no obligation or incentive to use the service, and are free to choose when, where and how they do so. The attractiveness of this business model is that it can remove some of the barriers to entry, introducing new people to the service on offer and thus opening up the market.

This is useful to the customer who is unsure as to just how much of a service they are going to need, and it makes their budgeting easier since the cost per unit is known. Furthermore, under some business models there is no requirement for an initial investment. This is the case when using a coin-operated machine such as a payphone, and perhaps under the ultimate form of the ‘Power by the Hour’ model for aero engines. Since the service-provider must invest in the infrastructure, and absorb the risk that a particular piece of equipment may be under-utilised, the cost per unit must be higher than that for a service where the user makes an initial investment. Hence the normal requirement for mobile telephones operated under a ‘pay as you go’ model to be bought outright, rather than being offered as an incentive.

This business model is sometimes complicated by the requirement that access to services is paid for in advance, perhaps via a third party. Like many modern business models, it is available in a number of hybridised forms.

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In Osterwalder's ontology, the 'all you can eat' business model's differentiating factor is the *value configuration* and consequently the *value proposition* that result from the *capability* of the *partnership*, ensuring that their operations remain profitable despite the demands of the typical customer (Figure 6).

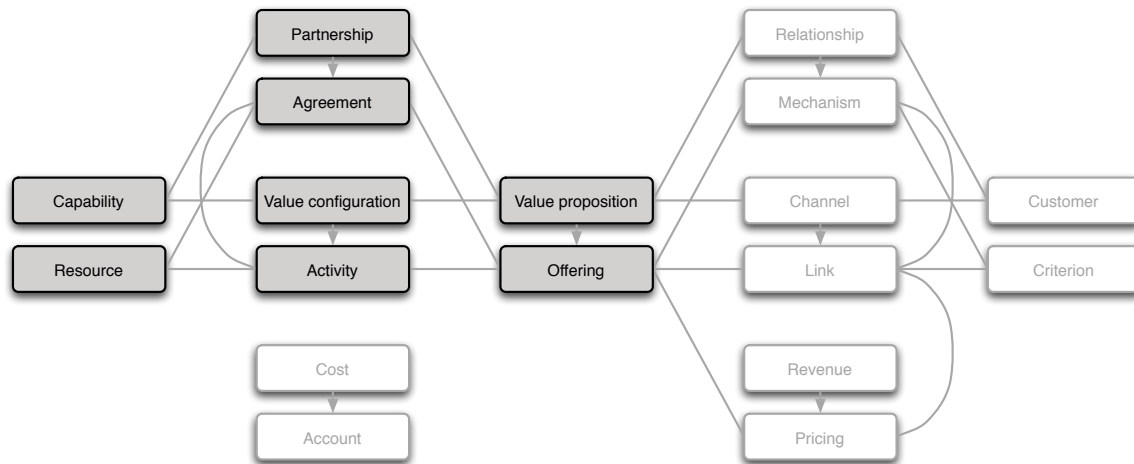


Figure 6: Primary elements of the 'all you can eat' business model

2.2.5 HYBRID SUBSCRIPTIONS

Some subscription business models feature a hybrid of the concepts discussed in the previous subsections. For example, it is necessary in some European countries to pay a fixed sum for annual vehicle excise duty ('road tax') while also paying duty on each litre of fuel. This could be considered to be a hybrid of 'pay as you go' and 'all you can eat'. It establishes a predictable revenue stream even in the event of low usage, while yielding additional funds in the event of high usage. Other schemes such as a tax based upon a tariff of kilometres driven per year, or for the use of certain roads, also exist. None of this guarantees that the tax will be perceived as "fair", but the hybrid approach allows governments to select their business model with precision. A simplistic model based upon a flat-rate tax for car ownership would punish low users, while obtaining revenue purely from fuel duty or kilometres driven would cause those that use their vehicles a great deal (such as businesses) to suffer. Armed with statistics detailing the usage pattern, governments can model a variety of ways to go about raising the revenue they need.

2.3 THE AUCTION BUSINESS MODEL

Auctions take a variety of forms, with the common theme being that the price paid is variable. Basically, an auction is "a public sale at which goods are sold to the highest bidder" [The Chambers Dictionary, 1998]. There are many variants of the business model, as described in the subsections that follow.

2.3.1 THE CLASSIC AUCTION

The basic form of auction takes place in public, with bidders in the audience, or in direct communication with agents at the venue. In some cases bidders may seek to remain anonymous, as the bidding process can be highly strategic. The process may be further

complicated by the existence of a reserve price, which must be met if the sale is to take place.

Bidding behaviour in an auction is a very interesting subject, although perhaps better addressed in detail by a psychologist. People often bid rashly, whether due to the excitement of the event itself, the natural competitive urge among humans, or reluctance to leave with nothing after having invested time (and some cost) to attend the auction. Bidding, of course, goes on until a price is reached that nobody present is prepared to better. Sometimes, the buyer finds there is little competition, and gets a bargain. Such tales are misleading, however, since anybody who wishes they had been present at the auction would not have obtained the product at the reported final price; instead they would have found themselves in competition with the ultimate bidder, and the price would have been driven higher. It is thus dangerous to draw too many conclusions from what has gone before.

For an auction house, the *offering* is a service that introduces buyers to sellers, with a business model based upon charging commission. To justify this commission, their offering may involve additional service elements such as guaranteeing security, anonymity and expertise that reduces the likelihood of fraud. Another key offering is the auctioneer’s ability to bring the products to the attention of the right buyers, in order to guarantee that a good price is paid. For a manufacturer, auctioning might only feature in the business model as a means of disposing of surplus stock, or as a means of reaching a new market. (Equally, a service-based organisation could use auctioning to dispose of surplus capacity.) It must be borne in mind, therefore, that while auctioning will be at the core of the business model for an auction house, it may be something of an afterthought for a manufacturing business, as Figure 7 suggests:

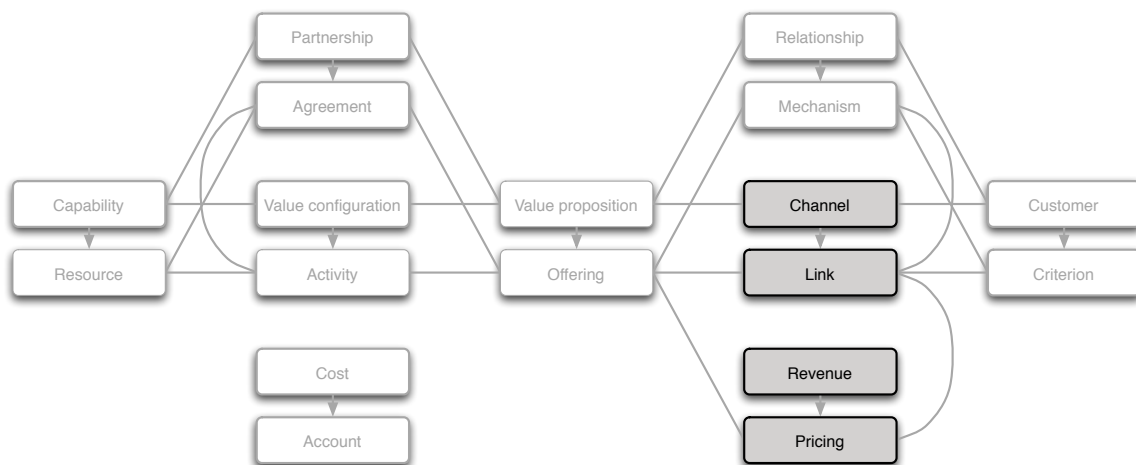


Figure 7: Primary influences of auctioning upon the business model for a manufacturer

2.3.2 AUCTION BY SEALED BID

As an alternative to an auction being a ‘live’ event, bidders may be required to bid just once, this being submitted in advance. When the deadline has passed, all bids are opened and the winner is (typically) the bid that is highest. In the housing market, sellers sometimes reserve the the right to accept a bid other than the highest one, if it is felt that another one is more attractive in terms of the speed in which the transaction can be completed, or a reduced risk element. A sealed bid may be binding, or bids may take the

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form of an ‘informal tender’, where the successful bidder can still revise their offer, perhaps following a problematic survey of a property they are proposing to buy.

Sealed-bid auctions are common in business-to-business transactions, where the buyer issues *invitations to tender* to a number of suppliers, and can then choose among the offers that are received. This is a common *channel* for governments to procure supplies. Clearly, the bid that is submitted needs to be determined with considerable care, striking a balance between the need to win the business and the need to make a profit, while also understanding the needs of the *customer*. This will involve changing the *value proposition* itself, and the *pricing* of that offering. Bidders must also base their pricing on the anticipated behaviour of their competitors. Figure 8 shows the most significant influences upon a company submitting a bid, using Osterwalder’s [2004] business model ontology:

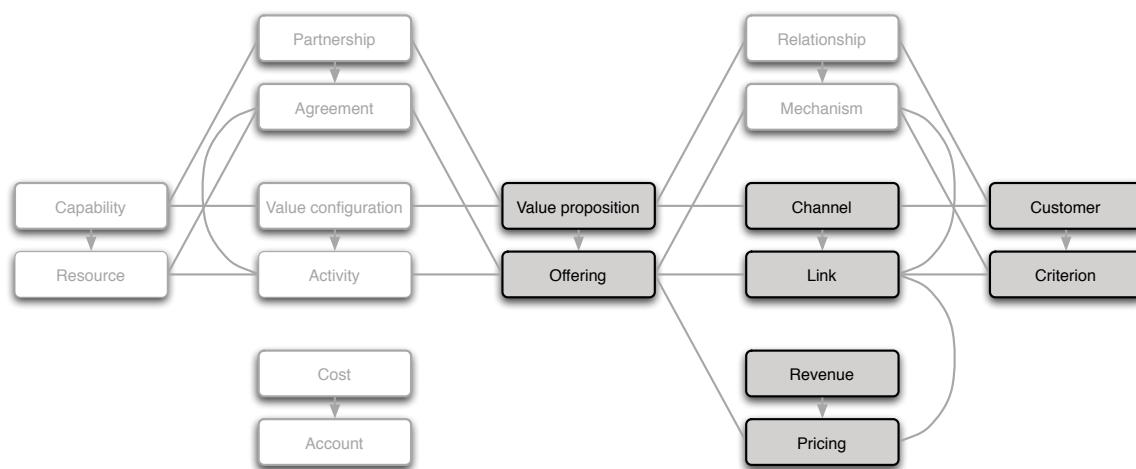


Figure 8: Primary elements in a tendering situation

2.3.3 THE DUTCH (OR REVERSE) AUCTION

The Dutch auction starts with a high price, and this is steadily reduced until somebody chooses to make a bid. Thus, the goods get cheaper if one waits, but the likelihood of a rival choosing to buy the product increases. Dutch auctions tend to take place in professional communities such as among traders acquiring commodities in bulk, which they then sell on. It is an efficient way to conduct repeat business where all buyers are well-informed.

This form of auction is not without problems, however, when the product (or service) on offer is differentiated. For an entirely commoditised product, tenders can be invited and the cheapest selected with ease. Where there are qualitative factors to take into account, the tendering process can yield misleading results.

A study from the University of Oxford’s Regulatory Policy Institute found that government claims about the savings that could be delivered through the use of reverse e-auctions were exaggerated, and that the approach could actually lead to higher prices or lower quality products being supplied [Keyworth and Yarrow, 2006]. Acting as a *channel*, the reverse auction puts the *customers* firmly in control, determining the *price* paid for the goods. Only competition among customers can improve the supplier’s revenues, so it is important to establish a large customer base (Figure 9).

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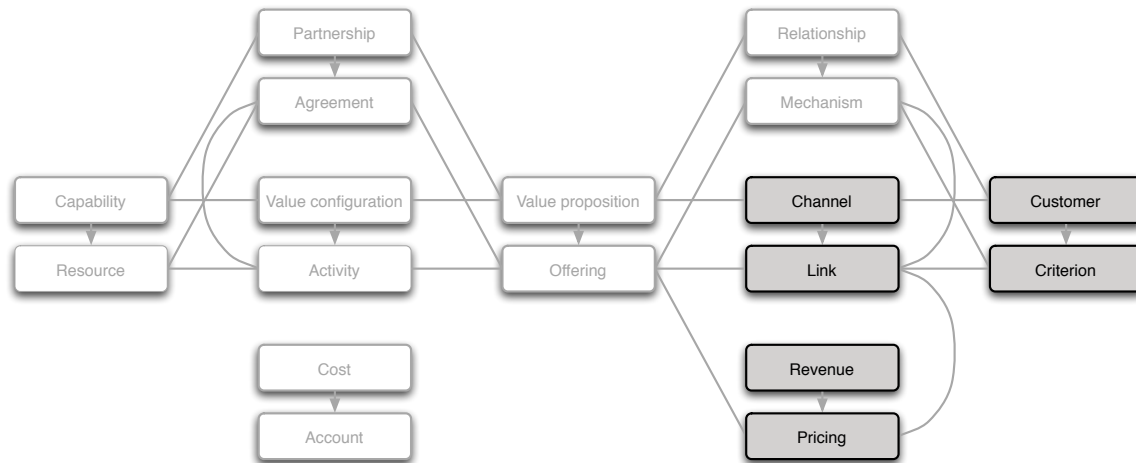


Figure 9: Primary elements in the reverse auctioning business model

2.3.4 THE E-AUCTION

Since an auction is most successful when there is a large pool of potential buyers, it was logical that the Internet would play a role in the auctioning of goods. In an e-auction, bidding takes place in much the same way as a conventional auction, but the bidders do not need to gather together physically. To many people, internet-based auctioning brings to mind one company: eBay. eBay was founded in September 1995, although it was known as Auctionweb for the first two years. It grew fast, being one of the companies that achieved the meteoric growth that characterised the 'Dot Com' era. Despite its humble beginnings, by 2005, eBay was valued at \$4.55bn on the NASDAQ.

Some eBay auctions are initiated by people selling second-hand goods; others are initiated by charities or companies, either manufacturers, resellers or service providers. Occasionally, a particularly unusual auction generates some publicity for all concerned. (The online casino GoldenPalace.com has gained much publicity as a result of its winning bids for unusual items such as a Volkswagen Golf previously registered to Cardinal Josef Ratzinger².) Other notable sales have included a World War II submarine, and a Gulfstream II aircraft. What is surprising is not the items themselves, but that eBay should be selected as the auctioneer, given the existence of more conventional agents who occupy a specialist niche.

Being computer-moderated, the transactional cost of each auction has been minimised, with the additional advantage that the capacity of the business is not constrained by the factors that affect most businesses, such as the number of personnel employed directly on operational tasks. Of vital importance to the eBay business model is the fact that they do not handle 'product' themselves. They provide introductions for sellers seeking buyers, and thereby receive a commission. (Commission ranges from \$0.25 to \$80 for listing an item, plus 2–8% of the final sales price.) To have adopted a model in which the items being traded moved through a facility controlled by eBay themselves would have inhibited their growth, and global reach. By contrast, the other household name in internet commerce, Amazon.com took many years to reach profitability, not least because their business model involves holding and handling stock.

² €188,938.88 was paid

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In effect, we must consider many different business models here. Firstly, the model of eBay itself as the auctioneer, providing a service that matches buyers to sellers in a format that gives the seller confidence that they are receiving a market rate for their goods, and allowing the buyer plenty of choice. Secondly, there are the business models of companies providing supporting services such as the 'Auction Sniper' service that offers the use of a software agent that will monitor an item and act by bidding on the buyer's behalf, in the closing seconds of an auction. (The payment system PayPal is no longer an example of a business providing a supporting service, since it has been acquired by eBay itself.) Thirdly, we have the business models of vendors, who may be private individuals, sole traders selling their own products, or companies that also have a real-world, 'bricks and mortar' presence, for whom the e-Auction is only a partial business model.

For eBay themselves, activity occupies most of the 'building blocks' of Osterwalder's [2004] ontology. Differentiating factors include the *channel* via which they interact with the sellers who are their *customers*, the *value configuration* they achieve, in matching buyers to sellers, the *value proposition* they offer (the eBay brand, as a favoured choice for many buyers seeking a particular item), their infrastructure, providing the *capability* to deal with many thousands of auctions per day, and their *pricing* structure, with low *costs* made possible by automation and their lack of direct involvement with the products. Some partnerships also exist, although eBay has tended to acquire complementary businesses, which is perhaps unsurprising given its cash position. Finally, the system of ratings for both buyers and sellers adds value, and provides an incentive for all parties to honour the promises they make in this electronic medium. This could be interpreted as a mechanism that exists to sustain a customer *relationship*, since it encourages vendors to build up a history of successfully completed transactions. This is interesting in itself, since trust has been identified as a key component in business transactions such as those taking place within the virtual enterprise (See the updated seven-day proposal process and system requirements [Bovik, 2006].) The next result is a business model that addresses just about every one of the 'building blocks' in Osterwalder's [2004] ontology (Figure 10):

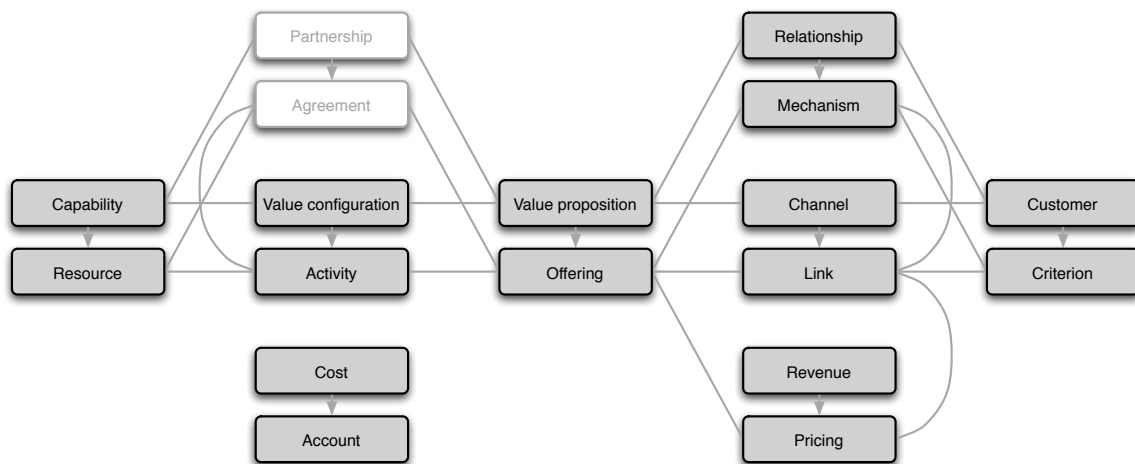


Figure 10: Differentiating factors for the on-line auctioneer, eBay

2.3.5 THE 'ONE DOLLAR, NO RESERVE' BUSINESS MODEL

The eBay environment has produced some new business model variants of its own, such as "one dollar, no reserve" approach. Under this business model, those searching for an item will see that there is a product listed very cheaply, with the auction running for the normal period of seven days. In fact, companies operating this business model will start an item at a very low initial price every few days.

The theory behind this approach has three key elements. Firstly, it is intended that the low price will generate interest in the product, causing people to find out more about it, and to come to want it. Secondly, the high level of interest in the product will drive bids upwards as the deadline approaches... but the sale of a single item is not really of interest to the business operating this model, since it impacts very little upon their total revenue. The third and most important element of this business model is that the auction will produce a large number of disappointed would-be buyers, who submitted bids during the auction but weren't online at the close. Experience has shown that many of the would-be buyers, upon finding out that they have failed to buy the item at auction will then choose to take advantage of the vendor's more conventionally-structured "buy it now" offerings. In effect, the auction is providing a form of advertising (need arousal) while also generating revenue. Under this model the process of offering products for auction is typically presided over by a software tool, reducing the seller's transactional costs.

As with viral marketing (Section 2.3.6) the distinction between promotional activity and revenue generation is not entirely clear. The marketing function does not fall entirely within the scope of this document, deserving study in its own right.

2.3.6 VIRAL MARKETING

A form of reverse auction, and one the most recent innovations in auctioning, is the viral marketing campaign. Here, a company chooses to have a time-limited sale. For example, a software product is offered at a reasonable price, but it is stated that the eventual price paid may be lower. For example, the product is offered at a discount price of \$50 for one week, but for every person buying the product during that period, that price paid by all is dropped by an additional \$0.05 (down to some minimum price). Naturally, everybody who wants the product now has an interest in ensuring that it sells widely during the period of the sale. They will spread the word within organisations and web-based communities, while the seller need undertake no further marketing effort.

This works well for a software product – or more accurately, the a license for a piece of downloaded software – since the marginal cost for each sold is close to zero. Thus, the degree of discounting on offer and the duration of the sale can be chosen to suit the target market, while still being sure of a profit. As Internet users become familiar with the viral marketing concept, such sales can only become more successful.

A company selling a software license or some other 'virtual' product made viable by modern information and communications technology has the *capability* to supply this unusual *offering* at low *cost*, with the Internet providing both the *channel* for the transaction and the medium for the *customer* to promote the product. The *price* of the product is ultimately determined by the market, of course (Figure 11).

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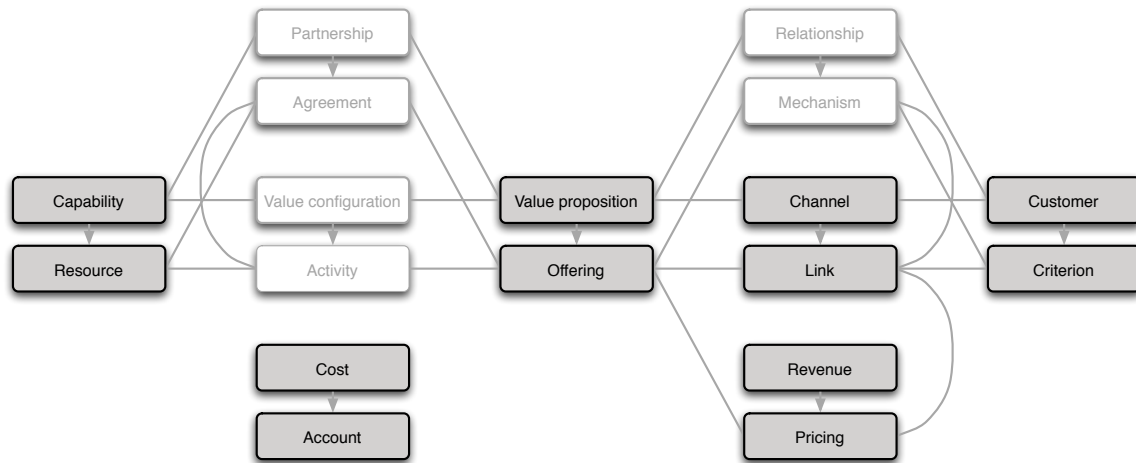


Figure 11: Primary elements of a viral marketing business model

2.4 THE MONOPOLY BUSINESS MODEL

We are generally taught that monopolies are a bad thing, since an absence of choice in a market means there is less incentive for those providing the product or service to improve. Indeed, regulatory bodies exist to limit the power of monopolies, cartels and ‘trusts’. A sanctioned monopoly can exist, however, as can a ‘virtual monopoly’; some markets and industries are much more conducive to competition than others. Kotler (1997) identifies a range of industry structure types, each with a different degree of competition (and hence differentiation) as Table 1 shows:

Table 1: Levels of Monopoly [Kotler, 1997]	
Pure monopoly	A single business provides the product or service in a certain country or area. As a sanctioned monopoly, this state of affairs may come about because the company has bought an operating licence from the government which grants it exclusive access to a certain market. Alternatively, it may come about because the company holds a key patent. A virtual monopoly can develop because the investment required to offer a particular product or service is massive, and can only be justified for a single company, able to enjoy economies of scale, etc. Under the pure monopoly there is little incentive to offer good service, since the customer has no choice of provider. Only regulation or the threat of the loss of monopoly status will motivate the monopoly to become more competitive.

Table 1: Levels of Monopoly [Kotler, 1997]	
Oligopoly	An industry in which a small number of large businesses dominate the market. In a pure oligopoly, the product is effectively commoditised (e.g. steel, oil); there is little to differentiate one product from another. Service may still become a basis for competition. In a differentiated oligopoly, the rival businesses are able to provide product features that differentiate their offerings in terms of quality, features, styling, performance and service. This might be said to be the present-day business environment for aero engine systems and services.
Monopolistic competition	This exists in an industry where there are many competitors, each able to differentiate their offerings to some degree, in the manner of a restaurant. In such circumstances the focus is increasingly upon meeting the needs of a niche market.
Pure competition	This is a state in which there are many rival businesses, effectively unable to differentiate their offerings. Since only price-based competition is possible, prices tend towards a common, low level. Only economies in production or distribution can lead to a greater profit margin.

It can be seen that the business model a company chooses is thus, to some degree, dictated by the nature of the market in which it is to operate, and the level of competition that exists.

In section 2.3.4, the business model of on-line auctioneer eBay was discussed. eBay has never been found to have conducted its business practices in such a way as to inhibit competition, but it is difficult to imagine a serious rival developing. Is there room in the world for another online auctioneer? Probably not, since existing sellers will want to maintain their presence in a network where they have built up a good reputation, under the system where buyers and sellers are encouraged to review each transaction. New sellers will want to tie in to the existing, large network of buyers. Thus, it seems likely that any new rivals to eBay are likely to be small, highly specialised networks that offer additional services and guarantees... which effectively places them in a different industry to eBay. It may be that China will provide a successful, home-grown alternative to eBay, but this is due to a unique combination of circumstances such as their continued isolationism, insofar as the Internet is concerned (due to censorship), the politics of the region, a huge domestic market, and language differences.

Other kinds of virtual monopoly exist, where one company or type of company can occupy a niche that could not work on a universal scale. For example, while most foodstuffs are sold in disposable (at best, recyclable) packaging, milk was delivered to the doorstep in reusable bottles for generations. This (partial) business model worked because only one type of business used it. If the empty containers had needed to be sorted, or their ownership was in dispute, it would not have been possible to operate in this way.

Within Osterwalder's [2004] ontology, a monopoly might exist in many of the 'building blocks' of the business model. A manufacturer might have a preferential relationship with

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a key supplier, preventing rivals from buying the components they need to produce a rival offering, or the business might have control of a key raw material, or a trade secret of some kind. The cost of market entry might serve to establish a virtual monopoly, or a business might monopolise the channel through which the value proposition is delivered. (In Osterwalder's ontology this refers to the communications channel, not a delivery mechanism, which would be a resource.) With an appropriate brand image, registered trademarks, etc., it may also be possible to dominate the market in terms of the *offering*, when shoppers demand a specific product rather than a generic one. The net result is shown in Figure 12, detailing the building blocks where it might be possible to establish a monopoly position.

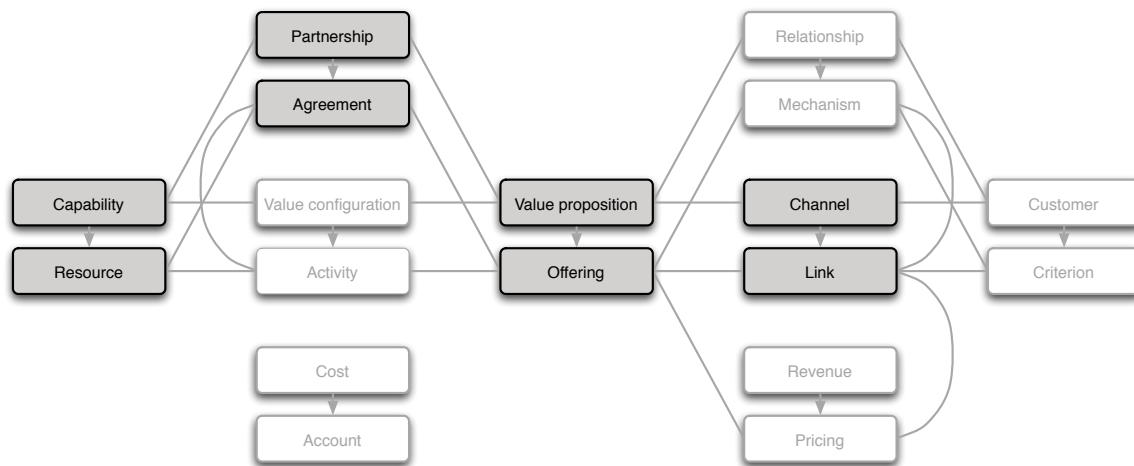


Figure 12: Aspects of the business model where monopoly status might be established

2.5 THE OPTIONAL-PRODUCT PRICING BUSINESS MODEL

Optional-product pricing means buyers see an attractive price for a base-model product, but then find that a number of extras must be purchased to bring the product up to the point where it meets their expectations. This model was characteristic of the automotive industry but has fallen from favour, somewhat, since Japanese manufacturers began including what had previously been 'extras', such as in-car entertainment, as standard in the late 1970s. This was one of the factors that led to their acquiring a considerable share of the market in Europe and North America at the time.

The optional product approach differs from 'captive-product pricing' (Section 2.1) in that the additional sales will normally be made at the time of first purchase, but it is similar in that the business model may be 'broken' if the extras are provided by a rival. For some businesses, optional products act as the 'icing on the cake' but in other instances the additional sales might be essential for a healthy profit margin, or even any profit at all. Engineering can play a part here; a factory outlet selling kitchen units might benefit from product features that lock the customer in, such as non-standard interfaces that force the customer to choose lighting and plumbing products from a particular range. Alternatively, the extras can take a less tangible form, such as financing for the product, or delivery, fitting and extended warranty charges.

In terms of Osterwalder's [2004] ontology, the optional product pricing approach concerns particularly the *value configuration* and resulting *value proposition* of the

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business, with the success of these offerings determining the *revenue* obtained (Figure 13):

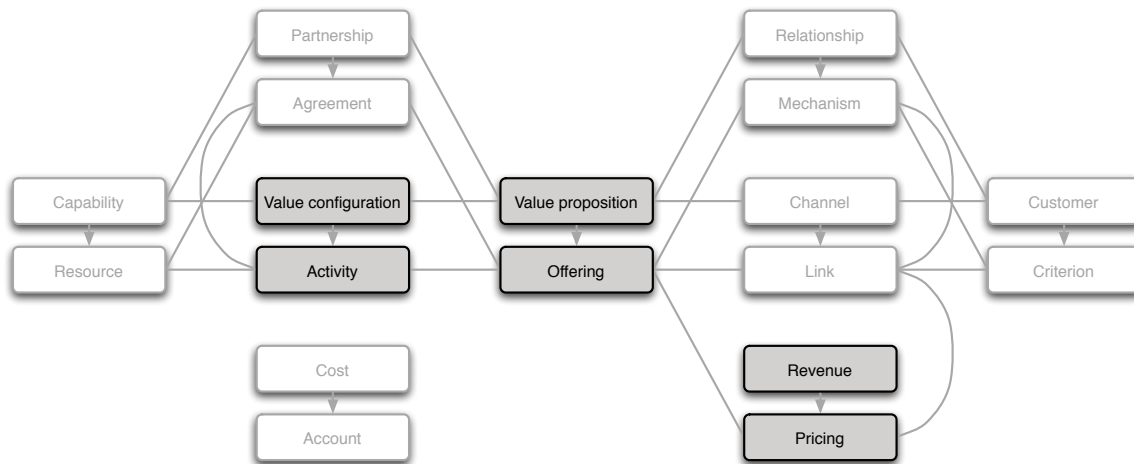


Figure 13: Primary elements in an optional-product pricing model

2.6 THE PURE SERVICE MODEL

Most of the preceding business models have discussed the needs of a business that supplies some kind of product. Before concluding this chapter, it is necessary to discuss the models employed by businesses that do not offer a product, as such. We have already touched upon the services offered by businesses such as auctioneers, communications providers and gymnasiums... but what are the key factors affecting a business that is geared towards service provision?

There are many companies that can be regarded as predominantly or entirely engaged in the provision of services. Examples include hairdressers, stockbrokers and airlines. At first glance, given such a diverse grouping, it seems difficult to identify any general principles.

One major distinguishing feature of the service-oriented business is that it cannot normally stockpile its offering in the way that a retailer or a manufacturer can. A barber's shop, for example, needs enough free capacity to process an arriving customer in a reasonable time. Their 'raw material' cannot be expected to queue for days or weeks. Some businesses may be able to reduce the extent of this problem to some degree, by agreeing in advance the time when the service will be performed. Most airlines operate this form of business model, although they must still seek an optimum balance between turning customers away when they have reached capacity, and having capacity stood idle during slack periods.

Some businesses, such as those providing cleaning services, have no real unique selling proposition, and require little in the way of investment. As a result, there are few barriers to market entry, and competition is high. In some cases, staff retention can also be a problem, since a person working in a service industry that requires no major investment can easily set up in business on their own. At the other end of the scale there are some service industries where reputation is important and substantial investments are required, such as in the maintenance of specialist equipment.

The provision of services is sometimes associated with a reduction in risk, with those in the service sector claiming that "people will always need haircuts", etc. The truth of this is, in fact, dependent upon the industry in question, and it should be studied closely for shifts in offerings or in customers' preferences that may introduce new opportunities – or

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destroy existing ones. Television repair, for example, was once a lucrative trade, but has been rendered obsolete by the availability of low-cost electronic goods. Likewise, painters and decorators have been forced to adapt by the growth in the market for do-it-yourself solutions. Being in a service industry does not necessarily guarantee a revenue stream, therefore.

Given the broad range of services available, it is difficult to establish a generic mapping of the pure service business model. Figure 14 shows the model for a 'low-tech' pure service model such as that operated by a car garage. There are few barriers to entry, so the business must concentrate upon maintaining a *relationship* with the *customer*, while making the most of the *capability* available within the business via *value configuration*. The *offering* may be differentiated only in the perception of the customer, but a convenient *channel* also provides an *offering*; accessibility is a part of the service.

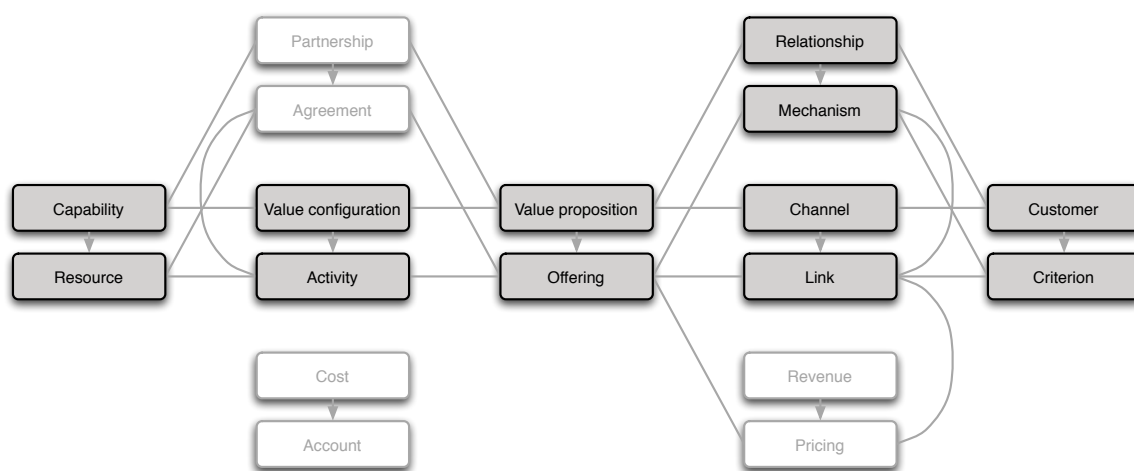


Figure 14: Primary elements in a pure service model

2.7 THE 'MINING' MODEL

This business model manages to offer something that is of value without any major 'input'. Classic examples are literally mining; getting something out of the ground such as coal, iron ore, or sapphires. Other business types that fall under this classification include those that possess a different reserve of raw material, perhaps 'mining' data that customers are willing to pay for. One might also stretch the definition to encompass wind-powered electricity generation, forestry and fishing.

The exact business model that the company adopts will depend upon whether they are eroding their supply of raw material; the pricing structure must include a recognition of the sustainability of the business, since the raw material may one day be exhausted. There may also be an element of risk; some 'mining' businesses can be reasonably confident about the size of their reserve, while for others, a degree of luck will always be present (for example the number of fish caught, or the amount of wind that can be used for electricity generation in a given period).

Some businesses blur the boundary between 'mining' and 'transformation' (Section 2.8) because they begin with a raw material, but then subject it to a considerable amount of processing. Indeed, there has been a trend in recent years for producers to seek opportunities to achieve greater added value. In effect, this is vertical integration; so instead of selling sacks of potatoes for processing, a farm might now wash them close to

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where they were harvested, and select the best ones to be packaged as 'baking potatoes' and sold direct to a supermarket. The middle stage is eroded in the quest for greater added value.

With so many different kinds of business that might be considered to be performing 'mining', it is hard to map the activity onto Osterwalder's [2004] ontology. One specific example is given in Figure 15, showing the key characteristics of a company offering a telephone directory service. In the UK, when the free 'directory enquiries' was replaced with a service that charged a fee, deregulation in the communications industry required that other businesses be allowed to enter the market, and dozens did so, using the new 118-prefixed format that was established across Europe. All such businesses 'mine' numbers from a database and supply these to the caller, who typically pays a fixed charge for the service. Since the telephone numbers in question are public ones, there is little that is special about the *capability* or *value configuration*. All companies performing this service have the same basic information to offer, although they dress it up in different ways. Recognising that people on the move may not be able to record the number, some providers offer to connect the caller (this is advantageous to them, since they may be in a *partnership* with the network that carries the call) while others offer to reply with a text message containing the number to call. Thus, the directory service might have a different *value proposition*, and more than one *channel*. *Pricing* may also offer a differentiating factor. (A report from the National Audit Office [HMSO, 2005] studies the offerings and performance of a number of UK providers.)

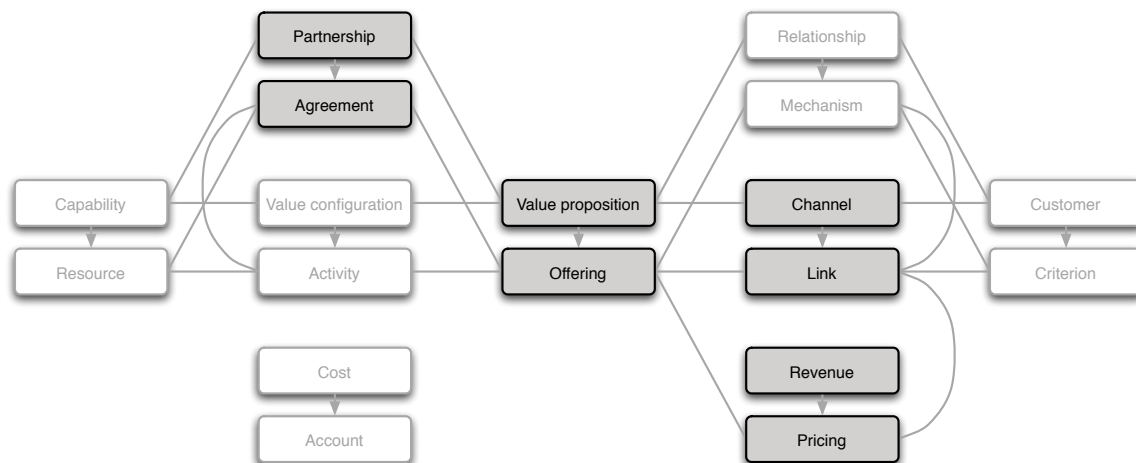


Figure 15: Primary elements in the 'mining' model of a telephone directory enquiries service

2.8 THE 'TRANSFORMATION' MODEL

In contrast to the 'mining' model described in Section 2.7, some businesses create value by turning one thing into another. In the broadest terms, this is the basic model of the manufacturing business, although some manufacturers derive competitive advantage from many other sources as well, such as after-sales service.

It must be noted that for many businesses, the transformation follows a design that has been evolved in-house; thus, the manufacturer is also evolving intellectual property. They may own a brand that is widely respected in the world at large, or at least within their industry. Not all 'transforming' businesses seek to design their own products,

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however. Some simply 'build to print', deriving their competitive advantage from other factors such as high quality, short lead times or low cost.

In some cases, the transformation may include a degree of customisation, to match more closely the needs of each customer. With modularity and standardisation of interfaces, the design that is used can be an enabler for the formation of *partnerships*.

The resources that a business operating a 'transformation' model has determine its *capability*; the ability to turn inputs into outputs at the required rate. In some industries, capability may be a real constraint, such as where high-value plant is required, and must then be utilised as effectively as possible. For a continuous process such as the manufacture of glass, seasonality or other market fluctuations could be a real risk, since they make it much harder to perform the transformation at an optimal rate. In addition to developing their product (*value proposition*), many 'transformation' businesses have developed improved working practices or processes of their own (perhaps protected by patents, kept as company secrets, or achieved as a result of the company culture). Any such uniqueness provides a *value configuration* advantage, and may lead to lower *costs*. The *channel* and the *relationship* with the *customer* are really dependent upon the target market and the marketing strategy for the transforming business; they will be very different, depending upon whether the customer is a member of the public, or if this is a business-to-business transaction taking place within an established supply chain, etc. An investigation of some of the business models discussed earlier (captive-product pricing, auctions, etc.) will reveal how the later stages of the business model might vary. Figure 16 shows only the business model elements related to the 'transformation' itself:

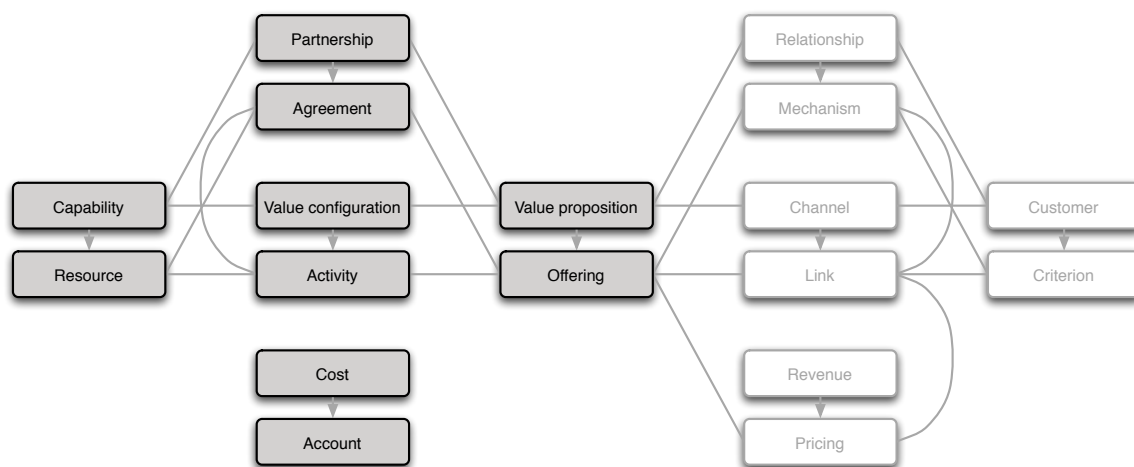


Figure 16: Primary elements in a 'transformation' process

2.9 CONCLUSIONS

The preceding sections have illustrated, by example, how wide a range of options exist for companies to differentiate themselves and obtain money in return for goods and/or services. These can be considered in comparison to the alternative; a hypothetical 'standard business model' where the company performs a range of activities and seeks a similar profit margin on every one, with no particular emphasis on any core goods or services. While it is reasonable for a business to require each division to meet financial performance targets, or for a new project or product to meet target values (such as a certain internal rate of return, payback period and maximum cash negative) it should not

prevent the company from evaluating the effect upon their operations if an alternative structure were selected. This chapter has demonstrated how a degree of focus, or concentration upon key aspects of the business model (achieved through cross-subsidies in some instances) can carve out a niche market for a business. Customers who find initial investments prohibitive will select 'captive-product pricing', or 'pay as you go' offerings, while heavy users seek 'all you can eat' type deals. These offerings can be considered to be at opposite ends of a similar scale; a product or service offering that exists at the middle of this scale is harder to bring successfully to the attention of customers.

In the next chapter, the methodology for the analysis of business models is reviewed in detail, providing a structure against which the models reviewed here – and others – can be mapped. Their suitability outside the industry in which they originated can then be considered, and new structures for delivering value – and obtaining money in return – may be developed.

3 A METHODOLOGY FOR THE ANALYSIS OF BUSINESS MODELS

The previous chapter presented a disparate range of business models from a variety of different industries and markets. It is aimed to apply a methodology whereby business models can be translated into a structured representation, such that direct comparison between alternatives becomes possible.

The Month 27 deliverable [Olofsson and Farr, 2006] reviewed a number of methodologies for business model analysis, including systems thinking [O'Donnel, 2005], discounted cash flows and Business Value Analysis [Russel, 2001] and Sense-testing [Voelpel et al, 2005], as well as conventional techniques such as PEST, SWOT and force-field analysis. All have yielded insights into the thinking that takes place when a business model is formulated, whether it is formally identified as being a 'business model' or simply a part of the management strategy.

With such a broad range of definitions of the business model, from different perspectives, it becomes difficult to compare propositions impartially. Some methods address the customer interface; others the financial performance of the business. Initial work on this subject, detailed in the Month 27 document, resulted in the identification of the Osterwalder [2004] ontology as presenting the most holistic view of enterprise activities, and this has been used extensively in the preceding chapter. Osterwalder's [2004] literature review process studied the business model research to-date, and yielded a set of common elements that featured in many of the proposed definitions. These were as follows:

- The value proposition of what is offered to the market
- The target customer segments addressed by the value proposition
- The communication and distribution channels to reach customers and offer the value proposition
- The relationships established with customers
- The core capabilities required by the enterprise
- The configuration of activities to implement the business model;
- The partners and their motivations for joining the enterprise
- The revenue streams generated by the business model
- The cost structure resulting from the business model

The investigation detailed in the previous chapter has revealed how different the business models of a selection of companies can be, but it remains necessary to establish a more detailed framework whereby they can be compared and contrasted. One key issue here is that the business models presented in Chapter 2 have all proved effective, despite the fact that they are different – even directly opposed. Consider, for example, the difference between the unlimited usage of the 'all you can eat' subscription and its counterpart, the 'pay as you go' model. Both are found within the communications industry, yet they offer the customer a very different proposition and extract payment in different ways. Neither can be said to be better or worse than the other; they simply serve different segments of the market for communications. It may well be that in some other industry, one of these business models has never been tried, or that some aspect of one of these business models could be adapted for use elsewhere. By breaking down business models into their key characteristics, it may be possible to generate a new set of permutations that can be tailored to suit the circumstances of the industry or market in question.

3.1 BREAKING THE BUSINESS MODEL DOWN

While the Osterwalder [2004] ontology has served to provide a useful framework in the discussion of present-day business models, a higher degree of resolution is required for the identification of their individual component parts.

One key finding of the work to-date has been that business models often have 'opposites' that work equally well, either in separate market niches or in some other industry. This is an interesting result that implies it may be possible to achieve some integration with the future business environment definition work performed under Task 2.1.1 [see Bramham et al, 2004 and Farr et al, 2005], where it was found that a complex range of alternatives could be expressed using a series of simple, linear scales. Figure 17 shows an equivalent scale applied to the business models study:



Figure 17: Range of offerings, from mass market to exclusivity

These two fragments of a business models are both viable, and both commonplace. Expressions such as “pile it high and sell it cheap” have entered our language as a result of the move towards commoditisation, seen in many industries. Conversely, ‘aspirational’ products are also available, at a much higher price. Examples of both can be found in the markets for food, clothing, automobiles and elsewhere.

Of course, the business model selected by a corporation will not be based on a simple, single dimension such as the one shown above. Business models require much more thinking than a simple pricing decision. Even Henry Ford, who introduced the idea of the high volume, low price automobile, is reported to have said:

“A business that makes nothing but money is a poor business.”

The investigation of business models has revealed a great many options, in addition to the volume and pricing decision presented in Figure 17. However, it has been found during this work that all such configuration and marketing decisions can be broken down into relatively simple choices of this kind. Having reviewed a range of existing business models, it is now possible to propose a list of these choices.

Naturally, there are a large number of factors that businesses might use to differentiate themselves or their products. In an effort to impose some order upon the range of options available, they have been categorised into logical ‘families’. The Osterwalder [2004] ontology provided good a starting-point for this process, although the literature survey presented in Olofsson and Farr [2006] had identified a number of tools and methods that might add some structure to business model thinking. Another significant input came from the *marketing mix* [Borden, 1964]. This is a simple checklist against which the offerings from any business can be described. When describing products it is

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sometimes known as the “four P’s” of marketing, although the full marketing mix for products and service involves seven “P’s”:

- Product
- Place
- Price
- Promotion
- People
- Process
- Physical evidence

While the Osterwalder [2004] ontology is one of the most thorough attempts to provide a method whereby business models can be mapped, there are two main areas in which it did not meet our needs. Firstly, due to its highly mechanistic approach, it does not lend itself to the consideration of issues that cannot be directly quantified. Any consideration of the business models of extended or virtual enterprises (such as are found in the modern aerospace industry) will need to take into account ‘intangibles’ such as trust, reputation, and value that is not purely financial.

It is also necessary to consider business models in context. Chapter 2 showed something of the breadth of alternatives being employed by present-day companies. Since all have been seen to be successful, this shows that there is an environmental component to business model selection. Any methodology that might be employed to define a business model (and explore opportunities) should therefore include a means of stating the environmental assumptions under which the business model is to be operated.

The Osterwalder [2004] ontology has been used to provide structure for Chapter 4, detailing the component parts of the business model, although it has been expanded upon where it did not offer sufficient resolution in some areas. In Chapter 5, the environmental factors affecting business model selection are explored in a similar fashion.

4. BUSINESS MODEL KEY CHARACTERISTICS

This chapter organises the features of each of the business models that have been studied, in such a way that a taxonomy of business models can be proposed. Building on experience with a parametric business environment mapping methodology [Bramham et al, 2004 and Farr et al, 2005a, 2005b] a structured method of business model description is proposed. The sections that follow each present a set of choices that go together to form a conceptual business model.

4.1 THE BUSINESS OFFERING (VALUE PROPOSITION)

Since most businesses exist to deliver profit (or shareholder value), they must focus their attention on one or more offerings that customers will be prepared to pay for. Silo 1 presents a selection of common business offerings; there are many ways to obtain income, and there are no 'right' or 'wrong' choices to be made. In fact, some businesses demonstrate activity in every area, while others focus on just one.

Silo 1: Aspects of the Business Offering	
1A: Supply of new goods	This is the most obvious revenue stream for a manufacturing business, or a reseller. Money is received in return for tangible goods that have been made, processed, shipped or otherwise value-added by the business in question. (The sale of used goods is addressed under 1F and 1G.)
1B: Customisation	Some businesses offer a set range goods or services on a 'take it or leave it' basis; others endeavour to create or obtain a unique solution to each customer's needs. Since it is likely to be a source of both cost and competitive advantage, the degree of customisation permitted is a key feature of the business model.
1C: Sale of optional 'extras'	This business model component seeks profitability through the promotion of 'extras' at the time of the initial sale, as per the optional-product pricing model (Section 2.5). These extras may also permit some degree of customisation to be achieved.
1D: Provision of services	These may be any of a broad range of services, and may be offered instead of – or in addition to – the sale of a good. Some services must be performed at a specific customer location (such as cleaning), whereas others can be performed almost anywhere on the globe (e.g. information-based services). The services provided may be a regular source of income for the business, or a sporadic one. Some services may themselves be optional 'extras', as described in 1C. For example, a product may be offered with financial services such as credit or insurance.

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Silo 1: Aspects of the Business Offering	
1E: Sale of consumables	The business may have a customer base that is locked into a continuing revenue stream, as per the captive-product pricing model (Section 2.1). In this case, the market for consumables will be an important component of the business model.
1F: Sale of products in a used condition	<p>Many businesses need to dispose of used assets from time to time. For some, this is simply a minor entry on the profit and loss account, but other businesses are configured to obtain a substantial income from this source. The major car rental firms, for example, do not seek to maximise the mileage done by each car before it is disposed of. Instead, the cars are sold while they are still new enough to generate a good second-hand price. The rental firm's considerable bargaining power when purchasing new cars ensures that a profit can be made in both the rental and disposal phases.</p> <p>The sale of products in a used condition may also include value-adding activities such as inspection, repair and the offering of a warranty.</p>
1G: Sale of used parts	Partly-used assets may not be disposed of as a 'going concern' but as a collection of parts. The business specialising in 'componenting' work will be supplying added value in the form of the sourcing, dismantling, inspection and logistics activities, and may also be engaged in reconditioning and/or remanufacturing tasks.
1H: Sale of options	When an offering is in considerable demand, it may be possible to sell options. Under such a model, the buyer pays a fraction of the full product price, in exchange for a place in a build (or delivery) schedule. As the delivery date approaches, the buyer must pay the remaining balance, or forfeit the deposit paid. Options are common in the aero industry (airframes), where the cost of an option will typically be in the region of 10% of the final purchase price.
1J: Absorption of risk as an offering	This special form of service (1D) is worthy of consideration in its own right, since it is the primary offering of many businesses. The absorption of risk may be done by selling insurance policies to individuals or other companies, or perhaps offering a 'hedging' to guarantee the price of a commodity at some point in the future.

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Silo 1: Aspects of the Business Offering	
1K: Stock-holding as an offering	In a world where much operations thinking demands that businesses be 'lean', some still choose to hold stock. This may be done in order to achieve a faster response to customer orders, the businesses might be performing a specialised warehousing role, or perhaps buying products at an economic batch quantity and then splitting that batch so that individuals or smaller businesses can buy the product in lower quantities. Since stock-holding involves an investment in products that may lose their value, this offering is a special form of risk absorption (1J).

If these are considered in terms of the marketing mix, it can be seen that some of them relate to a product, and some to a process. Excellence in either may be a source of competitive advantage. Even within this single silo, there is a tremendous set of potential combinations, such as choosing whether to offer a commodity product, a customised solution or a 'functional product' / 'integrated offer', which is to say, an offering comprising products and supporting services.

The present-day evolution of businesses appears to be generally away from the creation of products and into the provision of services. For example, the creators of a well-known 3D modelling tool elected to move from selling the software itself, to make it downloadable via the internet. Their new offering was a consultancy service, helping an enlarged user base to get the best from the tool. (This strategy may have been adopted as a response to problems with software piracy, this becoming increasingly widespread via the Internet.)

Some business models are founded upon the sale of a product at the beginning of a relationship, and then offer a number of supporting services in an ongoing relationship. For civil aero engine manufacturers, the aftermarket phase is particularly critical. New engines are discounted heavily, to a point where each one sold causes the manufacturer to suffer a loss. Discounting is done with the aim of increasing market share, with the losses being recouped during the life of the product.

A similar situation can be found in defence systems. When asked if a particular military operation, then ongoing, was 'good for business', one source said no; the munitions his company produced would generate the most revenue if they were held in readiness for the next twenty years, requiring regular servicing and upgrades. When fired, they terminated a continuing revenue stream (perhaps because the contract for their replacement might go to a rival).

Silo 1 offers a distinction between the sale of new goods and the sale of consumables, although some further differentiation may be necessary. 'Consumables' such as printer cartridges, tyres and 'lifer' aircraft components³ are new goods... but their provision needs to be given special consideration within the business model. Similarly, 'disposable' or 'single use' products are also new goods offerings. (Examples include plastic utensils, sterile packaged medical equipment, pyrotechnics and photographic film.) In some cases, the existence of a 'durable' or piece of capital equipment locks the customer into buying supplies of consumable or disposable equipment from a single

³ Allowable life may be expressed as a total length of running time (typically hours), as a number of uses, or as a total amount of time since installation. Some products have several constraints, and the consumable must be replaced when the first of these is met.

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supplier, although in some industries there are no such constraints. An understanding of what the company should offer – and what its competitors are likely to offer – is thus a key stage in the evolution of the business model. This part of the business model must be considered in conjunction with the revenue and pricing model, discussed in Section 4.8.

4.2 THE CUSTOMER (OR TARGET MARKET)

In addition to deciding the kind of offering can be delivered in a competitive way, it is necessary to identify where it should be offered, and who is likely to buy it. Key factors that differentiate customers are their age, gender and race, plus socio-economic factors. Geography may also play a part, with some businesses operating within a single town, while others are regional, national, continental or global in scope. The target market has considerable influence over the business model that is selected as Silo 2 shows:

Silo 2: Aspects of the Target Market	
2A: Individuals or organisations as buyers	In determining the marketing mix and the business model, it must be recognised that some offerings are bought predominantly by individuals, and others by companies, governments etc. This can influence everything from the design of a product to the way it is marketed, and the way business is transacted. Some companies are geared exclusively to business-to-business transactions, others sell directly to the customer, and some do both – although they must be careful not to alienate key dealers by using their position to undercut them.
2B: Customer's position in the supply chain	Where the transaction is a business-to-business one (see 2A), the customer might be the original equipment manufacturer ('OEM'), or they might be further down the supply chain. It may be advantageous for the business model to take into account the supply chain tier(s) to which offerings are made, since the requirements of the customer may differ. For example, Forrester [1961] identified the bullwhip effect, in which demand patterns fluctuations were amplified, further back in the supply chain.

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Silo 2: Aspects of the Target Market	
2C: Geographical spread	<p>The desired 'reach' of the company is an important thing to establish when a new business model is being established. The owner of a sandwich shop must recognise that they need to be located where they can attract passing trade, whereas a computer memory chip manufacturer can afford to fly their high-value product to any point on the globe. It may be particularly important for a company performing services to target an their geographical spread appropriately, since many services cannot be delivered remotely, nor stockpiled.</p> <p>Laws such as export restrictions may make it impossible to sell a given offering in some countries. Conversely, the lack of some law might also make the offering harder to sell (for example, having motor insurance is mandatory in the UK, but this is not the same all over the world).</p>
2D: Age spread	<p>Not only is the age of the target consumer going to influence the design of the product or service that is offered, it will also affect its means of promotion. Where the buyer is an organisation (see 2A), this factor can often be disregarded.</p>
2E: Gender significance	<p>It must be recognised that some products are pitched exclusively, or almost exclusively, at one sex. Occasionally, however, a company might challenge conventional thinking with a product such as Calvin Klein's fragrance, "CKone: a fragrance for a man or a woman" or Rowntree's chocolate bar, "Yorkie: not for girls" – a clever piece of reverse psychology. An understanding of who typically <i>buys</i> the product, rather than who <i>uses</i> it will help to ensure that it is promoted in the most effective manner.</p>
2F: Racial / cultural boundaries	<p>As with gender differences, it must be recognised that different cultures value different things. This may be reflected in the design of products, or in the propensity for markets to invest in a product or service. Different cultures may have a different attitude to risk, etc.</p>
2G: Socio-economic factors	<p>A good is not necessarily consumed in greater quantities by customers who have more money to spend. Market research assigns classifications to buyers, often using a scale from A–E. Recognising the socio-economic position of the target buyer will enable decisions to be made that affect the promotion of the product, and the nature of the distribution channel.</p>

Silo 2: Aspects of the Target Market	
2H: Customer knowledge level	Some customers know more than others, and the business model may be influenced by its need to support customers during a purchase. Alternatively, the business model may specifically target customers who know relatively little (more knowledgeable customers go elsewhere, and get a better deal). Thus, an assessment of the target customer's knowledge level may well form a part of the business model.

It can be seen that many of the factors in Silo 2 concern individuals, rather than corporations. As such, its significance will vary from industry to industry. However, in some cases, even if the buyer is a corporation, the demographics of the ultimate recipient of the value that is delivered should affect the configuration. For example, the usage pattern, demographic and anthropometric data of passengers should be used to decide the ideal layout of a railway carriage.

Environmental influences upon the market are discussed in Section 5.1.

4.3 COMMUNICATION AND DISTRIBUTION CHANNELS

The communication channel by which buyer encounters seller (or by which a client contacts a service provider) is of critical importance in bringing awareness of the offering to the customer, and the distribution channel is no less important, actually delivering value to the customer. Lilien et al [1992] presents a *five-stage model of consumer behaviour* that identifies a set of functions that must be served by the communication and distribution channels:

- Need arousal
- Information search
- Evaluation (perception and preferences)
- Purchase
- Post-purchase

At each stage, the presence of an appropriate point of contact can increase the likelihood of a mutually satisfactory transaction taking place. Silo 3 details the business model decisions relating to the selection of communication and distribution channels:

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Silo 3: Decisions affecting the selection of communication and distribution channels	
3A: Existence of outlets and dealerships	<p>Many large businesses operate via a recognisable 'interface', providing a local point of contact for buyers, whether private or corporate. Other businesses are more centrally organised, or perhaps only have a single place of business due to the scale of the organisation. Where they exist, outlets may perform a promotional (need arousal) role, assist customers in their information search and simultaneously capture market intelligence. They also provide a means of 'delivery' when buyers receive the product or service at the point of sale. Other 'outlets' include the presence of a sales team, who may or may not be directly employed by the parent company (3B discusses the 'ownership' of outlets).</p> <p>The channels in business-to-business transactions offer a number of possibilities for outlets. A supplier may even maintain a stock on the premises of a major customer, in order to improve the service level achieved; this can be considered an outlet.</p>
3B: Ownership of outlets and dealerships	<p>Where outlets of the kind described in 3A exist, they may be owned by the parent company, they might be independent ventures or there might be some of each. Independent outlets might still offer only products and services from one company, or they may be more generalised.</p> <p>Possibly, the ownership of outlets will differ according to geographical region (or the company might retain a wholly-owned 'outlet' in cyberspace; see 3D). Where the ownership of outlets is mixed, deals conducted with owned and independent outlets must be considered with care, so as not to disadvantage third parties to the point where it is no longer worth their while offering the product or service in question.</p>
3C: Home shopping	<p>When marketing to individuals, some businesses aim to target this segment exclusively. Examples of the communication media by which products are bought to customers' attention include television (advertisements and dedicated 'home shopping' channels) and catalogues. The Internet has been considered separately; see 3D.</p>
3D: Internet presence	<p>The Internet is a relative newcomer as a communication channel that allows sellers to encounter buyers, but it has grown strongly, both in the form of on-line retail and portals for business-to-business transactions. Some newer businesses concentrate exclusively on internet-based retailing.</p> <p>One emerging area is the development of autonomous software agents that can 'negotiate' on behalf of a buyer or a seller.</p>

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Silo 3: Decisions affecting the selection of communication and distribution channels	
3E: Need to deliver the product and/or service	Regardless of the communications channel by which a contract is entered into, in many cases it still remains necessary to physically present a product or perform a service at the premises of the buyer. Since this may influence the geographical spread (see 2C) that the business is able to achieve, its capabilities (see Section 4.5) and its costs (see Section 4.9), the proportion of 'tangibles' that the business delivers (in the marketing mix, the product and the physical evidence) needs to be stated. Some businesses, such as those selling only information (telephone directory enquiries, digital entertainment, software development, etc.) are fortunate enough to need no physical delivery mechanism at all. For others (fast food, petrol, etc.) the customer takes 'delivery' of the product at the point of sale, but this still requires infrastructure in the form of the sales outlet.
3F: Purchase of exclusive rights to a channel	As Section 2.4 explained, some companies enjoy the status of a monopoly. One form of monopoly comes from purchasing sole rights to use a particular channel, such as a postal service being granted a license by a government, or a convenience food outlet having exclusive rights to sell snacks inside a sports stadium. Choosing to buy any such right is a significant (and quite likely, expensive) component of such business models.

The usage made of the Internet is an interesting and relatively recent addition to the business model. Some companies have been formed to use the Internet specifically, having no 'high street' presence at all. Some existing businesses have embraced the Internet as a new channel, or a means of expanding their brand (for example, major stores endorsing a banking or communications service) while others have refrained from having any significant internet presence at all. For example, consider the UK supermarkets Tesco and Morrisons. The former has an internet portal that allows home shopping, and a business model that includes a flat-rate delivery charge; the latter offers nothing of the kind, having only a 'corporate' website. In each case, this decision is based upon the demographic of their customers.

Where a disparity exists between the customer base (Silo 2) and the communication channel (Silo 3), the result can be disaster. The story of the on-line fashion retailer Boo.com offers a classic example from the 'dot com' boom and bust. One of its most significant blunders must surely have been that its homepage employed the very latest Internet technology to present an eye-catching user interface. At the time, 98% of US homes and 99% of European ones did not have a sufficiently fast Internet connection to view the site [Thornton and Marche, 2003].

4.4 RELATIONSHIP WITH THE CUSTOMER

Some businesses seek a long-term relationship with customers and will give concessions to ensure a continuing revenue stream, while others conduct their business

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on a case-by-case basis. The industry in question does much to determine the wisdom of each choice. For a supplier producing components for a larger system, investment in equipment, tooling and skills mean that it is of critical importance to have an ongoing relationship, whereas for a garage that repairs accidental damage to cars, there are fewer opportunities to guarantee repeat business. Where a long-term relationship exists (whether established formally via contracts or not), additional forms of co-operation become possible. Silo 4 presents key characteristics affecting the relationship with the customer:

Silo 4: Key Characteristics of the Customer Relationship	
4A: Existence of long-term relationships	<p>Some businesses have only a casual relationship with their customer, who is able to shop around, often choosing to do business with whichever supplier happens to be offering the best price for a commodity at the time.</p> <p>Others are able to have a longer-term relationship with the customer, which can offer considerable benefits such as being able to plan their operations better, and getting to know the customer's requirements in detail. These customers are not locked into a long-term relationship by legal means (that is addressed in 4B), but the relationship may still arise as a result of a customer's desire for standardisation over a number of purchases, or perhaps via the captive-product pricing model described in Section 2.1, which is aimed at establishing a continuing relationship with the customer.</p>
4B: Existence of long-term contracts	<p>Contractual agreements that guarantee an ongoing relationship may be of interest to both buyer and seller. Since such an agreement allows any necessary investments to be amortised over a longer period, it means the cost of each unit of the product or service is lower. Some of the savings may be passed on to the customer as an incentive to enter into the long-term agreement. Some of the subscription-based business models discussed in Section 2.2 are actually or effectively long-term contracts.</p>
4C: Design (or service configuration) authority	<p>Some businesses trust their suppliers to the point where they can allow them a degree of flexibility in the design of their offering. The exact nature of this flexibility will vary, depending on the circumstances; some businesses simply 'build to print', others can propose changes that would be mutually advantageous, and the relationship some have with their customer means they are free to change the product or service from time to time. Whether the customer will want the revised offering is another matter!</p>

Silo 4: Key Characteristics of the Customer Relationship	
4D: Investment in suppliers	Some customers demand improvements or cost reductions that would be unreasonable, were it not the additional investment they are prepared to put into the supplier. If the customer is investing in the business under study, this can be noted in this section.
4E: Regulatory constraints upon the customer relationship	Legislation may require a (typically government-run) customer to act in a certain way, with regard to any agreements they can enter into. The customer might be obliged to operate a scheme of perpetual competitive tendering, for example, awarding business to the lowest bidder. Any such influences should be noted if they are the norm for the industry.

While long-term relationships have been seen to be good for some businesses, they should not be considered best practice on a universal basis. Some successful businesses are based upon a one-off encounter with the customer, and in some industries there is little alternative. Most people who use the services of an estate agent have only one house to sell, so it would be foolish for the agent to spend a significant amount of money in attempting to establish customer loyalty. Furthermore, some transactions take place in a marketplace that is very changeable – and the seller's own business may also be changing, and moving on to a new customer base. All such approaches are options to be considered when the business model is evolved.

4.5 CORE CAPABILITIES

Businesses need a source of competitive advantage if they are to distinguish themselves from their rivals, and as the study of Osterwalder's [2004] ontology and its application to a series of present-day business models has shown, any of nine different 'building blocks' may provide a source of differentiation. One key component, however, remains the core capabilities of the business or partnership. In the new reality of global competition, *core competencies* are the aspects of the value configuration that should be retained while activities that can be performed by anybody should go to the lowest bidder. Core capabilities are sources of competitive advantage, whether obtained through expertise and information, investment, access to markets, licenses, or other sources. Strategic alliances may also yield sources of competitive advantage, but these are not 'core' to one business as such, and are therefore discussed under Partnerships (Section 4.7). Wallin [2000] identifies four kinds of value creation capability; generative, resource-integration, customer-interaction and transformative capabilities. This categorisation has been used in the preparation of Silo 5, which shows the influence of core capabilities upon business model decisions, although we also wished to consider innovation separately, since it has been seen to be an important component of many business models:

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Silo 5: Decisions Affecting Core Capabilities	
5A: Existence of 'generative' resource infrastructure	<p>The capability of the business to create products or deliver services is normally dependent upon some investment in equipment. To what extent such equipment is 'core' – which is to say, a differentiating factor that provides competitive advantage – should be reflected in the business model. If the business is in possession of a generative resource that is unique or scarce, its existence should be noted within the business model.</p> <p>Some generative resources are tangible assets that appear on the balance sheet of a business, such as major pieces of equipment, while others are less directly measurable but no less important, such as a knowledge base. Such 'assets' need to be noted, since they may explain why a business model works for one company (or business unit) and not for another.</p>
5B: Resource-integration capability	<p>In the past it would have been normal for any capability regarded as essential to the business to have been wholly-owned. The Ford Motor Company, for example, owned coal mines, steel mills and forests in its early days, to ensure continuity of supply. Nowadays, when we see competition between supply chains rather than individual businesses, it is possible for a capability to be recognised as core, while still being provided by a partner. The ability of a business to co-ordinate activities with the resources or core capabilities of a partner should be reflected in the business model.</p>
5C: Customer-interaction capability	<p>This capability refers to the ability to communicate with customers. A knowledge base of customer preferences, needs and buying patterns may be a core resource to the business, and a source of competitive advantage. Other aspects of customer-interaction are covered in Silo 3; communication and distributions channels.</p>
5D: Transformative capability	<p>This refers to the ability of a vendor to adapt its product and service offerings to suit the needs of an individual customer. As such, it is related to 1B: customisation. Some businesses will be found to be more able to customise than others. For example, if a production process requires a large investment in tooling, the capability to adapt the offering to suit individual customers will be almost nil; other products can more easily be configured to reflect customer demands, and any such capability should be reflected when addressing the capabilities of the business.</p>

Silo 5: Decisions Affecting Core Capabilities	
5E: Innovative capability	Some companies place great emphasis on the in-house development of products that can be seen to be different from those of the competition, and different from those offered by the company itself in the past. This might be 'genuine' innovation that makes the product better, or it might be in the form of styling, to make the product seem new or to make it appear to match the offerings of successful rivals.
5F: Protection of core capabilities via patents	Taking out a patent involves striking a bargain; in exchange for revealing how something can be done, the holder is granted exclusive rights to exploit the invention for a period. Applying for a patent is not cheap nowadays; neither is it guaranteed that the patent will be granted. Furthermore, there is the danger that the patent will be infringed in a country that does not respect patent law. Thus, while some companies actively seek patents, others simply do not seek to innovate (see Silo 11) or rely upon secrecy and/or a fast pace of change to retain their dominant position.
5G: Protection of core brands via trademarks	Like patents, trademarks also afford some degree of protection, in this case for a brand rather than a technology as such. Establishing and defending a particular brand may be a core component of the business model.

The relative importance of each of these forms of capability will vary from one business to another. A manufacturer might focus upon generative resource infrastructure, while a reseller's areas of greatest added value would be in customer-interaction and transformative capabilities. Each focus yields a different business model.

4.6 VALUE CONFIGURATION

A business must be built upon an understanding of the needs of the customer, and upon having the means of meeting those needs. In Section 4.1, a series of offerings were reviewed as components of the business model. Any combination of these, appropriately selected, might have resulted in customer demand, but it remains necessary to trace the desirable qualities of the offering back *into the organisation itself*, to understand the sources of value, as perceived by the customer. The work of Porter [1985] was significant here, establishing the Value Chain (Figure 18) as a means of analysing the activities of a business.

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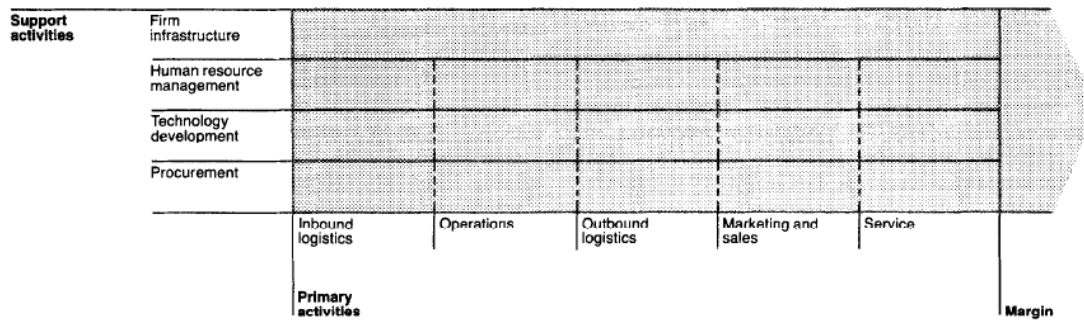


Figure 18: Porter's Value Chain [1985]

Porter's Value Chain shows business activities as a process of transformation, moving from left to right. There are core activities, directly engaged in the with the creation of the physical product (or service) including operations, marketing and sales, etc., and supporting services such as human resource management and procurement, that allow the core functions to take place. The company under study should achieve competitive advantage by co-ordinating these core processes, and ensuring that value is added at every stage.

Porter's Value Chain model shows only a single business, which might be felt to reduce its utility in the modern context of global markets and global supply networks, but this does not pose a limitation when considering the business model of a single, focal company. (The business models of a group of companies operating within an extended or virtual enterprise may all be different, and should thus be considered one at a time.)

Hegert and Morris [1989] identify five stages to value chain analysis:

- ① Determining the boundaries of the business segments (Subdividing the enterprise into autonomous units responsible for delivering customer value)
- ② Identifying the critical activities that have a large impact on competitive advantage
- ③ Defining product and cost information and apportioning this cost information for each product group
- ④ Identifying linkages, where performing a specific activity will influence the way in which others are completed
- ⑤ Identifying value cost drivers (activities that are a source of competitive advantage) by understanding how value is created by each activity

The application of value chain analysis to a business or extended enterprise is a subject in itself. Indeed, it was the subject of a Month 24 deliverable within VIVACE Work Package 2.1 [Buxton et al, 2005]. This discussed the key components of the value chain, and sources of competitive advantage.

It must be understood that many of the means whereby companies derive advantage are addressed elsewhere within this chapter; in Silo 6 only activities relating to value configuration activities are presented. Sources of advantage such as core capabilities, services and customer relationships are covered in the other silos. Responses to the questions posed in Silo 6 should determine the relative importance of each activity to the business:

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Silo 6: Configurational Aspects of the Business Model	
6A: Emphasis on inbound logistics	Some businesses may be able to use an inbound logistics capability as a source of competitive advantage. For example, a business that repairs machinery may be able to differentiate itself by including a collection service. They may or may not be able to charge for it. Either way, such provision would form a part of the business model. Some manufacturing businesses demonstrate a world-class approach to inbound logistics with integrated order tracking and processing mechanisms. Since the cost of such a system must be justified, it should also be mentioned in this part of the business model.
6B: Competing on operations	Some businesses may be able to use their <i>operations</i> as a basis for competition. Many such advantages would qualify as one or another of the core capabilities described in Silo 5; others should be noted here.
6C: Importance of outbound logistics	Some businesses may be founded upon excellence in outbound logistics. On-line retailers need to pay particular attention to this feature of their business model, since it is an area in which they will be judged, even if products are actually moved by a third party. Where a third party is not employed, growth may place a tremendous strain upon these operations. This is closely related to Silo 3; communication and distribution channels.
6D: Importance of marketing and sales	It is fair to say that some businesses are geared towards marketing rather than any real excellence in the product or service on offer. Some people might dismiss such a tactic as 'hype' but it can generate an extraordinary amount of business in some markets. The music industry offers a good example, showing how a product that history later judges to have been rubbish can be sold in very large numbers in a short space of time. Whether selling singles or soap powder, a company planning an intensive campaign of this kind will need to budget appropriately. Thus, the strategy features in the business model. Again this is related to Silo 3; communication and distribution channels.
6E: Emphasis on responsiveness	Some businesses attach considerable importance to responsiveness; reacting quickly to changes in the requirements of the market, whether in terms of styling, features or volume. While all businesses ultimately need to change, some business models will emphasise this, even to the point of having surplus capacity (despite its cost) to be ready to exploit an opportunity as it emerges.

Silo 6: Configurational Aspects of the Business Model	
6F: Process innovation	Some businesses seek improvements in their processes, rather than in the end product (or the physical evidence, for a service). Such businesses will seek innovation in processing and handling equipment, new working practices, etc., often with the aim of reducing costs and thereby becoming more competitive. The commitment to continued improvements of this kind should be noted here, as a component of the business model.

Many of the aspects of the business model that are mentioned in Porter's value chain [1985b] are covered in other silos, or have whole silos devoted to them as we attempt to increase the resolution at which the business model is described. Thus, no attempt has been made to include Porter's 'service' element here, since it is discussed in context as a part of the offering (Silo 1) and as an opportunity for a continuing relationship with the customer (Silo 4).

4.7 PARTNERSHIPS

It is not necessary – nor is it wise – for every company to perform every activity in the value chain. Instead, partners can be selected, such that each business contributes one or more functions, applying their core capabilities. By capitalising upon the strengths of several businesses, any weaknesses can be offset, and new opportunities can be found. Silo 7 explores the business model issues related to operating in partnership with other businesses.

Silo 7: Partnership Components of the Business Model	
7A: Sole source suppliers	The business may have suppliers that work only for them. This is a risk for the supplier, and will need to be compensated for. However, it may mean that a particular process or piece of technology becomes a unique selling proposition; a source of competitive advantage.
7B: Mutually established partnership 'brands'	Some groups of businesses establish a brand between them, all benefiting from the strength of that brand. Munich's Oktoberfest is one example; the Star Alliance airline passenger loyalty scheme is another.

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Silo 7: Partnership Components of the Business Model	
7C: Partner autonomy and innovation	<p>Some businesses will allow partners a great deal of freedom, so as not to limit their freedom to innovate and evolve. Indeed, some businesses depend upon key suppliers to improve certain components that feature in their products. For example, a personal computer might be marketed on the performance of its Intel processor; the computer manufacturer is depending upon the supplier to keep their product 'interesting'.</p> <p>In other situations, this may not be pursued. The business model may this be founded upon more of a 'buyer-supplier' relationship than a partnership between equals. This is related to 4C (design/configuration authority), but seen from the perspective of being the recipient of the goods or services, rather than being the supplier. Most businesses will be both suppliers <i>and</i> customers, of course.</p>
7D: Partnership network integration	<p>Will the partners be encouraged to communicate with one another in an integrated network, or is the partnership really a collection of one-to-one relationships? The latter may make it easier for the prime (controlling) company to protect their position, but it may result in lost opportunities.</p>
7E: Joint ventures / complementary offerings	<p>Two or more businesses may enter into a joint venture, where each company provides an offering that is complementary. Such ventures may provide a useful alternative when moving into new territory, in terms of markets or technologies.</p>
7F: Forming partnerships to offset risk	<p>Some businesses will seek to offset uncertainty by inviting suppliers to enter into risk and revenue sharing partnerships. This can be particularly useful where the offering is complex and the lead-time is long. Those who join such a partnership are demonstrating their commitment to the venture.</p>

Businesses may well take part in several different kinds of partnership or network, leading in some activities and playing a more minor role in others. An important issue to address at this point is that businesses do not necessarily perceive their relationship with partners impartially. A typical resistor, for example, is a very simple component as far as a company building electronic devices is concerned. To that company, the resistor is a simple commodity that is ordered in multiples of 10,000 with each one costing a penny or less. The purchaser has little time to spend appreciating the finer points of the resistor's manufacture. To the supplier, that same resistor is the end product; a complex assembly of metal film, ceramic materials, wire, coatings, paint and packaging. As Kamm [1996] put it:

"Everyone buys components, but sells systems."

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Furthermore, despite the fact that a product may be very humble offering in terms of its technical complexity or its cash value, the supplier may be in a very strong position. They may be supplying dozens of different businesses, quite possibly in several different industries. Demand for their product might be outstripping supply; *their* best course of action may be not to enter into a partnership, but simply to quote for goods and services on a case-by-case basis. In discussing the rapid formation of extended enterprises within the aerospace industry, Farr et al [2006] posed the question: would the perfect supplier agree that you are the perfect customer? Partnership building may be a lengthy and difficult process; the aspirations expressed in Silo 7 remain as nothing more, but it is necessary to establish goals of this kind if there is to be any chance of them being achieved.

4.8 REVENUE AND PRICING COMPONENTS

Section 4.1 has already presented a review of offerings that might be provided in exchange for money. Here, we investigate the actual cash flows that might be expected to take place. Simply assuming that money will come to a company that offers desirable products and services is dangerously optimistic!

This is the most complex of all the silos, since numerous options are available, in terms of the source of revenue, and the pricing strategies that will influence the magnitude of money that can be expected from each source.

Silo 8: Factors Relating to Revenue and Pricing Decisions	
8A: Money received as a unit of product is supplied (or as a unit of a service is consumed)	This is probably the simplest form of revenue model, existing for as long as currency itself. Money acts as a medium of exchange, allowing a standard price to be set, instead of employing bartering (see 8D).
8B: Money received on a time basis	Some business models are based upon receiving income on a calendar basis, bearing no relation to the amount of work done. For example, an insurer might expect to receive premium payments on a regular basis.
8C: Delay between delivery of a product (or service) and payment being received	Cash flow is a problem for many businesses, where customers fail to pay in good time. Some businesses, however, give generous payment terms such as 0% finance and nothing to pay for six months. Of course, any such generosity is accounted for in the basic price of the product or service. Still, such terms are attractive to some customers, and this additional 'offering' may provide some additional competitive advantage.
8D: Receipt of payment 'in kind'	Some transactions may not involve money, or may not be purely financial. Instead, some product or service might be offered as payment in full or in part. In the form of bartering, this was probably humanity's oldest 'business model'. It is complicated by the fact that both parties must acquire something that they want, or that they feel they will be able to dispose of profitably.

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Silo 8: Factors Relating to Revenue and Pricing Decisions	
8E: Receipt of donations	Some business models are built upon payment being voluntary, it being argued that if the customer is being given something they value, payment will follow. Examples of this kind include charitable organisations, software distributed as 'shareware', street musicians, etc.
8F: Money received from the sale of scrap	This will normally be only a very minor component of the business model, if it exists at all. Waste such as the swarf left after a machining operation may have some value. In some cases, this is worth little except as an incentive for somebody to remove it, but in some cases it may be possible to identify a means of deriving some income from scrap, and this entry allows any such opportunity to be stated as a part of the business model. In one well-known example of deriving value from scrap, a company paid to take away the sludge left over after a beer brewing process used it as the raw material for a successful food product, Marmite.
8G: Government grants	Some businesses have a history of successfully attracting government funding, and may consider the pursuit of grants to be a component of their business model.
8H: Money received from partners	Some businesses are able to invite partners to buy a share in a venture, and any such payments may be entered here. Within the aerospace industry it has long been common for component suppliers to contribute towards 'certification costs' in this manner.
8J: Extraordinary items	<p>There are a variety of events that may take place from time to time, providing the business with some additional income. Examples include the issue of shares, or the sale of a major asset such as a piece of land.</p> <p>Whether these can be considered a part of the business model is normally questionable, although this is the major <i>raison d'être</i> of some companies, who buy a controlling stake in businesses that are under-valued, and strip them of their assets. For this reason, it is included as a component of the business model.</p>
(pricing-related elements follow)	
8K: Targeting of innovators and early adopters	Some offerings command a premium through being new (or being perceived as new), even though they might later become commonplace, commodity items. If the company aims to charge higher prices on the basis of an innovative project, this should be expressed as a part of the business model.

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Silo 8: Factors Relating to Revenue and Pricing Decisions	
8L: Cross-subsidy	Some businesses operate a model whereby one offering is discounted, or entirely free, this being funded through profits obtained on an associated offering.
8M: Market penetration pricing	Some businesses will reduce their prices, even to the point of tolerating a loss for a time, in order to break into a new market or improve upon their market share. Being prepared to take this step (for a time) is thus a component of the business model.
8N: Capacity-based pricing	Prices can be varied in an effort to match demand to available capacity. During slack periods, a business might accept a lower profit margin, or even no profit (just a contribution towards overhead expenses). Businesses that are invited to submit a proposal, such as the tendering process for a building company, will vary their prices based upon their level of future commitments. A manufacturer might look at their order book in much the same way.
8P: Disposal of surplus	In some industries, sale prices are applied to goods in order to dispose of stock that is becoming obsolescent. Examples include clothing at the end of the season, and food that is approaching its 'sell by' date. Under some circumstances this may be addressed under 8F: money received from the sale of scrap, although this business model element assumes that the surplus offering isn't <i>quite</i> scrap.
8Q: Promotional bulk schemes	Promotions may influence the effective price per unit. For example, an offer such as "buy three, get one free" increases the volume of business done, albeit at reduced price. Some promotions might serve to establish a continuing relationship with the customer (see Silo 4).
8R: Auction-driven pricing	Some businesses use auctions to sell goods or services. This can be useful when the value of the offering is not known with confidence, since the eventual price will be determined by all the bidders who take part. There is a danger that the sale price might be lower than was anticipated; the existence of a reserve price may avoid this risk, although it could increase the transactional cost of the sale.

Sections 8A – 8J identified nine forms of income for the business, although as with the offerings presented in Section 4.1, some companies will focus upon just one, while others will be active in many areas. Again, there is no right or wrong answer – at least, not until the context of the business is considered – but it should be possible for those determining any business model to state the relative importance of each potential income source. There are further options available that do not relate *directly* to revenue,

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but which might be employed to change the timing of cash flows, or the level of confidence that they will be received, such as factoring⁴.

Sections 8K – 8R list factors concerning the pricing of offerings. Price is a key component of the marketing mix, influencing the demand for the product or service, and the profit that can be expected. Basic economics teaches us to expect to find – with a few exceptions such as that noted under factor 2G (Section 4.2) – a link between the price of a good or service, and the level of demand. Thus businesses seeking to maximise their revenue will select a pricing structure that takes into account the influence of pricing upon demand (what in economics is referred to as the own-price elasticity of demand). Some choose to aim for a large number of sales with thinner margins, while others choose the reverse. The own-price demand function describes the relationship between the price of a good, and the likelihood of a customer making a purchase; this information would have been found through surveys, or prior experience in the market.

At a lower price, demand will normally be greater, *but all customers pay that lower price*. The pricing model must thus attempt not merely to maximise demand, but to obtain the best pattern of profitable sales. Ideally, a business will segment the target market in such a way as to ensure that the customers who are prepared to pay a premium still do so, but the customers who will only pay the lower price make a purchase as well. Such a pricing strategy needs to be evolved with care, since the model can be ‘broken’ if customers can import the product from a market where it is cheaper. Still, some businesses *do* manage to set prices that differ from one market or channel to another. One way to do this is by having a portfolio of different brands. Another is simply time-based, accepting that the price of the product will fall over time, until every customer has had an opportunity to acquire the product at a price they are prepared to pay. Existing business theories address this movement, applying names to the customers who buy products at various stages; innovators, early adopters, early majority, late majority, and laggards [Lilien et al, 1992]. Those selling new products will seek to maintain the ‘exclusive’ image of a product for a period, extracting a high price from those prepared to pay (and perhaps recouping the development costs entirely) before reducing the price of the product to increase sales volume when sales to innovators and early adopters begin to slow⁵.

Other pricing decisions affecting the business model include determining the profit margin that should be sought for each element of the product/service mix. It is entirely possible that one element of the offering subsidises another, as discussed under the captive-product pricing business model (Section 2.1).

The pricing decisions facing a company are highly complex, not least because they may vary over time, between offerings and from one market to another. The exact nature of any pricing structure or promotion that is offered needs to be determined with care, looking at every component of the business model.

One change that can be anticipated is a reduction in the cost of manufactured goods over time. The move from high-cost, low volume to low-cost, high-volume production is a

⁴ Factoring is the sale of debt to a third party. While the factor will pay only a part of the debt’s full value, this offers certainty and rapid settlement. In some industries, it is therefore highly desirable. Factoring is normally confined to tangible products, rather than information services, etc., because in such industries, the services delivered are harder to track. Some banks offer a factoring service, and specialised debt collection agencies exist as well.

⁵ Some companies may withdraw from a market approaching saturation as much for reasons of brand image as for their inability to compete as prices are driven down.

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well-understood one. Products tend to be luxuries when they first appear, but increased competition, improvements in manufacturing efficiency and market saturation tend to drive prices downwards. Electronic devices are the most obvious example in the present day, but similar effects have been seen in household appliances, automobiles, firearms, etc. This will be examined further in Chapter 5, where the business environment in which the model is to be operated is discussed.

Some products, of course, will always remain low-volume items because one product can serve a whole community (e.g. power generation systems), because only a few people have a need for the product (e.g. medical devices), or because the general public do not have the means or the need to own it outright (e.g. large aircraft).

4.9 BUSINESS COST STRUCTURE

If we are going to look at the sources of income for a business, we also need to consider when and where it spends money. Silo 9 reviews the ways in which the business model might affect how a company parts with money:

Silo 9: Costs Influencing the Business Model	
9A: Purchase of raw materials, components and consumables	It is reasonable to expect a 'transformation' business to require materials, components or subsystems for conversion into products that are of greater value to the customer. Still more businesses will require inputs that are consumed in processes such as service provision. The procurement of these items may be a means of deriving competitive advantage, as some businesses manage to negotiate advantageous terms, or monopolise the supply of a key commodity (see 7A). In any event, they are likely to be a source of costs for many businesses.
9B: Payments for services received	In addition to buying in the materials necessary to create value, some services must also be obtained. Getting input from specialists outside the business, such as IT services, is an example. If the service does not reflect a core capability of the business (see Section 4.5), it can often make sense to buy it in.
9C: Leasing costs, and rents	Further expenditure is required upon enabling resources that are not owned outright. Some large companies have actually sold off assets and leased them back, to improve their cash position or reduce their own exposure to risk. For business start-ups, leasing may be selected because the cost of buying things outright is prohibitive. In any event, this forms a potential component of the business model.

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Silo 9: Costs Influencing the Business Model	
9D: Staff costs and payments to contractors	Outgoings in this category include salaries, employers' contributions to national insurance, pension scheme costs, etc. If the business is downsizing, there may also be redundancy payments. These costs are largely unavoidable, but need to be examined when any business considers a new project. In terms of options presented to the designers of the business model, the company may choose to focus upon independent contractors, piecework, or some other model that avoids an ongoing obligation to a permanent staff (see 11E) although this can have disadvantages.
9E: Taxation	Taxation is largely unavoidable, and will generally not feature in the business model. However, there is scope for some multinational, virtual enterprises to select where they will pay taxes. Furthermore, businesses are sometimes given tax breaks by governments in order to encourage them to locate in a particular area. Such issues will influence the financial performance of the company.
9F: Donations	Some businesses make regular donations to charities for promotional reasons, or to lobbying groups or political parties. Presumably, such payments are made in the hope of securing advantage in terms of a favourable image or outcome. As such, they form a part of the business model.
9G: Money paid out to join an risk and revenue sharing partnership	The aerospace industry, in particular, is characterised by suppliers who wish to take part in a programme paying a 'certification' fee. In effect, this is a contribution paid to join the programme, and nowadays it seldom reflects the actual cost of the certification task. Brandenberger and Nalebuff [1995] characterise this as a 'pay to play' cost, identifying various circumstances under which such payments might change hands. The existence of any such requirement should be included in the business model, since the cost may be considerable.
9H: Compensation and warranty costs	Guaranteeing products or services may make the offering more desirable, but it exposes the company to an additional cost risk, expressed here. Some businesses (such as budget airlines) accept a far lower level of liability for problems that their customers may have, while other businesses prefer to protect their image with more care, operating to the maxim, "If in doubt, pay out."
9J: Buy-back scheme costs	Some business models include an offer to buy a product back at some phase, perhaps at the end of its life. This commitment must be accounted for within the cost model. If a guarantee of a price has been given, this may constitute an offering (Silo 1).

Silo 9: Costs Influencing the Business Model	
9K: Approach to depreciation	In their accounting practices, most businesses depreciate their assets, recognising that some fraction of a machine or building is 'used up' during operations. Depreciation helps to ensure that a business activity is genuinely profitable. In some circumstances, however, a company may find itself using an asset that it is not necessary to depreciate. With Concorde, British Airways had an asset for which no depreciation could be calculated; setting aside money against the day when every Concorde was life-expired would have been pointless; there was simply no replacement available to buy. This made for an unusual cost structure, and an unusual business model.
9L: Payments made at auction	Auctioning is not just about selling goods and services; some businesses may use auctions as a part of their procurement process. If prepared to wait for a bargain, and to bid strategically, it may be possible to obtain offerings at low cost. Some major purchases such as the acquisition of a license may also be achieved via a bidding process similar to an auction. (Section 2.3 detailed a number of different types of auction.)

Businesses incur a variety of other expenses, including overhead expenses, the cost of borrowing money (and other financial services), the payment of dividends, etc. None of these can really be said to be a component of the typical business model, although they can also be noted if the business under study derives some kind of differentiation or competitive advantage from favourable terms that they enjoy, for some reason.

4.10 CONCLUSIONS

In the preceding nine sections, a series of elements have been presented, each of which can be posed as a question, when constructing a business model. These questions can be worked through as a checklist, to reduce the chance that an opportunity has been overlooked. By breaking down the business model so thoroughly into its component parts, it has been aimed to simplify the answers to these questions, ideally to a point where they can be answered 'yes' (our business model is founded upon that, 'somewhat' (that features in the business model to some degree) or 'no' (that plays no part in our business model).

In reality, businesses are created by inventive people, and it is likely that any taxonomy or parametric system of business modelling will be challenged by the new business models that emerge. Some responses to the questions posed in the silos might require detailed comment about the circumstances surrounding an activity, or the relative importance of one kind of offering versus another; others may result in bafflement, requiring them to be answered 'not applicable' rather than 'no'. The end result, however, is a tool that allows conceptual business models (such as those reviewed in Chapter 2) to be compared and contrasted, and it may be thought-provoking when used by people developing business models of their own.

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In the chapter that follows, the environmental factors within which the business model must be operated are listed, in a similar fashion. Any business model is geared towards operation under a certain set of circumstances, and these need to be stated, since the business model that is evolved will not be universally applicable.

5. ENVIRONMENTAL FACTORS INFLUENCING BUSINESS MODEL SELECTION

This chapter discusses issues that do not fit within the business model as such, but which nonetheless need to be considered making strategic choices. As such, they describe assumptions about the environment in which the business model is to operate. They were evolved in the same way as the issues presented in Chapter 4, and are listed in the same format, but have been separated from the business model itself in order to provide clarity. Despite the separation, it is important that the business model should be shown in context; thus, these sections still constitute a part of the methodology under development.

5.1 TARGET MARKET ENVIRONMENTAL FACTORS

Section 4.2 examined the target customer in terms of their demographic, location, knowledge level, etc. The selection of customers to target is within the control of those creating the business model, but there are other factors that cannot be controlled, and these are discussed here. Silo 10 lists characteristics of the market that should be considered when selecting the business model to adopt:

Silo 10: Environmental Aspects of the Target Market	
10A: Market fluctuation	The demand pattern for some products is much harder to predict than for others. In some cases, it must simply be accepted that products will not be ordered at a uniform rate. Similar circumstances exist in the market for some services. The response to such fluctuations requires an understanding of how large the fluctuations can be, and how long customers are prepared to wait for the offering. This can then be addressed through holding stock (see 1K) in the case of goods, or having surplus capacity (see 6E) for either goods or services.
10B: Market seasonality	The demand for some products and services is influenced by the time of year, due to influences such Christmas, the weather or the timing of school holidays. Some offerings do not have a seasonal sensitivity at all, but for those that do, the company will either find it necessary to stockpile goods during the quiet periods (see 1K) or to operate a flexible workforce (see 11E) that expands and contracts as necessary during the year.

Silo 10: Environmental Aspects of the Target Market	
10C: Sensitivity to the economic cycle	<p>The demand for some products and services is affected strongly by the global economic cycle, whether from the confidence of individual consumers, or corporations. Some markets experience a dramatic boom and bust, while for other products and services there is almost no sensitivity to the economic cycle. The demand for basic cooking ingredients, for example, is less likely to be affected by world events.</p> <p>For some goods and services, there is an inverse relationship to the condition of the economy. For an 'inferior' offering such as bus journeys (as opposed to car ownership), demand may actually increase during an economic downturn.</p>
10D: Market growth (or decline)	<p>Most thought is directed towards markets where growth is anticipated, but business models may need to recognise that a market will eventually become saturated. Some business models may specifically address a declining market, such as one transitioning from the mainstream to a niche market of enthusiasts or collectors.</p>
10E: Establishment of radically different markets or industries	<p>For some, rare businesses, innovation leads to the creation of a new market or a whole new industry. For example, in the 1920's, to combine the 'known' science of aviation and the 'mature' business of the postal service to create an innovative offering in the form of airmail. More recent examples include home computers and mobile communications.</p> <p>Businesses that seek to establish a whole new market or industry should state this assumption as part of their planning process.</p>

The description of the target market as being subject to demand fluctuations, being seasonal or being affected by the global economic cycle may be major influences in the operations a business chooses to conduct.

5.2 APPROACH TO BUSINESS GROWTH

The last entry in Silo 10, 'market growth' actually poses a great many problems, not only in the case of a decline, but also in a growth scenario. Growing a business can be a very difficult proposition, and the growth period at the end of an economic depression can actually be the most dangerous time, in terms of the risk of bankruptcy.

There are several different ways by which a growth opportunity might be exploited, however. For a small business, growth typically means taking on new staff and opening a new branch, or creating a new division. Larger businesses typically grow by acquisition; buying out businesses that will complement their operations (subject to the approval of government anti-trust legislation such as that embodied by the Monopolies and Mergers Commission). This form of growth is less likely to create employment, and

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may well do the opposite, as consolidation between merged companies often involves a round of redundancies⁶.

Another form of growth is achieved by selling franchises. Where a brand is strong enough to generate sufficient interest, this can be highly lucrative. As such, selling franchises may be a core component of the business model. Significant drawbacks to growth of this kind are that it becomes increasingly difficult to protect the image of the brand as the network of businesses grows, and that there is little outlay to offset against the money received for each franchise, so a considerable amount of tax will probably be paid on this. Silo 11 shows the issues relating to business growth:

Silo 11: Aspects of the Business Model Relating to Growth	
11A: Conventional, 'organic' growth	A business that plans to grow significantly in this manner will need a suitable strategy, addressing how to attract the right staff, and who to promote to positions of authority in the newly-enlarged business. Where specialist skills are needed, staff shortages may be a very real problem, particularly if rapid growth is anticipated.
11B: Sale of franchises	This is an approach to business growth that also yields income. If the business has demonstrated a successful formula, it may be possible to invite others to use it as well, deriving value from the reputation and expertise of the established business.
11C: Licensing	Sometimes, a company finds itself in possession of a desirable new technology or brand, but is unable to keep pace with the level of demand. Attempting to do so might introduce an unacceptable level of risk, in fact. Licensing allows a company to receive some income, while operations are performed by another company. This approach may be adopted for geographical reasons, or because demand is outstripping supply. Companies that create a demand that outstrips their capacity often cause a rival to copy their offering, and may even cause a new player to enter the market, so licensing presents a desirable alternative under some circumstances. (See also 7E: Joint ventures.)
11D: Growth by acquisition	A company may be able to buy its way into a new geographical area, or a new market, by acquiring an existing business. This will need to be followed by a period of realignment in which the acquisition – or both companies – change to work together more closely.

⁶ Acquiring businesses can also be a business model in itself; see 8J.

Silo 11: Aspects of the Business Model Relating to Growth	
11E: Growth through workforce flexibility	Some industries are able to call upon a substantial force of short-term labour, performing tasks such as harvesting crops or assisting in shops, restaurants and postal services during the busy Christmas period (see 10C). Reliance upon such a workforce should feature in the business model, along with strategies for making the most of such people, who are typically with the company for too short a time to receive much training. To attract staff to work on this basis will probably involve compensating them well for their lack of job security (see 9D).

Most businesses expand and contract at various times, in response to market conditions. The business model should not seek to resist such adjustments, but can promote consideration of the means by which expansion will be pursued. It may be wise to consider growth in terms of the whole supply chain, rather than just the focal company; this is related to considerations of partnerships in Silo 7.

If the business is a start-up, planning will need to address the means of obtaining capital, etc. Again, this is not a part of the business model *per se*. Indeed, having an innovative business model in mind may be an 'offering' that allows the start-up business to attract venture capital. Thus, it is wise to think in holistic terms when developing the business model, taking into account the environment not only in terms of buyers and competitors, but also those whom it might be wise to approach.

5.3 CONCLUSIONS

This chapter has presented an additional pair of silos, containing business environment issues to be considered in conjunction with those of the business model itself. Although not strictly a part of the business model, it is important that these should also be considered, since this provides an opportunity to identify the market conditions under which the business model is designed to operate.

In Chapter 6 it is explained how the issues identified as being key components of the business model and its operating environment can be expressed in the form of a structured methodology, allowing alternative business models to be compared.

6. METHODOLOGY FOR BUSINESS MODEL COMPARISON

Building upon the key components of the business model, as listed in Chapters 4 and 5, a framework is presented, whereby proposed activities can be plotted, and business models can be compared. The result is a structured methodology, something like a ‘workbook’, that can be followed when constructing a corporate business model.

6.1 SELECTED METHODOLOGY FOR THE DESCRIPTION OF BUSINESS MODELS

The contents of the silos in Chapters 4 and 5 have been converted into a set of scales, expressed within a Microsoft Excel spreadsheet. Each element from each silo becomes a row in the spreadsheet, making a statement. For example, 1A, the first issue in Silo 1 says “Supply of new goods.” The modeller can make a choice ranging from “vital” to “not done”. There is also space for comments to be written; in some cases this already includes a brief note that clarifies the choice that is available. Figure 19 shows a small part of the spreadsheet:

	A	B	C	D	E	F	G	H	I	J
1	Business Model Mapping Framework									
2										
3	Silo 1: The Business Offering									
4	Part	Issue	Option A						Option B	Comments
5	A	Supply of new goods	vital						not done	
6	B	Customisation	every time						never	
7	C	Sale of optional 'extras'	vital						not done	
8	D	Provision of services	vital						not done	
9	E	Sale of consumables	vital						not done	
10	F	Sale of products in a used condition	vital						not done	
11	G	Sale of used parts	vital						not done	
12	H	Sale of options	every time						never	
13										
14	Silo 2: The Target Market and Customer									
15	Part	Issue	Option A						Option B	Comments
16	A	Mix of individuals and organisations as buyers	individuals						organisations	
17	B	Geographical spread	the globe						one town	
18	C	Age spread	broad						narrow	
19	D	Gender significance	relevant						irrelevant	
20	E	Racial / cultural boundaries	relevant						irrelevant	
21	F	Socio-economic factors	aspirational						'economy'	Identify target customer range A-E, may be more than
22	G	Market fluctuation	random						stable	
23	H	Market seasonality	seasonal						steady	
24	J	Sensitivity to the economic cycle	sensitive						constant	Also note if an inverse relationship exists
25	K	Market growth (or decline)	growth						decline	
26										
27	Silo 3: Communication and Distribution Channels									
28	Part	Issue	Option A						Option B	Comments
29	A	Existence of outlets and dealerships	outlet network						centralised	
30	B	Ownership of outlets and dealerships	wholly owned						independent	
31	C	Home shopping	every time						never	
32	D	Internet presence	strong						none	
33	E	Need to deliver the product and/or service	necessary						unnecessary	

Figure 19: Screen display showing the business model mapping methodology

This method can now be used to map any conceptual business model, such as those presented in Chapter 2, or the model of a real, present-day business. By marking entries in columns D – H for each issue and adding comments, the user is working through a

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structured methodology that reduces the chance of a component (or potential component) of the business model being overlooked. Since each represents an opportunity or a source of risk, it was important that this list of issues should be as thorough as possible; hence the detailed study of business models now in use, and the review of business model literature presented in the Month 27 deliverable [Olofsson and Farr, 2006].

Excel provides a useful, common medium that allows many users to access the methodology. However, the use of software to achieve business model representation *could* be taken further. For example, a computer-based mapping approach similar to that used for the VIBES software [Farr et al, 2005] might be used, identifying the business model in the form of a plot against 'dimensions' taken from the silos. For example, customisation of the offering might allow the user to make a mark anywhere on a scale from 'every time' to 'never'. Figure 20 shows a prototype, demonstrating this approach:

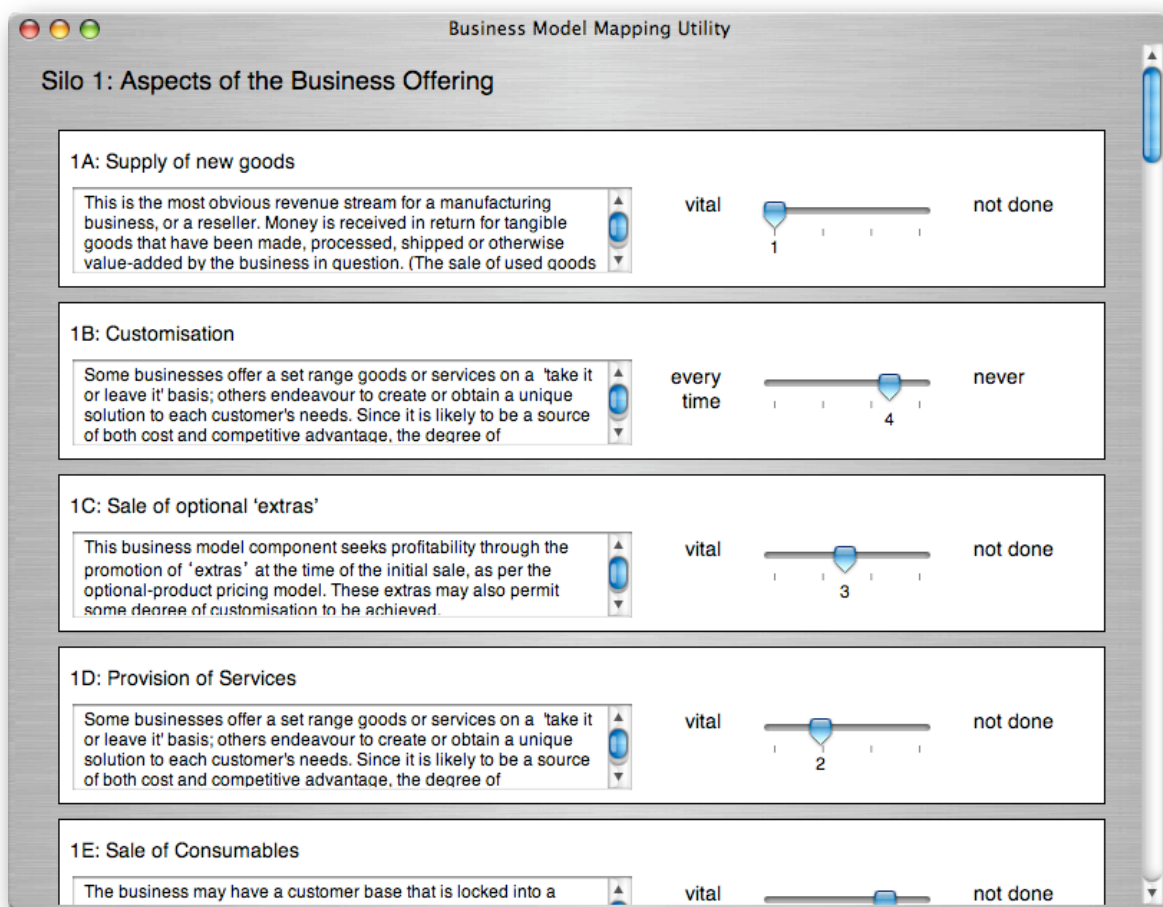


Figure 20: Screen display from an experimental business model mapping application, created by the author

With a computer-based approach, new possibilities arise, such as facilitating communication between (potential) partners at the enterprise formation stage and checking their strategic 'fit', or using the information held within the system to perform other analyses, and perhaps driving a simulation.

Some research work has been conducted into the use of a form of simulation to assess the suitability of a business model, such as that of Kumazawa and Kobayashi [2006], allowing the financial consequences of business strategies to be explored over the

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whole product lifecycle, and Tsuda et al [2002] which provided the specification for a web-based 'business simulation compiler'. At this time, such systems are heavily mechanistic and generally miss out on the value of qualitative factors such as reputation and relationship-building – vital characteristics of a long-term virtual enterprise such as that now used for the development, provision and support of aerospace systems.

6.2 METHODOLOGY FOR EXPRESSION OF FUTURE BUSINESS MODEL ASPIRATIONS

In addition to the present-day position, the future aspirations of the business can be plotted using much the same technique. Beginning with the present-day business model for the organisation, in the form of a printout from the Microsoft Excel spreadsheet, arrows can be drawn on the diagram to show movement away from the present-day state of affairs. Further annotation can be added to identify when and how the transformation is to be pursued. In this way, it becomes possible to communicate unambiguously while planning the future direction of the business. Figure 21 shows an example, in which it is proposed to transition the business into one with a greater emphasis on customisation and service, while reducing involvement in the market for used products and parts:

Part	Issue	Option A		Option B	Comments
A	Supply of new goods	vital	X	not done	
B	Customisation	every time	X	never	Certification requirement prevents customisation
C	Sale of optional 'extras'	vital	X	not done	
D	Provision of services	vital	X	not done	
E	Sale of consumables	vital	X	not done	
F	Sale of products in a used condition	vital	X	not done	
G	Sale of used parts	vital	X	not done	
H	Sale of options	every time	X	never	

Figure 21: Partial business model map, showing a proposed transformation

Again, functionality of this kind could be incorporated within a software tool, although it may be found that the methodology is more likely to facilitate useful discussions if it is paper-based, allowing a multifunctional team to write directly upon the business model plot. Further investigation of potential users' requirements would be highly beneficial, before committing to a software development phase.

6.3 IDENTIFICATION OF 'DANGER ZONES' IN THE BUSINESS MODEL

'Danger zones' are non-sequiturs; statements in the business model that don't add up. It is easy to make ambitious statements about the aims of the company, and many of the options presented in Chapters 4 and 5 seem like obvious good choices; growth, risk reduction, innovation, increased flexibility, etc. Unfortunately, elements that are good sense for some companies at some times can become a recipe for disaster if they are all heaped together. A business attempting too many changes at once will spread its

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resources too thinly, and may even find that one initiative cancels another one out. Some examples of 'danger zones' are presented:

- Company A has a long history supplying highly reliable products. The company now wishes to move into the aftermarket, where it is known that some of their rivals make a considerable amount of money performing maintenance and repairs. Unfortunately, the reliability of Company A's products means they seldom fail in service, and the new maintenance division is starved of work. It remains a very minor division of the company, and is eventually sold off since it is not 'core' to the business.
- Company B develops an innovative electronic component, and is convinced that it is the 'next big thing' in home entertainment. The company redesigns one of its products to make use of the new component, and begins production, recruiting additional staff as they go. Demand far outstrips supply, and Company B cannot grow fast enough. Six months later, companies C and D are offering a product that isn't technically quite as good (they haven't yet found a way around Company B's patent) but their offerings are available in large numbers, filling the vacuum in the market created entirely by Company B.
- Company E designs a line of summer clothing products. It is a manufacturer, and has no customer channel of its own. Company E normally sells its products to high-street retailers, such as Company F. Company F is impressed by the summer clothing range, and contracts to buy it. They have two concerns; that demand might outstrip supply, or that demand might not be as strong as they expect. Thus, Company F demands that Company E must have the full production run of 100,000 garments ready by the beginning of the season, for Company F to hold on 'sale or return' terms. It is a disappointing summer, and Company F does poorly. They return 85,000 unsold garments to Company E, which (naturally enough) has no use for them and promptly goes bankrupt. They were required to accept too much exposure to risk, in exchange for the chance of a profitable exchange.
- Company G has bought a license from a local government, to be the sole provider of boat trips on a river. This should have protected its access to the market, but on weekends and holidays it finds itself competing with a river rescue service, who offer 'joy rides' in one of their boats. The rescue service is operated as a charity. Since their boat and its staff are effectively already paid for, their operating costs are lower. The charity also has a better image, in the eyes of the public, than the commercial operation. Company G struggles because the charity can choose when to offer boat trips (in good weather, at weekends) whereas the company cannot switch its capacity 'on' and 'off' in the same way, and must cover its costs all year round.

Many more such 'gaps' or flaws in a business model can be identified. In this way, the business model mapping methodology performs a useful role as a 'look-up table', making sure that nothing has been missed out. Seldom has a more significant gap been left than in the case of the 'Commonwealth Sentinel', a newspaper that ran for exactly one issue. Having spent a hectic week writing and obtaining articles, and selling advertising space, the entrepreneur completely forgot to arrange any means of distribution [Pile, 1979]. Few products go out of date as fast as a newspaper, of course, so the venture was doomed. A checklist such as the methodology presented in this document could have averted the problem, by identifying that no thought had been devoted to the distribution channel (Silo 3).

Ultimately, a more detailed analysis of a proposed business model might become possible, with software such as that shown in Figure 21, to analyse the proposition and identify the 'gaps' using a series of rules.

Because each firm is unique in terms of its strengths and weaknesses, its network of social capital and its resources, its strategies cannot simply be subjected to an analysis technique, to determine the best plan of action. Grant (1995) warns that no industry has clear boundaries, either in terms of products or geographical areas. Furthermore, competing within the same market and competing within the same industry are different, and thus require separate consideration.

While it might ultimately prove impossible to feed a proposed business model into a simulation and observe the 'bottom line' that results, some of the risks inherent in a business plan might be highlighted, and certain detailed 'sub-models' of the kind now being created in our value chain mapping work (VIVACE sub-task 2.1.1.3) might support decision-making in this area.

6.4 CONCLUSIONS

This chapter has shown how the key components of the business model can be used in the form of a questionnaire or checklist, to classify a business model and to provoke innovative thinking when changing the model or developing a new one. The use of the methodology to propose transitions from one business model to another has also been discussed, and it has been shown how the methodology might be used to identify 'danger zones' where a combination of options that has been seen to fail can be identified, and brought to the planners' attention.

In the next chapter, the questions posed by the business model mapping methodology are worked through, discussing their applicability within the aerospace industry.

7. APPLICABILITY OF THE IDENTIFIED BUSINESS MODEL ELEMENTS IN AN AEROSPACE CONTEXT

Chapter 2 presented a review of some well-known business models, each of which has brought success within a particular industry, market or niche. It was desired to see if anything could be learnt from business models being operated elsewhere that might be applied within an aerospace context to enhance the competitiveness of the industry.

In evaluating the alternative options, it would be a mistake to consider whole business models, however, since each has evolved in response to the unique circumstances of its industry and market. An examination of communications, for example, has yielded several interesting and successful business models, but they could not be applied directly within the aerospace industry. For example, the provision of information services via mobile telephones is not subject to the same logistic constraints as the movement of aerostructures within Europe. Thus, the business models within these two industries *must* differ a great deal.

Chapters 4–6 described a methodology whereby a number of key components could be combined to describe a wide range of business models. In the sections that follow, those components are used to provide a basis for discussion of the business models now operated within the air transport industry, and the associated industries that make air travel possible.

Issues are identified by the number and letter used within the silos presented in Chapters 4 and 5. For example, (1B) denotes that the level of customisation is being considered (Silo 1, issue B).

A range of aerospace industry stakeholder positions are considered, including operators, primes, component manufacturers and Maintenance, Repair and Overhaul (MRO) providers.

7.1 THE BUSINESS MODEL OF THE OPERATOR

The operator has the difficult task of using very expensive assets to provide a service; the transportation of people and cargo in exchange for money from ticket sales (and freight revenues). In the subsections that follow, their business model is explored.

7.1.1 OPERATOR OFFERINGS

The exact nature of the service to be provided is a key component for the operator. The service provided varies from airline to airline, and much has already been written on the subject of business model comparisons between low-cost operators and flag carriers. Examples include Vlaar et al [2005], Lawton and Solomko [2005], Osterwalder [2004], Papatheodorou and Lei [2006], Klophaus [2005] and Keen and Qureshi [2006]. The profits achieved by low-cost airlines at a time when most operators were reporting losses account for much of this interest. Southwest Airlines in the USA are typically credited with having introduced the low-cost model; previously, civil air transport had for decades been dominated by flag carriers, but the new business model was based upon fitting in more seating, with reduced leg-room and what has been referred to as the “single toilet model.” Because food and drink are sold rather than given to all passengers, consumption is lower. This meant there was less use made of the lavatories on the aircraft, so they could be reduced in number, and an extra row of seats fitted in the aircraft. Other technical changes have included getting rid of window blinds and seat pockets, to reduce the workload of the (minimal) cabin crew.

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Being equipped with a greater number of seats and enjoying higher seat occupancy are key features of this business model; cost reduction is another, with pressure on keeping the aircraft flying as frequently as possible. Another element is the passengers' inability to book through-flights on a single ticket; the low-cost airlines do not accept the same level of responsibility for getting the customer to their eventual destination in the event of a delay. Conversely, the reputation of a flag carrier rests upon *not* abandoning passengers to their fate, and some passengers choose to pay a premium in exchange for this guarantee that the operator will work harder to get them to their eventual destination in the event of a problem.

The use of relatively obscure airports allows the low-cost operator to further reduce costs, and this might increase a passenger's journey time, although the in-air component of the journey is unlikely to be different from that of a traditional airline.

Here we can see again the relationship between volume and pricing, as shown in Figure 17 (Section 3.1); single class aircraft typically pack more passengers inside, with each paying an economy fare, whereas business class and particularly first class seating is at a much lower density. Differences in the level of in-flight entertainment, food, etc., also contribute to the price differential.

There are few real *product* components of the operator business model, unless we stretch the definition to include the optional extras (1C) that are sold to passengers in the form of in-flight shopping. For low-cost airlines where food and drinks are sold on-board the aircraft, these can be considered an optional extra. All such extras represent an opportunity to increase the value of the basic transaction that is taking place. Operators cannot really be said to customise (1B) their offering, unless we consider the hire of business jets, and similar 'air taxi' services.

7.1.2 OPERATORS' TARGET MARKET, CUSTOMER, CHANNEL AND PRICING

Operators have different target customers in mind; large groups of holidaymakers, families, business travellers... each has a different set of requirements. Different social groups may be catered for (and competed for) in different ways. There is also the question of the buyer being an individual or an organisation. Business- and first-class travel can be regarded as having a predominantly organisational buyer, since in most cases the passenger does not pay for the flight personally. This influences the marketing tactics chosen and the choice of interface... and the price of a ticket.

Having different target customers in mind, some operators conduct business through agents, and these are essentially their customer (although it may still be possible to buy tickets direct, if only at the airport). Other operators have removed this layer, and deal direct with the passenger, via a website. A relatively recent innovation is the e-ticket, which reduces transactional costs by removing the need to get a ticket to the customer. Thus, the need for a 'distribution channel' disappears. Instead, a reference number performs the same job. It seems likely that the conventional ticket will disappear entirely in the years to come.

The demographics of an airline's passengers exert some influence on the configuration of aircraft, and also upon the prices charged. The correct price for a ticket is a difficult thing to determine, being subject to the actions of rivals, the sensitivity of a given route to seasonal effects, etc. The correct price is the one that maximises profit – which may involve flying with empty seats, rather than discounting to the points where near-full occupancy is achieved.

Further price/demand balancing may be possible. For example, some airlines operating between western Europe and the former Soviet Union charge very different prices,

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depending upon whether the ticket is for a return flight beginning with an east-bound flight, or a west-bound one. In this way, they are able to set their prices at the right level, which is to say *as high as the market will stand*. Prices will also be varied to match capacity and demand as closely as possible.

Unlike many businesses, an airline consists of highly-mobile assets. If a city pair proves to be unprofitable, it is a relatively simple matter to reduce or end operations on that route, and set up something else. It also allows the operator to send the aircraft almost anywhere to undergo servicing; this 'nomadic' nature is one of the strengths of the airline industry.

7.1.3 THE OPERATOR'S RELATIONSHIP WITH THE CUSTOMER

If we take the 'customer' in this context to mean the passenger, it can be seen that operators go to considerable lengths in an effort to persuade them to become regular fliers. The various 'air miles' loyalty schemes are the primary means by which this is achieved, although relatively few passengers have actually spent air miles. (In purely numeric terms, air miles are the world's most abundant 'currency', and they continue to be issued, producing inflation.) Passengers like amassing air miles, however, and will go out of their way to choose a flight that will provide them with more. As such, this scheme is an excellent component of the business model; far better (for the operator) than attempting to achieve customer loyalty via discounting.

7.1.4 THE OPERATOR'S CORE CAPABILITIES, VALUE CONFIGURATION AND PARTNERSHIPS

If we use Wallin's [2000] classification of capabilities as either generative, resource-integration, customer-interaction or transformative, we can see that an operator's core capabilities are generative (5A) where the operator has control of slots at a busy airport, differentiating the offering. There may also be customer-interaction capabilities (5C) where the operator derives competitive advantage from an established mode of communication. Code-sharing and other forms of alliance, made possible by the deregulation of the air transport industry, have allowed some novel resource-integration (5B) capabilities, effectively allowing airlines to operate within partnerships (see Section 4.7). Partnerships may also encompass other industries, such as car hire, onward transport at the destination, hotel accommodation, etc.

The value configuration of an operator needs to be selected with care, not least because most operators have access to similar aircraft, and all must abide by the same regulations. Thus, there is a danger that the only differentiating factor that can be found is price – a format for competition that can be disastrous for every operator. Instead, the operator must look for alternative sources of differentiation. In a world where one passenger aircraft is (more or less) as safe and as fast as another, value needs to be derived from convenience, dependability, and the perceived quality of the offering, as discussed in Section 7.1.1.

For businesses that are focused upon the movement of airmail and airfreight, differentiation may have been achieved through investment in technology that provides a substantial competitive advantage, achieved through improved logistics operations.

7.1.5 THE OPERATOR REVENUE MODEL AND COST STRUCTURE

It is the norm for operators or their agents to sell tickets in advance of a flight. As such, operators receive payment *per unit of service consumed* (8A), although canny operators can study the typical proportion of passengers who fail to present themselves for a given flight. A simple calculation can then be performed, and the flight can be over-sold to a degree, which is a means of increasing revenue.

Most airlines carry freight as well as passengers and their baggage, receiving additional money for this, based upon the tonnage and the distance flown. At times of slack passenger demand it may be possible to transport additional freight, reducing or negating the losses incurred. Low-fare operators that charge for in-flight refreshment, entertainment etc. will have an additional revenue stream from this.

The operator has numerous outgoings, some of them very great indeed. The major expense for operators is in payments for supporting services (9B), of which the most significant is maintenance, repair and overhaul. Staff cost (9D) is also a major expense. The third greatest cost is that of jet fuel, which is addressed as 'consumables' (9A). Since aircraft use fuel at a prodigious rate, the operator is exposed to risk in the form of increases to the price of oil products. The only consolations are that newer aircraft burn through fuel at a relatively lower rate, and that the price increases affect all operators equally, assuming their fleets are similar. (At present, no major operators offset the risk of fuel price increases with hedging). Food and drink served on-board the aircraft are also consumables, of course.

Typically, large aircraft are leased rather than owned outright. Thus, leasing costs (9C) must be addressed within the business model.

7.1.6 OPERATORS AND BUSINESS GROWTH

Operators would tend to consider business growth in terms of increasing the mean aircraft occupancy (or more accurately, the number of tickets sold) and the number of available seat-kilometres flown in a given time period. Available seat-kilometres can be increased through the reasonably simple expedient of increasing the size of aircraft flown on a route, assuming such an aircraft is available. There is a risk of incurring a loss if the large aircraft cannot be utilised sufficiently, however. Thus, 'organic' growth (11A) must be considered with care. Another form of organic growth may involve opening up a new route. Alternatively growth by the acquisition (11D) of a smaller airline is also a possibility.

7.2 THE BUSINESS MODEL OF THE AIRFRAMER

The supply of integrated systems is a prestigious part of the industry, with airframer primes offering brands that are in some cases household names, such as the Boeing 747. In the sections that follow, their business model is discussed.

7.2.1 THE AIRFRAMER'S OFFERINGS

Primes are the integrators of aerospace systems, and as such are the ones able to see the 'bigger picture' when compared to the others businesses within the value chain. They perform the assembly, integration and testing of aircraft, with activities spread over many business units. They manufacture parts that are considered 'core', and assemble these with less strategically important components, sourced using economic criteria. The prime

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is typically the *only* supplier of a particular aerospace system... although in some cases final assembly is performed by a company in the purchaser's nation, as the result of an offsetting deal.

The prime sells not only new goods, but also acts as a point of contact through which spares and certain services are ordered. Very little customisation (1B) is seen (fitting out the cabin, or freighter conversion are typically handled by third parties), although variants of aircraft will be developed over time.

The air transport industry also includes a thriving market for previously-owned systems (1F). Aircraft are built to last, and may be in use for decades, changing ownership a appropriate. Some operators demand the newest systems, or the highest level of availability, and will thus, after a number of years, dispose of their aircraft.

The matching of used aircraft to customers is a business model in itself, this service being performed by a specialist company in many cases, although primes may find themselves handling the disposal of a part-used product, particularly if it was originally sold under a guaranteed price buy-back agreement.

Since aircraft take such a long time to build, it is not normal to buy new ones 'off the shelf'. Instead, it is normal to order them years in advance. Since the size of the market for air travel can fluctuate, it is common for operators to enter into a purchasing deal that includes both a firm order for a certain number of aircraft, and a number of *options* (1H). At a later date, these options may be exercised, sold to a third party, or allowed to lapse, depending upon the condition of the market. With large airframes costing hundreds of millions of dollars, and options typically being a deposit of around 10% of the purchase price, the cash flows at this point are a major component of the airframers' business model. (Sabbagh [1995] identifies circumstances under which an airframer might return the option price to the customer, however.)

7.2.2 AIRFRAMERS' TARGET MARKET AND CUSTOMER

Many businesses need to focus their promotional activities and select their channel to market, based upon whether they typically sell to businesses or individuals (2A). Clearly, almost all large aircraft will sold to corporations, and this determines how and where they are sold. Airframe manufacturers will, at times, have governments as customers, or the armed forces of a government. Again, sales of this kind would take place through a specific channel.

Many of the issues within Silo 2 such as race, culture, gender, etc. are not relevant. The geographical spread (2C) of the market will be significant, however, since a request for proposal from an operator in a new region may raise problems in terms of service provision and the suitability of the aircraft to the routes where it is likely to be operated.

At first glance, the market for aerospace systems appears to fluctuate (10A) a great deal, but a closer analysis reveals that there is a pattern. The practice of ordering aircraft in fleets makes demand appear chaotic, as does the requirement for a certain number of orders to be obtained before volume manufacturing begins; this drive is normally followed by a lull, after which a more normal pattern can be seen for the remainder of the lifecycle. The market is highly sensitive to economic conditions (10C), despite its overall growth trend (10D).

7.2.3 THE AIRFRAMER'S CHANNEL AND RELATIONSHIP WITH THE CUSTOMER

With a relatively small number of customers (governments and airlines) there is no need for independent resellers (3A, 3B) as such, although primes maintain a company

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presence in each market. The Internet presence of the primes (3D) takes the form of a corporate website, although subscribers can also gain access to some information services such as advisory notices and technical bulletins via the 'web.

It is to the customer's advantage to have a standardised fleet, since this simplifies their inventory and staffing requirements, and allows interchangeability of aircraft. This does not mean that an operator will continue buying an obsolete, uneconomic design indefinitely... but there can be a certain amount of inertia on the customer's part (4A).

7.2.4 THE AIRFRAMER'S CORE CAPABILITIES AND VALUE CONFIGURATION

The airframer's core capabilities will be generative (5A), in that they can be expected to keep any manufacturing capability or information that is a source of competitive advantage in-house. Since the virtual or extended enterprise is the norm for modern-day aerospace projects, there must also be considerable resource-integration capabilities (5B); making best use of the core capabilities offered by partners.

It is clear that the both airframer and engine primes have taken Porter's (1985) Value Chain to heart, seeking competitive advantage in every activity. Thus, we see partnerships with businesses such as Unipart and TNT enhancing inbound logistics (6A), and heavy investment aimed at exploiting emerging technologies and materials such as composites. Airframers' promotional activities (6D) operate at multiple levels, both within the industry and in the population at large. Occasionally, a system such as the Concorde or the A380 catches the public's imagination, but these are the exception and most passengers are indifferent to the type of aircraft upon which they travel. Still, the airframers work hard to present a positive public image. By contrast, component suppliers are almost entirely unknown by the public.

7.2.5 AIRFRAMERS AND PARTNERSHIPS

Airframers exist at the apex of a large network of companies, all collaborating to produce an airframe or engine... and quite possibly also working on a rival programme. It is in some cases possible to enter into agreements that prevent the partner from working with a rival (7A) if only for reasons of capacity. In some cases, partners have a good level of autonomy (7C), although others are required to operate on a 'build to print' basis. Partnerships take the form of relationships with the prime, rather than a cluster of companies in an integrated network (7D). Joint ventures (7E) are the norm.

7.2.6 THE AIRFRAMER'S REVENUE, PRICING AND COST MODELS

Airframers typically receive money at the time when new goods are provided (8A), differing considerably from the business model for engine providers, as explored in Section 7.3. Since the aerospace industry is a major employer, and has in the past proved a vital component in the defence of nations, some form of subsidy or state aid (8G) may also form a part of the revenue model.

The civil aerospace industry supplies high-value products to a relatively small pool of customers⁷ – a few hundred airlines and governments – so the products are not sold to a simple list price. Every deal is negotiated, and each outcome is different, depending

⁷ Economists term this limited pool of buyers an 'oligopsony' – which may be compared and contrasted with the forms of supplier monopoly described in Section 2.4

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upon the current state of the order book, the actions of rival businesses, etc. The industry does not extract a premium from early adopters (8K). On the contrary, the first aircraft of a new design have often been found to under-perform slightly, compared to their later siblings. This, and the need to win sufficient orders to begin manufacturing operations mean that the launch customer's aircraft are likely to be discounted more heavily than those that follow. This could be considered a form of market-penetration pricing (8M).

The purchase of materials and components (9A) will be a major expense for an aerospace prime; services (9B) and staff costs (9D) will also be high for such a large organisation. This is to be expected, although that is not to say that efforts should not be made to reduce waste.

Since the airframer may have found it necessary to give guarantees (for example, as to the performance of a system that only existed on paper at the time it was ordered, or asserting that an asset would have a particular resale value at a certain phase of its life), there may also be payments to make to operators (9H, 9J).

7.2.7 AIRFRAMERS AND INNOVATION

Innovation is a vital component of the airframers' business model, in order to compete not only with each other, but also with a rival 'offering' in the form of a very large global pool of parked aircraft that could be returned to service if new aircraft are not a sufficiently attractive alternative. Through product innovation (5E), primes can reduce the operating costs for hard-pressed operators, and open up the possibility of new operator offerings as new systems improve payload ranges, opening up new routes.

Key suppliers are also encouraged to innovate (7C) yielding systems that are cheaper, lighter, or more reliable, etc. Innovative processes (6F) have come out of the aerospace industry, but these are generally evolved with a new product in mind. The safety-critical nature of aerospace systems and components means that changes to manufacturing processes cannot be treated lightly, so the aircraft themselves appear to evolve relatively slowly, compared to the products in industries such as consumer electronics.

7.3 THE BUSINESS MODEL OF THE ENGINE MANUFACTURER

Although aircraft engines are ultimately a subsystem of the aircraft, their manufacturers are still considered to be primes, since they act as original equipment manufacturers, providing a functional product offering. Their business model is different from that of the airframer, as noted in the subsections that follow. The major difference for manufacturers supplying large aero engines is that the supply of each new product will typically involve a loss, this being made up (it is hoped) in the years ahead, when the engine requires spares and services. Under this captive-product pricing approach (as described in Section 2.1) the engines must be provided, despite the losses incurred, in order to acquire market share.

7.3.1 THE ENGINE OEM'S OFFERINGS

The engine prime not only supplies the engines to the airframer, but also acts as the source of spares and information for years to come. Little or no customisation (1B) will be carried out, due to certification requirements; an expensive and lengthy testing process that must be undertaken before a product or variant can be used commercially.

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A few variants may be offered, for reasons such as short field or high altitude takeoff performance, but the offerings cannot really be said to be customised.

The aftermarket is much more important for engine primes than for airframers. Services (1D) represent an opportunity to recoup some of the money lost due to discounting when the engine was first sold. Fortunately, a jet engine has a regular requirement for certain replacement parts, such as turbine blades. These can be considered as 'consumables' (1E), representing an opportunity for the engine manufacturer to break even and ultimately make a profit, years after the sale of the heavily-discounted jet engine. (The need for replacement parts throughout the lifecycle of the airframe is relatively minor.) In addition to being a source for spare parts, the manufacturer will seek to play a part in their engines' MRO, and can provide further services such as training and information support. (MRO businesses are considered in Section 7.5). It is important for the engine manufacturer (and the other companies that perform services or supply 'consumables') that their systems should continue to fly, to and beyond the point at which break-even is achieved.

Under emerging business models, based upon a functional product offering, money may be received in exchange for engine flight hours rather than in return for the supply (and fitting) of replacement parts. As such, the supply of consumables becomes an obligation rather than a source of profit, and we might ultimately expect to see the development of longer-life components and systems, in order to reduce costs.

7.3.2 THE ENGINE OEM'S DISTRIBUTION CHANNEL

The delivery of products and services (3E) is a complex issue, given the size and value of the assets involved. Aircraft are normally a highly mobile asset (compared to other pieces of machinery with a similar price tag) – but while scheduled maintenance can be arranged to suit the convenience of the engine's owner, a mishap may leave an aircraft grounded.

Customers have different requirements; some take delivery of an engine and then perform all MRO activities in-house. Others will want the prime to do the MRO work, but will expect to transport the engines they own to a place where they can be serviced. Others look for this logistics function as a part of the engine OEM's service offering, and some operators simply pay for a 'capability' and do not own engines, using them under leasing-type agreements.

To meet the demands of those who use aero engine, the OEM must configure its operations appropriately. Determining the location of repair depots and supplies of spare parts, etc., could be the subject of a document in itself.

7.3.3 THE ENGINE OEM'S CORE CAPABILITIES

The engine prime's core capabilities do not differ significantly from those of the airframer, being essentially based upon generative (5A) capabilities relating to the manufacture of key components that are a source of competitive advantage. Co-ordinating the activities or an extensive supply network, they also need considerable resource-integration (5B) capabilities.

The transformative capability (5D) of the engine OEM may be a key feature of new business models relating to functional product offerings, since it is here that the offering will be made to match the needs of a diverse population of operators, each of which perceives their support requirements differently.

7.3.4 THE ENGINE OEM'S REVENUE MODEL

In the case of the engine OEM, money received at the time when new goods are supplied (8A) can be less than the cost to make those goods. Such revenue model demands a long view, having a payback time of seven years or more. Effectively, under the conditions now pertaining within the market, the manufacturer of large aero engines must employ a cross-subsidy (1B), selling the product at less than cost, and recouping this loss over the life of the engine. New business models where money is paid per flight hour yield revenue over time (8B).

Primes may also receive financial contributions from partners (typically tier 1 suppliers) who are required to buy a share of the collaborative venture (8H). Such payments are referred to as 'certification charges' although they need not actually match the true cost of certification.

7.3.5 ENGINE OEMS AND RISK

The prime takes on a great deal of risk when embarking upon a new engine programme, although some of this can be offset if they can persuade suppliers to join a risk and revenue sharing partnership (7F).

Where the engine is sold at a loss, in the hope of obtaining revenue in the aftermarket, there are risks that MRO activities may be performed by third parties, and that PMA (parts manufacture authority) components may be fitted. These are licensed replacement parts from a rival manufacturer, developed during the service life of the engine. Rival businesses do not need to develop whole engines if they can simply offer a viable substitute for a service part that is required in quantity. The high cost of an engine development programme is much less of a barrier to market entry when considering a single component.

Patenting (5F) of products and processes is the norm, but a patent will expire within the life of a typical aerospace system⁸. Thus, whether through substitution or outright copying, there is a very real danger for primes that they do not remain the sole source for spare parts. The result can be an erosion of the prime's share of the aftermarket value, delaying the point when income from spares and services pay off the loss that was incurred when an engine was first sold.

Under schemes where the engine remains the property of the prime and the operator pays for the use of the engine on a per-flight-hour basis, the prime is taking on a considerable amount of risk (12A), since engines have been made and installed which may sit idle in the event of a market slump, or the operator getting into difficulties.

Stock-holding risks (1K) are generally passed back to suppliers, in the name of 'lean manufacturing'.

7.3.6 ENGINE OEMS AND BUSINESS GROWTH

Both engine and airframer primes tend to grow organically (11A), and slowly, not least because it takes time to recruit and/or train staff for highly technical jobs – this also makes downsizing a difficult process, since the loss of these skilled workers can delay a

⁸ There remains the possibility of designing systems to have features that make it harder for customers to fit substitutes to the OEM's service parts, or maintaining a steady programme of upgrades to stay one step ahead of the PMA-based rival. In such ways, barriers to market entry can be erected.

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recovery. Growth by acquisition (11D) has also been seen, gaining access to new technologies and markets.

In some cases, mature products are built under license (11C), by partner companies that more typically occupy a position in tier one of the supply network.

7.4 THE BUSINESS MODEL OF THE COMPONENT MANUFACTURER

Component and subsystem manufacturers play an increasingly important role in the aerospace extended enterprise, as systems become more complex. They bring specialist knowledge to bear, and take on some of the financial burden of developing next-generation systems. The days when a single company could develop a world-beating aircraft or engine appear to have gone for good, despite lingering problems in the integration of activities across multiple businesses in different locations.

Now, as businesses specialise in particular components, they are able to invest in equipment and R&D programmes that yield weight savings, greater fuel efficiency etc. Section 4.7 warned that we should not assume that components are somehow trivial, simply because they are ordered as discrete units, without examining *their* supply chain... and their business model, which may involve industries other than aerospace.

7.4.1 COMPONENT MANUFACTURERS' OFFERINGS, AND TARGET MARKET

Component manufacturers' offerings vary from a simple build-to-print operation, to a partner with world-class knowledge and the authority to influence product and/or process design.

Aerospace component manufacturers operate in an environment of a few, relatively large customers. In terms of gathering market intelligence and managing relationships this may be seen as desirable, but it means that these few customers are much more important. This may be reflected in the adoption of working practices and IT standards, etc., at the prime's request.

Some component manufacturers supply other industries in addition to aerospace. This can be useful in allowing development costs to be amortised over a large production run, reducing the unit cost of components... but most other industries have less stringent certification requirements, and tend to change components or processes more readily as a result. Aerospace component manufacturers must be in the industry for the 'long haul' – supplying service parts for systems that will be in service for decades to come – and this may cause their customers to select those with a proven track record.

7.4.2 THE COMPONENT MANUFACTURER'S COMMUNICATION AND DISTRIBUTION CHANNELS, AND RELATIONSHIPS

Components are supplied via the prime, with that business handling communication with the end customer, etc. Component manufacturers do not normally encounter the customer directly. Even aftermarket components are sold through the prime. This means that 'the customer' is a much less nebulous concept for the component manufacturer than it is for the original equipment manufacturer. All parts will be shipped to the same location(s) under the same terms.

Given the life of an aerospace programme, the relationship with those few customers is likely to be very long indeed, and it should be expected to change and improve over time.

7.4.3 THE COMPONENT MANUFACTURER'S CORE CAPABILITIES AND VALUE CONFIGURATION

While the prime 'farms out' manufacturing that is not considered to involve a core capability, this does not mean that those operations will not be core to the component manufacturer. The advantage may be an economic one, arrived at through specialisation or economies of scale, where the prime's advantages are more likely to be purely technical.

The component manufacturer may be able to bring a substantial amount of expertise to bear, in the cost-effective manufacture of a particular component or system to the required high quality. Their activities may also include development and testing for new components.

7.4.4 COMPONENT MANUFACTURERS AND PARTNERSHIPS

In addition to the prime, partnerships are also possible at and between various tiers in the supply chain. For example, the supplier of a major subsystem may have its own suppliers with whom it enters into agreements or alliances of one kind or another. This remains possible as we move back through the supply chain, until the lower levels where the complexity of the component or raw material is reduced to the point where it is effectively commoditised.

7.4.5 THE COMPONENT MANUFACTURER REVENUE AND PRICING MODEL

The component manufacturer's revenue is very much dependent upon the role they have accepted within a programme. The timing of payments, for example, will be very different if the manufacturer is a full-sharing partner on an engine programme where customers pay on a per-flight-hour basis, than if they simply sell components (via the prime) in order to receive money. Either form is possible, although manufacturers of relatively simple, commoditised components are unlikely to become full-sharing partners unless primes' strategies change.

It should be noted that some components are 'lifed', and thus their suppliers effectively enjoy a captive-product business model (Section 2.1) as a result; others make structures that should last the whole life of the engine, barring misfortune, and must price their offerings accordingly, since there will be relatively little income from mature systems.

7.4.6 THE COMPONENT MANUFACTURER'S BUSINESS COST STRUCTURE

As with the revenue model, the manufacturer's costs will depend upon the nature of the agreement entered into. Certification charges or payments to join risk and revenue sharing partnerships (8H) may be considerable, for example.

While the cost of making each component will be more-or-less determined by its design, its cost to the business may be more palatable under one contract than another. A component that must be replaced after a few thousand hours is a lucrative opportunity when supplied under a 'time and material' deal, but it represents a steady drain on profits when it is being paid for on a per-flight-hour basis.

7.4.7 COMPONENT MANUFACTURERS AND BUSINESS GROWTH

Assuming that adequate capacity exists, the component manufacturer achieves growth by winning business; getting components accepted for use on new engines. This may be achieved through technical excellence (in turn, a result of investment in design or production processes), or as a result of buying a share in a risk and revenue sharing partnership (8H) as noted earlier.

Another means of growing the business is to offer PMA parts on existing engines, although the component supplier is simultaneously at risk of finding its own parts being substituted. Protection of 'uniqueness' becomes harder as the 'system' in question gets smaller and simpler. Where there are substantial barriers to enter the three-shaft gas turbine market, it is *relatively* simple to develop and market a sub-system such as a fuel pump. The financial barriers are lower, and the time required to develop a new system is likely to be shorter. Thus, component manufacturers appear to be more exposed to the threat of substitution. Patents will still be sought, where appropriate, of course.

7.5 THE BUSINESS MODEL OF THE MAINTENANCE, REPAIR AND OVERHAUL (MRO) BUSINESS

Maintenance, Repair and Overhaul (MRO) activities provide a service, basically keeping fleets of aircraft flying. Many 'players' within the industry offer MRO services, including primes and operators themselves, but some businesses are focused purely upon maintenance work.

7.5.1 THE MRO'S OFFERINGS

The MRO's offering is primarily a service (1D), although used parts (1G) can also be sourced and fitted. The MRO's offering may also have a logistic component, such as transporting the items that are to be serviced, travelling to them in order to perform servicing, or holding stocks of spares etc. at various locations.

Possibilities for customisation (1B) present themselves, in terms of the level of servicability that is guaranteed, and the way these support activities are paid for. The specific MRO operations that must be carried out are predetermined, based upon the exact airframe and engine in question, but operators have differing requirements and if MRO providers are to win business they will need to adapt their offerings to suit the attitudes of their customers.

7.5.2 THE MRO'S TARGET MARKET AND DISTRIBUTION CHANNEL

Not all operators are potential customers for MRO businesses, as some prefer to retain an in-house capability of this kind. There is no hard-and-fast rule to explain the pattern of in-house MRO capability; Southwest Airlines, for example, would typically be regarded as a low-cost airline, yet it retains a full in-house MRO capability.

The distribution channel will be an issue for any MRO business, in terms of the place(s) where the service can be performed (3E), influencing their choice of location for the business.

7.5.3 THE MRO'S CORE CAPABILITIES AND VALUE CONFIGURATION

There is a danger, for the MRO business, that they have little to differentiate themselves from their rivals. Given that the maintenance procedures they are to carry out are detailed exactly within technical manuals, opportunities to do things *in a different way* are likely to be very limited.

A key component of the MRO's capability is likely to be its staff, who will need to be highly-skilled and well-motivated. With sufficient investment in people and infrastructure, the MRO may be able to build a reputation for itself in keeping operators' aircraft flying more of the time, and thus generating revenue. However, any such capability is likely to be achieved through additional capacity, and the cost of this must be balanced against the value of increased responsiveness (6E).

Exactly what is offered by the various forms of MRO business within the industry (primes, operators' in-house capability and third parties) is of critical importance at this time, since there is a transition underway from the conventional 'time and material' approach to the aftermarket, to one focused upon a functional product offering where the prime contracts to supply capability, performing any supporting services as and when they may be required. Persuading the operators that the new offering is superior may be a struggle in some cases, however; particularly in the case of operators that have invested in an in-house MRO capability.

7.6 CONCLUSIONS

This chapter has studied the business models of a number of air transport industry stakeholders, using the mapping methodology evolved for this deliverable. We have seen how interdependent, complementary businesses can nonetheless operate markedly different business models; even several business models at once, where some products and services are provided on a 'time and material' basis, while others are offered as part of a 'functional product' offering.

Only the directors of a company can select the most appropriate business model, based upon an in-depth understanding of the circumstances facing a company, and its strengths and weaknesses. Furthermore, differentiation demands that businesses seek their own, unique solution. Thus, this document cannot suggest an ideal configuration for an aerospace industry business model. The key components that have been identified *do* provide a structure for that evaluation process, however – and may prompt decision-makers to 'think outside the box', as a result being presented with an option or issue that originated in some other industry.

8. DISCUSSION

During the work conducted, the 'business model' – a comparative newcomer in management terminology – has been seen to be less a new field of management science, and more a single 'umbrella' term for a collection of acknowledged good practices such as customer retention, focus on core capabilities and the elimination of waste. Most such practices have been identified as specific goals in recent decades, but before they were components of management theory they would still have been recognised and pursued as being 'common sense'. It seems to be the way of things, that many practices are already well understood before we have a name for them, and business model thinking is one more such example.

The business model itself came out of the 'Dot Com' era of rapid growth in the 1990's, following the mainstream adoption of the Internet as a medium for commercial activity. Two reasons for its rise at this time can be identified:

- That the adoption of the Internet caused (or forced) a number of businesses to change the way they did business in a very short space of time – and exposed them to new sources of competition
- That having an innovative business model was seen as a prerequisite if one was to attract investors during this period

That there was a major stock market 'readjustment' after many 'Dot Com' businesses failed to deliver should not be taken to mean that the concept of the business model was itself flawed; nor was the Internet itself a failure – despite the fact that some businesses that were set up to exploit it failed⁹.

The business model, then, contains little that cannot be gleaned from an investigation of mission statements, partnership agreements, company culture, working practices, etc. Some interpretations place the business model entirely within the realm of corporate strategy.

What is new, however, is the idea of expressing within a single document a business' strategic purpose, sources of competitive advantage, route to market, intended participation in networks, attitude to risk, and so on. Previously, these influences would have been considered in isolation, and might have gone entirely unrecorded. The business model requires that assumptions and intentions are stated; this provides an opportunity to identify faulty assumptions, or missed opportunities. It also provides a form of knowledge capture that may have considerable utility when further changes are proposed in the future.

⁹ The Internet itself can be considered as a communication channel that provides access to markets that might otherwise be too remote. Since it is dependent upon computers as the means of communication, it lends itself well to automated transactions at low cost, and in some cases mass customisation. The Internet also introduces new threats, in that it levels the 'playing field', allowing tiny start-ups to challenge incumbents of long standing, who may not have grasped the differences required by the medium. Some businesses work very differently over the Internet, such as news services. For example, Lam and Harrison-Walker [2003] discusses how 'generic' content of the kind that had sold well on newsstands for decades was unpopular when delivered via the 'web. Another danger brought about by the Internet lowering transactional costs to almost zero is the possibility that a substitute will be available free; clearly, there is a good deal of thinking still to be done about internet business models.

8.1 ALTERNATIVE BUSINESS MODELS AND THE AEROSPACE INDUSTRY

The description of work [DOW 3.0, 2005] required that this document should contain a review of business models used commercially in the provision of a range of products and services, using examples from a broad range of sectors and discussing these in terms of the alternative options these approaches might offer within the value chain for aerospace components, systems and supporting services throughout the product lifecycle.

For this reason, Chapter 2 detailed a number of business models that have been operated successfully in industries such as communications, entertainment, auctioning, mining, etc. It would have been almost impossible to list a 'full' range of business models, not least because businesses can all operate their own variants, with emphasis chosen to match their unique circumstances in the market, company culture, history and so on. The selected business models that were reviewed *did* reveal a range of key details that served to identify how they achieved a unique selling proposition or other competitive advantage. These key details could then be separated out, to produce a 'generic' chart against which any of the business models in Chapter 2 could be plotted, as well as a number of other variants. This chart formed the basis of the methodology described in Chapter 6.

It was then possible to study the air transport industry, and the businesses that make air travel possible, to see where they might have those same faulty assumptions, or missed opportunities. The study revealed that the aerospace industry already borrows from other industries, where relevant, adapting and adopting ideas that improve the overall 'health' of the business, whether in terms of cost reduction methodologies, or ways to increase the value of a customer transaction.

Using the business model mapping methodology described in Chapter 6, it becomes possible to examine a company's operations in a formalised way. One question that is often addressed in recent business model literature (Section 7.1.1 provides references) concerns the mysteries surrounding low-cost airlines. How can an airline known to charge 99p or less for a flight remain in business, while a flag carrier charging more than a hundred times as much for the same trip reports a loss? The answer is that profitability can only be achieved through a detailed understanding of the own business model, encompassing strategic alliances (e.g. tie-ins with car hire companies), optional products (in-flight shopping, gambling, communications) and more.

No glaring missed opportunities have been identified in the aerospace sector as a result of this work. Operators, primes and manufacturers alike have clearly studied their circumstances with care, and sought to exploit all the additional opportunities they have been able to identify. (Ryanair's sales of scratchcards to passengers show just how far they have pursued the concept of the optional extra.)

This is a time of transition for the industry, however, and new components to the business model are already emerging. (Virgin, for example, might one day be able to add "we take customers on joy-rides to the edge of space", as a component of their business model.) No doubt many more business model components will appear in the years ahead; some of them more useful than others.

It is in the identification of 'danger zones' (see Section 6.3) that the business model mapping methodology might be most immediately of use within the industry, since this is where a lack of 'joined-up thinking' could introduce real threats. Consider, for example, the move from offering aero engines on the conventional 'time and material' basis, to one where the engine is paid for on a per-flight-hour basis. The aero engine OEM (and its risk and revenue sharing partners) would then have an incentive to develop systems and components that last a long time, since they are no longer receiving money each time a part is consumed, but rather for the time that the whole engine remains

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serviceable. This is fine when the engine is operated on a pay-per-flight-hours basis, but if the OEM should ever be persuaded to sell the hypothetical 'long life' engine outright, the result could well be a disaster. Because the new engine does not consume spares fast enough pay back the cost of its manufacture within its life, it must not be made available on the same basis as the more conventional offerings. Comparisons are likely to be made, however, and the OEM would come under pressure to release the new offering on unfavourable terms that 'break' the business model. Any such danger zones must be understood, identified clearly during the development business model, and avoided.

The next chapter draws final conclusions, and suggests areas for further work in the next iteration of the VIVACE project.

9. CONCLUSIONS

Beginning with definitions of the term, this document moved on to a review a diverse selection of business models that have proved successful (or otherwise) in sectors other than the aerospace industry. These were subjected to analysis via the ontology provided by Osterwalder [2004], earlier identified in Olofsson and Farr [2006] as the most promising structured approach to business model mapping.

Following this analysis, a new methodology for the analysis of business models was derived. This was presented in Chapters 4 and 5, breaking the business model (and in Chapter 5, its environment) down into a set of key components, each quite simple when considered in isolation, but allowing a near-infinite series of permutations when used in combination. In Chapter 7, the range of options available to the aerospace industry (primes, component manufacturers, MRO businesses and carriers) was discussed within this framework.

The new business model mapping methodology is presented as a tool, reproduced within Microsoft Excel to make it available to a broad range of users, although a brief experiment into its implementation within a new software tool was also conducted. The new methodology uses a paradigm similar to that developed for VIBES (the VIVACE Interactive Business Environment Simulator) [Farr et al, 2005], being based upon a combination of measurements on relatively simple, linear scales. The methodology is not intended to be industry-specific, but to capture the influences acting upon any kind of commercial venture. In this way, it allows emerging concepts from one industry to be flagged up as potential opportunities within another.

9.1 SUGGESTIONS FOR FURTHER WORK

It may now be useful to take the business model mapping methodology that has been developed, and attempt to populate a series of business model diagrams for individual businesses within the aerospace industry, and perhaps elsewhere. The methodology provides a powerful way to provoke original thinking, which is exactly what is needed in order to differentiate a company from its competitors.

Task 2.1.2 includes a VAC-led M36 deliverable (D2.1.2_4) that addresses the evaluation of a future business model. It is hoped that the methodology that has been established during this phase will prove useful in that work. No doubt it will ultimately feature more than the 85 elements in the present-day methodology, since it is the nature of businesses to seek new opportunities and new ways in which to differentiate themselves. Thus, any further use of the mapping methodology could well lead to its expansion, but the framework that exists should serve to ensure that any such expansion is logical and relatively simple to achieve.

In addition to the proposed investigation of partner companies' activities using the business model mapping methodology developed, its parametric nature means it would lend itself relatively well to representation within software. Ultimately, this might yield a 'business model simulation tool' that allows the strengths and weaknesses of a strategy to be revealed in the laboratory rather than the marketplace. Any such work would probably benefit from close integration with the work on cash flows within the value chain, now being simulated within Task 2.1.1.

10. REFERENCES

- Borden, N.H. (1964) The Concept of the marketing Mix, *Journal of Advertising Research*, Vol. 4, pp. 2–7.
- Bovik, C. (2006) Seven Day Proposal Updated Process and System Requirements, D2.1.3_2, VIVACE document reference VIVACE 2.1/VAC/T/06002.1.0
- Bramham, J., Er, M., Farr, R., MacCarthy, B. and Dannemark, O-J. (2004) Preliminary Description of the Future Aerospace Business Environment. VIVACE project reference: 2.1/UNOTT/T/04002-0.1
- Brandenburger, A.M. and Nalebuff, B.J. (1995) The Right Game: Use Game Theory to Shape Strategy, *Harvard Business Review*, July–August.
- Buxton, D., Farr, R. and MacCarthy, B. (2005) State-of-the-Art Review of Value Chain Mapping Techniques Relevant to the Aerospace Industry, M24 deliverable D2.1.1_4, VIVACE document reference VIVACE 2.1/UNOTT/T/05002-1.0
- Chambers Dictionary, 1998, Chambers Harrap Publishers Ltd., (ISBN 0-550-14000-X)
- DoW, Description of Work revision 3.0 (2005) VIVACE Annex 1, issue date December 20th 2005
- Farr, R., MacCarthy, B. and Dannemark, O-J. (2005) Modelling Aerospace Business Environments with VIBES: The VIVACE Interactive Business Environment Simulator, D2.1.1_2, VIVACE document reference VIVACE 2.1/UNOTT/T/05001-1.0
- Farr, R., Bramham, J., Er, M., MacCarthy, B. (2005), Scenario Planning in the Aerospace Business Environment – the VIBES Approach, 11th International Conference on Concurrent Enterprising (ICE), June 20th – 22nd, Munich, Germany
- Farr, R. Buxton, D., MacCarthy, B. and Bovik, C. [2006] Streamlining the Formation of Virtual Enterprises in the Aerospace Industry, 12th International Conference on Concurrent Enterprising (ICE), June 26th – 28th, Milan, Italy
- Forrester, J.W. (1961) *Industrial Dynamics*, MIT Press, Cambridge, MA
- Grant, R.M. (1995) *Contemporary Strategy Analysis*, Blackwell Publishers, Cambridge, MA.
- Hegert, M. and Morris, D. (1989) Accounting Data for Value Chain Analysis, *Strategic Management Journal*, Vol. 10, pp 175–188
- HMSO (2005): *Directory Enquiries - From 192 to 118*, report by the comptroller and auditor general, 14th March 2005, National Audit Office, London
- Kamm, L.J. (1996) *Understanding Electromechanical Engineering: an Introduction to Mechatronics*, IEEE Press, New York
- Keen, P. and Qureshi, S. (2006) Organisational Transformation through Business Models: a Framework for Business Model Design, *Proceedings of the 39th Hawaii International Conference on System Sciences*, 2006
- Keyworth, T. and Yarrow, G. (2006) Reverse eAuctions and NHS Procurement, Regulatory Policy Institute report republished by ABHI, London (<http://www.abhi.org.uk/healthcareindustry/ukmarket/eAuctions.aspx>)

- Klophaus, R. (2005) Frequent flyer programs for European low-cost airlines: prospects, risks and implementation guidelines, *Journal of Air Transport Management*, No. 11, pp 348–353
- Kotler, P. (1997) *Marketing Management: analysis, planning, implementation and control*, 9th Edition, Prentice Hall International, Inc., New Jersey
- Kotler, P., Wong, V., Saunders, J. and Armstrong, G. (2005) *Principles of Marketing*, 4th European Edition, Prentice Hall, Harlow
- Kumazawa, T. and Kobayashi, H. (2006) A Simulation System to Support the Establishment of Circulated Business, *Advanced Engineering Informatics*, Vol. 20, pp. 127–136.
- Lam, L.W. and Harrison-Walker, L.J. (2003) Toward and Objective-Based Typology of eBusiness Models, *Business Horizons*, November–December, pp. 17–26
- Lawton, T.C. and Solomko, S. (2005) When being the lowest cost is not enough: Building a successful low-fare airline business model in Asia, *Journal of Air Transport Management*, No. 11, pp 335–362
- Lilien, G.L., Kotler P. and Moorthy, S. (1992) *Marketing Models* HF5415.13.L4
- McClure (2004) Getting to Know Business Models, www.investopedia.com, March 31st 2004
- O'Donnell, E. (2005) Enterprise risk management: A systems-thinking framework for the event identification phase. *International Journal of accounting information systems*, Vol. 6 pp 177–195
- Olofsson, L. and Farr, R. (2006) *Business Models: Tools and Definitions*, M27 deliverable D2.1.2_1, VIVACE document reference VIVACE 2.1/VAC/T/06001-1.0
- Osterwalder, A. (2004) *The Business Model Ontology, A Propositional in a design science approach* (PhD Thesis, Université de Lausanne Ecole des Hautes Etudes Commerciales) Available from <http://www.hec.unil.ch/aosterwa/PhD/>
- Papatheodorou, A. and Lei, Z. (2006) Leisure travel in Europe and airline business models: A study of regional airports in Great Britain, *Journal of Air Transport Management*, No. 12, pp 47–52.
- Pile, S. (1979) *The Book of Heroic Failures*, Futura, London (ISBN 0708819087)
- Porter, M.E. (1985) *Competitive Advantage*, Free Press, New York
- Reicheld, F.F. and Sasser (1990) Zero Defects: Quality Comes to Service, *Harvard Business Review*, September–October, pp. 105–111
- Russel, T. (2001) *Business Value Analysis: Coping with unruly uncertainty. Strategy and leadership* Vol. 29 No. 2 pp 16–23
- Sabbagh, C. (1995) *21st Century Jet: The Making of the Boeing 777*, Macmillan, London
- Scott, D., Buxton, D. and Hedenryd, E. (2006) *Business Models in the Aero Industry*, D2.1.2_2, VIVACE document reference VIVACE 2.1/RR/T/06001-1.0
- Stone, M., Woodcock, N. and Wilson, M. (1996) Managing the Change from Marketing Planning to Customer Relationship Management, *Long Range Planning*, Vol. 29, No. 5, pp 675 – 683
- Thornton, J. and Marche, S. (2003) Sorting through the dot bomb rubble: how did high-profile e-tailers fail?, *International Journal of Information Management*, Vol. 23, pp 121–138
- Tsuda, T., Terano, T., Kuno, Y., Shirai, H. and Suzuki, H. (2002) A Compiler for Business Simulations: Toward Business Model Development by Yourselves, *Information Sciences*, Vol. 143., pp. 99–114

Vlaar, P., deVries, P. and Willenbrog, M. (2005) Why Incumbents Struggle to Extract Value from New Strategic Options: Case of the European Airline Industry, *European Management Journal*, Vol. 23, No. 2, pp 154–169.

Voelpel, S. Leibold, M. Tekie, E. Von Krogh, G. (2005) Escaping the red Queen Effect in Competitive strategy: Sense-testing Business models. *European Management Journal*, Vol. 23, No. 1, pp. 37–49

Wallin, J. (2000) Operationalizing Competencies, *Proceedings of the International Conference on Competence-Based Management*, Helsinki, Finland