

# Chapter 18

## Pricing

### 18.1 Product and Pricing Policy

As is the case for traditional goods, information providers must consider which product they want to offer to their customers at what price. Product policy, i.e. the presentation of the service offer (Meffert, 2005, 327), and pricing policy (Diller, 2008, 21 et seq.) are two of the central setscrews in a company's marketing mix. The close connection of these two entrepreneurial action parameters becomes clear in the economical price definition (Diller, 2008, 31), in which the price is represented as a quotient of remuneration and scope of services. This exemplifies on the one hand that the customer always considers the relation between the remuneration for and service of an offer. In this sense, prices can only be too high when the corresponding service is inadequate. On the other hand, the quotient makes the diametrically opposed interests of suppliers and customer very clear. Suppliers are interested in a particularly high price quotient, customers in a particularly low one.

Here, too, the context of our considerations will allow us only the mention of product and pricing policy's particularities as relevant for information providers. Comprehensive analyses of marketing in general can be found in Meffert (2005) or, for pricing policy specifically, Diller (2008), among others. We on the other hand wish to exemplify how information providers can design their products and prices with regard to high fixed and low variable costs, information asymmetries, uncontrollable propagation tendencies and network effects. These economical characteristics pose particular challenges to product design and pricing, but at the same time, digital goods lead to much more variable forms of product and price differentiation than traditional goods.

The focus of this section is the pricing of information offers. Information providers generally have different income streams available to them (Wirtz, 2006, 70 et seq.). Next to the recipient or user markets, they often service advertising and licensing markets as well. Thus search engines or online portals integrate ads into their online presence, for example. Book publishers in possession of the exploitation rights to a bestseller give out licenses for softcover editions. Film or music producers sell regional or outlet-specific exploitation rights. Here, too, prices must

be set. The mere sale of rights does not represent an information good and thus will not play a role in the following. Advertisements, on the other hand, are generally not requested for their own sake but are offered to the user as a forced bundle, i.e. as a combination of desired and more or less undesired information goods. Advertisements are thus regarded as a particular form of complement. If we orient ourselves on the definition of information goods anything that is or can be digitized and for which there is willingness to pay, we will be able to clearly mark when advertisements are an information good and not an unsolicited nuisance (information bad), which is when it has value for the user and he or she would principally be ready to pay. For example, there are entry charges for the cinematic presentation of advertising films that have received critical recognition or awards.

Product policy is only considered when it is in close relation to pricing policy, i.e. in price differentiation. For further aspects of product design, read the sections on Complement Management, Compatibility, Copyright Management and Signaling.

Pricing policy is one of the *most potent (kind of) marketing weapons* in the marketing mix. This potency comes as a result from the strong *effects* (“*Price Response*”) it can be used to achieve on the market. Customers as well as competitors often react drastically to changes in price. Market share shifts in the double digits are not uncommon, particularly as prices are easily communicable and arouse the interest of many customers who view budget buys as the central purpose of their economic behavior (Diller, 2008, 21).

Prices for information goods can be formed in several ways. For digital offers, there are new pricing vistas vis-à-vis traditional goods. Here Figure 18.1 provides an overview. **Fixed-price offers** are generally accepted. In this static procedure, the price is dictated by one side of the market, usually the provider. An innovation in static procedures is Reverse Pricing, where the customer dictates the price. Here it must be distinguished between such procedures where the provider sets a minimum price that must not be lowered (Name your own price–NYOP) and procedures that bank on completely unregulated pricing by the customer (Pay what you want–PWYW).

Such a demand-oriented pricing with a (covert) set minimum price (NYOP) is practiced by priceline.com, for example. The demander tells Priceline the maximum price he is willing to pay for a particular service (plane ticket, hotel, rental car etc.), whereupon Priceline searches for the corresponding offer (Kwasniewski, 2003; Bernhardt et al., 2005). An analogous offer can lately be found on eBay, with its “Best Offer” function. Here the buyer may make up to three price offers below the publicly set minimum price. If one of his offers is above the minimum determined by the seller, which is invisible to buyers, he will win the item.

A totally new variant of determining prices from the demanders’ side is the (open) Pay What You Want. Here the provider foregoes a minimum price and ac-

cepts the customer's price offer without reservation (Kim et al., 2009). Such offers are more and more frequent as of late, e.g. from music groups such as Radiohead and Nine Inch Nails, who make their music available for download for a certain period of time, merely providing the option of a voluntary payment.

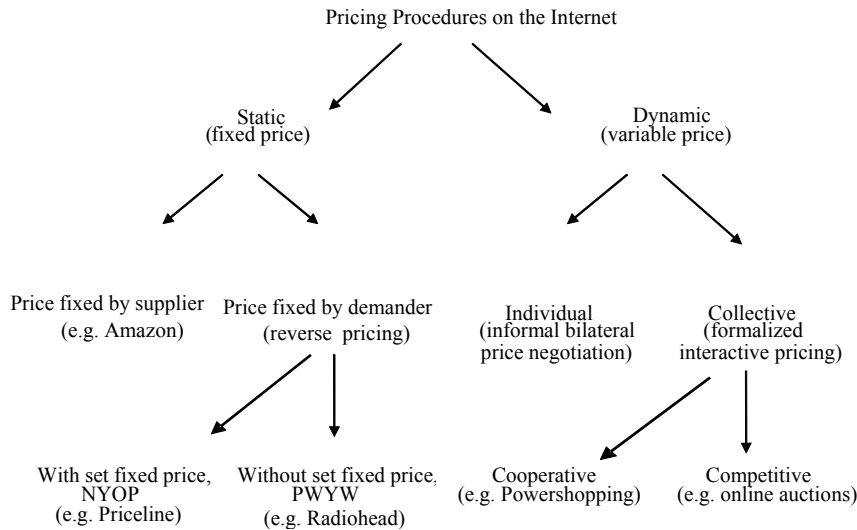


Figure 18.1: Alternative Pricing Procedures. Source: Following Fritz, 2004, 203 with reference to Möllenberg, 2003, 36.

Then there are the dynamic procedures of pricing (Fritz, 2004, 202 et seq.). Here the price is only determined over the course of the transaction between supplier and demander. Individual price negotiations have been in use for a long time as so-called invitations to tender, particularly in public administration (Wirtz, 2001, 459). With the advent of the internet and electronic payment services, e-marketplaces have established themselves for business-to-business transactions over the past few years. However, the hopes that had originally been nurtured concerning the great economic importance of these trade platforms were disappointed. Covis-int, for instance, an electronic marketplace of the automotive industry launched at great expense, was sold by its founding company a few years after its inception due to a lack of success (Zillich, 2004). Individual business-to-consumer price negotiations are only gradually coming up.

Collective procedures, and specifically competitive ones, such as online auctions, are used far more often. We will address this issue below, under Price Dif-

ferentiation. Cooperative pricing by buying communities bundles the demanders' buying power in order to create bulk discounts. A product becomes cheaper as more interested parties make an offer online. This pricing variant has not established itself, though, as a lack of customer acceptance and legal problems (Zeix, 2006) have led to even the leading representatives of power shopping, such as [powershopping.de](http://powershopping.de) or [letsbuyit.com](http://letsbuyit.com), leaving the market.

Due to their fixed-cost-intensive cost structure, it makes sense for information providers to aim for prices that create large quantities of sales and thus the desired unit cost reduction. If the provider then wants to let the network effects related to information goods come into play, it is recommended to concentrate, in pricing, on a quick distribution. Both these aspects point in the same direction: prices must not be set in a cost-oriented, but in a market-oriented way (Fritz, 2004, 204). This can be achieved with a view to competition, which is heavily favored by the internet's price transparency, or with a view to the customer. Here either the customer's willingness to pay must be determined via (online) market research or the customers must be given the option—at least in part—to reveal what their ideal price would be. Here the instrument of price differentiation offers an entire arsenal of possibilities.

## 18.2 Forms of Price Differentiation

From a current perspective, we can already say that it will be an entirely new and central challenge, even for information providers, to not so much set one's preferred price than ideally determine the pricing mechanisms to be used (Skiera et al., 2005, 292). Here we are on the topic of price differentiation. Its basic idea is to sell fundamentally the same product to different customers at different prices (cf. e.g. Diller, 2008, 227 et seq.). From a company's perspective, this would ideally mean that consumer surplus could be skimmed off in its entirety. Of course, price differentiation only makes sense if there are actual different use values and thus different willingnesses to pay for the offered goods on the customers' side. This is well established in everyday life, but does it hold for information offers? For internet users, it is apparent that priced information offers are still being largely rejected. Heil (1999, 246) recognizes, focusing on a survey of internet users by the GVU Center, that more than 40% reject priced offers because there is, in their opinion, still a sufficient amount of free alternatives available. The results are similar for music-sharing platforms. Walsh et al. (2002, 216) show that a good two thirds of the surveyed filesharing site users are not willing to pay for services hitherto free of charge. It must thus be assumed that for information offers, there is a larger fraction of users unwilling to pay. The reverse conclusion, however, might be that there is definitely willingness to pay on information markets. Also it can be observed that willingness to pay for digital goods is tendentially increasing, with growth rates particularly high in Germany (Stahl et al., 2004, 13, 31). Broadband users in particular have a high acceptance of the purchase of digital products

(Theysohn et al., 2005, 174). Thus it makes entrepreneurial sense to siphon off the existing willingnesses to pay via differentiated pricing (Fritz, 2004, 207).

There are three basic forms of price differentiation, which go back to Arthur Cecil Pigou (1929). They are distinguished by the party that sets the price and how the buyer groups are separated.

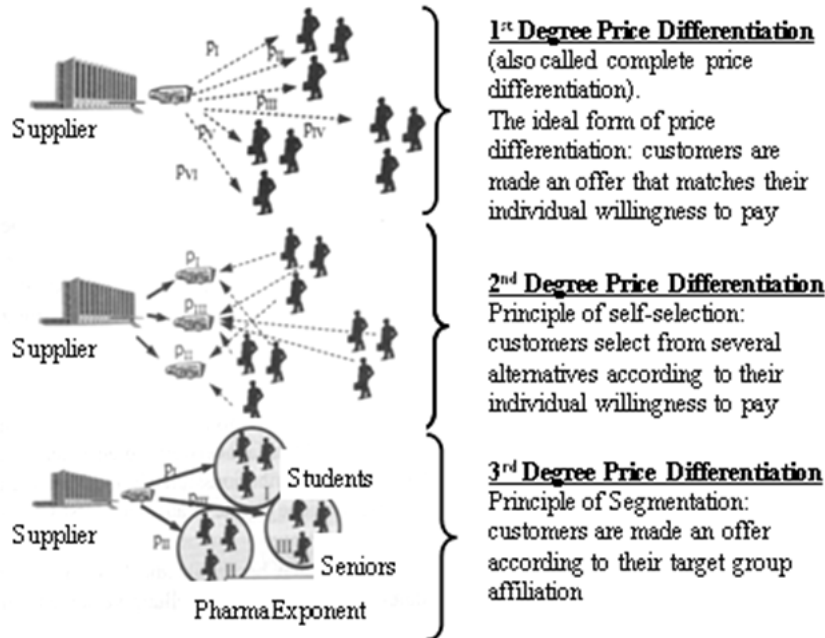


Figure 18.2: Basic Forms of Price Differentiation. Source: Following Schumann & Hess, 2006, 70-71.

1<sup>st</sup> Degree Price Differentiation represents the ideal form, where the provider tries to get every customer to pay the maximum price he is willing to pay. Before the advent of electronic trade, this form of price differentiation had been regarded as not very practicable. It could be implemented in individual price negotiations (Diller, 2008, 236), by haggling or in auctions, but only the internet created the means for using individual price differentiation not only in single transactions but in mass business (Diller, 2008, 222-223). The different forms of online auctions, to be addressed later, in particular are a suitable instrument for finalizing transactions on the basis of individual willingnesses to pay.

In 3<sup>rd</sup> Degree Price Differentiation, the aim is to overcome the problem of individually determining willingnesses to pay via target group segmentation. Customer groups are formed, e.g. students or senior citizens, whose members are assumed

to have similar willingnesses to pay, and which can be clearly differentiated from the other groups.

As an example, let us consider a medical journal. As it is well regarded by doctors, the publisher can charge them a relatively high price. For students of medicine, the journal's value is less high, and they typically have lesser financial means. For this reason, the publisher offers its future core target group a reduced student subscription. A special price for members of the pharmacological industry can be set in a similar way (Schumann & Hess, 2006, 70).

This variant leaves the customers no choice between offers and prices. The problem of this form of differentiation is in the clean separation of the customer groups and in the occurrence of arbitrage. To wit, if customers from the group charged a low price sell the product on to those who would normally pay more, the company is deprived of consumer surplus it would receive by selling the product to the more solvent customers itself.

The last of the three forms of price differentiation mentioned—and displayed in Figure 18.2—is 2<sup>nd</sup> Degree Price Differentiation.

Price Differentiation (PD)							
PD 1 <sup>st</sup> Degree		PD 2 <sup>nd</sup> Degree			PD 3 <sup>rd</sup> Degree		
Price individualization		Performance obtain PD	Quantitative PD	Price Bundle (PB)	Personnel PD	Spatial PD	Temporal PD
Price negotiations	e.g. Auctions	Delivery vs. collections price, Seat categories	e.g. Quantity discounts Boni, Multi-stage rates Estimated prices	e.g. Set-price, Package tours, Accessory packages	e.g. Student rates, Official rates or Senior rates	e.g. Internat. PD, Station prices	e.g. Weekend fares, Nocturnal tariffs

Figure 18.3: Examples of Price Differentiation. Source: Diller, 2008, 229.

Contrary to the 1<sup>st</sup> and 3<sup>rd</sup> Degree Forms of Price Differentiation, the provider here does not make a fixed offer to a single customer or target group (segmentation). Instead, the company offers the services in such a differentiated way that the cus-

tomers will buy at different prices of their own volition. This principle of self-selection allows them to decide which combination of price and performance they want their product to have. This price differentiation can be based on differences in performance (e.g. classes of reservation for airplane travel), on a difference in quantity (e.g. bulk discounts, flatrates) or it can take the form of a price/product bundle (e.g. all-expense tours). Figure 18.3 provides an overview of these options.

The different forms of price differentiation will now be discussed with regard to information offers. For the 1<sup>st</sup> Degree Price Differentiation, we will deal with the different variants of **online auctions**. For 2<sup>nd</sup> Degree Price Differentiation, we will present **windowing**, **versioning** and **bundling**. 3<sup>rd</sup> Degree Price Differentiation will involve “**follow-the-free**” pricing. These five forms of pricing are generally very relevant for internet marketing (Fritz, 2004, 200 et seq.), and specifically for electronic trade with digital content (Stahl, 2005, 285 et seq.).

### 18.2.1 Online Auctions

An individual pricing that takes into consideration customers’ willingness to pay is very desirable for companies. As opposed to standard-price offers, this form of **1<sup>st</sup> Degree Price Differentiation** allows for the complete transformation of consumer surplus into profit. Next to the above-mentioned individual price negotiations, auctions are a suitable instrument for revealing willingness to pay (McAfee & McMillan, 1987). The bidding procedure frequently makes bidders go to the very limit of their willingness to pay or—in the case of “overbidding” (Sattler & Nitschke, 2003)—even beyond. Until a few years ago, auctions didn’t play a particular role in economic life. They were predominantly used in selling rarities, used items or on the stock market (Diller, 2000, 300). The internet has changed this, though, hence online auctions are one of the most popular sales methods today (Fritz, 2004, 210). Apart from the usefulness for companies to reveal customers’ willingness to pay (Fritz, 2004, 204 with further sources), auctions offer the customers a certain price experience. The success of eBay and other auction platforms confirms this.

The auction theory differentiates between four central types of auctions (McAfee & McMillan, 1987, 702; Wirtz, 2001, 453 et seq.), which can all be found in electronic business transactions. A fundamental difference between them is whether they are conducted publicly or whether they are hidden.

The different auction types’ prevalence rate varies strongly. Well suited for mass business and by far the dominant variant on the internet is the English Auction. Dutch Auctions are also used quite often. Hidden auctions are seldomly found, with the Vickrey auction only playing a role in online advertising (e.g. in Google AdWords).

Public Auctions	Hidden Auctions
<p>English Auction</p> <p>Increasing the offers until there is only one bidder left. The last bidder wins the item and pays the price of his last bid.</p> <p>E.g. eBay.com; hood.de</p>	<p>Highest Price Auction</p> <p>Each bidder submits exactly one hidden bid. The highest bidder wins the item and pays the price of his bid.</p> <p>E.g. murphyauctions.net</p>
<p>Dutch Auction</p> <p>A preset starting price is lowered until the first bidder accepts it. This bidder will then win the item.</p> <p>E.g. intermodalex.com; azubo.de</p>	<p>Vickrey Auction</p> <p>Special form of highest price auction, where all bidders submit exactly one hidden bid. The highest bidder wins the item and pays the price of the second highest bid.</p>

Figure 18.4: Auction Types.

### 18.2.2 Windowing

So-called windowing deals with the problem of bringing a finished information good, like a book or a film, on the market in different packages and at different points in time (Owen & Wildman, 1992, 26-37). Starting from one and the same first copy, the master, customers—and this is the decisive point—are offered different modes of transmission, i.e. carrier media, over time. Films are not only shown in cinemas but also enter the market—with delays—as DVDs, on Pay-TV and free TV.

We remember that **2<sup>nd</sup> Degree Pricing** means that companies make different offers, where customers then choose the one that is most attractive to them. The offers satisfy different needs, which is why customers are prepared to pay different prices. Customers, for instance, who want to see a new film in the cinema, are willing to pay more than those who want to see it as a rental DVD or on TV.

At the foreground of this form of price differentiation is the temporal aspect. Information providers try to exploit the different “profit windows”—hence: windowing (Zerdick et al., 2001, 70et seq.)—to the full. If they didn’t grade their offers, cannibalization effects would kick in: many customers go to the cinema or rent a DVD because they have to wait a long time to see a film on TV, which is why there are clear waiting periods between the single windows. In Europe, there are generally six months between a film’s entering the video market and the Pay-per-View program. In the USA, this period is much shorter, usually between 40 and 90 days (Zerdick et al., 2001, 71). Free-TV offers are right at the end of the exploitation chain, as the customers found here are the ones with the least willing-



ness to pay. Accordingly, they are the ones who have to wait the longest for the free, because ad-financed, transmission. If films on free TV were shown before they aired on Pay-TV, a large part of the customers willing to pay would be lost. After a film has been shown free of charge, consumers are ready to pay only very little, or nothing.

The single exploitation windows' positioning depends on their potential for profit. Even though profit from ticket sales in cinemas has gone down significantly in recent years, it is still the most important source of revenue.

Furthermore, films have a high strategic meaning for the overall exploitation's success.

The more successful and prominent a film was in cinemas, the easier (and more profitable) its exploitation in the following profit windows is going to be (Zerdick et al., 2001, 71).

The largest profits are made in home entertainment these days, where DVDs have largely replaced video tapes, and sales are more profitable than rentals (Wirtz, 2006, 267). When the exploitation chain has been completely run through, the films are additionally offered via syndication and program archives (Zerdick et al., 2001, 71).

The greater the danger of cannibalization, the more clearly the exploitation windows must be separated from each other and planned without any temporal overlaps. If the gaps between the windows are too small, the customers may wait for the lower-priced offer (DVD instead of cinema). But within the TV windows, too, repeats must not air too frequently, as interested audiences will not be excited for repeat viewings (Schumann & Hess, 2006, 74 et seq.).

It is still an open question how new offers will fit into this chain. Just as the home entertainment market pushed back ad-financed TV to last place with its introduction at the beginning of the nineteen-eighties (Zerdick et al., 2001, 71), new digital offers on the internet will make space for themselves. Video-on-Demand is slowly beginning to unfold, encountering a clientele that has a tendentially higher willingness to pay because this sort of offer reduces transport and search costs for them (Wirtz, 2006, 308). Streaming films before, during or shortly after their cinematic launch could also address customers who are ready to pay a little more for this offer. When Video-on-Demand has fully established itself, it is to be expected that it will be positioned at the forefront, possibly even in first place, of the value chain (Litman, 2000, 100).

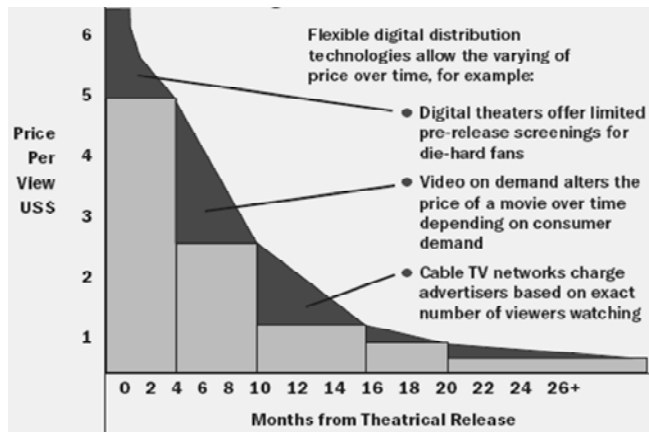


Figure 18.5: Revenue Potentials for Digital Film Distribution. Source: Cap Gemini Ernst & Young, 2001, 14.

Here some interesting perspectives with regard to the creation of network effects open up. If it is so important that a new film generates a lot of initial publicity so that the subsequent exploitation can profit in terms of quantity and price, digital offers can make an important contribution if they are measurable and thus as communicable as box office data. In such a case, it might be the legal—and possibly even illegal—download figures that are used for advertisements. Digital paid content in each case bears “digital potential” (Wirtz, 2006, 308), i.e. the chance of making—in combination with windowing—a clear step toward perfect price differentiation. Prices can, as shown in Figure 18.5, be variably set over time in order to siphon off film, DVD or TV audiences’ different willingnesses to pay.

Upon closer inspection, it is noticeable that windowing is no entirely pure form of temporal price differentiation. It may be with regard to identical content, which is exploited repeatedly in the different windows, but not with regard to the form of the offer. The customer, it is easy to recognize, receives a clearly different product, depending on whether he watches a film in the cinema or at home on his TV or PC. Here the relation to another form of price differentiation that is increasingly being used for information goods, namely performance-oriented price differentiation (versioning), becomes clear. It used to be too complicated to change information products in order to sell them to different target groups after they had been created, which is why temporally graded distribution via different channels—as it is also practiced in publishing, for example, with its hardcover and softcover editions—played such an important role. With the digitalization of information products, an entirely new arena is opening up. Products can be reassembled with little effort and tailor-made for ever smaller target groups. The fact that this can be done to a much greater degree of differentiation is shown by the following example from publishing.

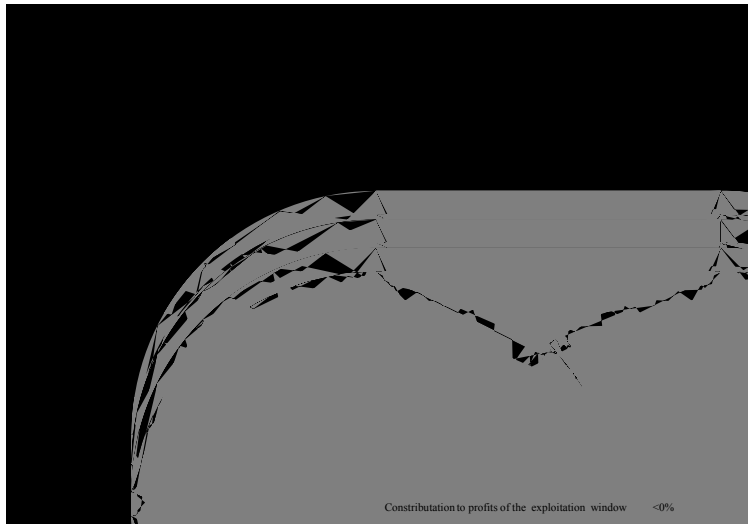


Figure 18.6: Exploitation Chain of the Frankfurter Allgemeine Zeitung. Source: Following Schumann & Hess, 2006, 75.

As can be very clearly recognized in Figure 18.6, there is a total of fifteen exploitation windows, which are divided into five stages. Of all the offers, only three are print-based, and eleven–twelve if we also count the telephone offer—are electronic. The main earner is still the print version of the daily newspaper. All other offers either bring in no (PDA, radio offer) or little revenue, up until a maximum of 33%.

### 18.2.3 Versioning

With this, we will leave windowing and turn to performance-oriented price differentiation, i.e. versioning, as another form of **2<sup>nd</sup> Degree Price Differentiation**. We can find two points that may serve as separation criteria between windowing and versioning, the identity of the product and the timing of the offer. Windowing is traditionally based on a once-created first copy being offered via different distribution channels, in principally identical form—i.e., apart from some minor edits. Additionally, the different offers are temporally graded, meaning that there exist temporal exploitation windows that can be clearly separated so that the information offers can only be used after a certain time has elapsed in each case.

If the customer can choose from different variants generated from a first copy, and if these are available to him at the same time, we are dealing with versioning.

Windowing approaches versioning when the offers are adjusted for single channels. Thus it is often the case that DVDs are outfitted with additional features, e.g. languages, extended versions, or background material.

Windowing and versioning as forms of 2<sup>nd</sup> Degree Price Differentiation are again distinguished from temporal 3<sup>rd</sup> Degree Price Differentiation, which we will address further on, by the provider varying the prices in relation to the time of the offer if there are identical offers. To wit, if telephone conversations are more expensive during the daytime than evenings or nights, there is a temporal price differentiation.

In versioning, the company thus offers its product in different versions and leaves it to the customer to select the variant best suited to him. Versioning is based on performance differences in information offers noticeable to the customer, be it films, music, books or software.

Your goal in versioning your information product is to sell to different market segments at different prices. By creating low-end and high-end versions of your product, you can sell the same thing to customers with significantly different levels of willingness to pay (Shapiro & Varian, 1999, 61-62).

The provider must thus aim to design the product services in such a way that they meet customers' expectations as exactly as possible on the one hand, and that the asking price matches the customers' willingness to pay. This form of performance-oriented price differentiation comes close to product differentiation, yet remains *price* differentiation because

The goal of performance-oriented price differentiation is to achieve a higher perception of gain, and thus a greater willingness to pay, in a section of one's clientele via relatively minor changes in the range, or quality, of services that result in no significant cost consequences. In this respect, performance-oriented price differentiation is always use-oriented. The more elastically demanders react to corresponding differentiations in their sense of values and the willingness to pay that is predicated on it, the better it will succeed (Diller, 2008, 237).

The versioning of information goods is thus a form of price and not product differentiation, because it aims to match to customers' different senses of usefulness while incurring minimal differentiation costs. Let us take the example of an E-Mail program, of which there are three versions that address different customer needs. The underlying price differences, e.g. for more free text messages, better virus protection or more disk space, are very low for the provider. The case is slightly different, though, when information offers are coupled to different service levels, for example. This can lead to noticeable additional costs if the pre-existing service capacities are insufficient and must be augmented specifically for the premium offers.

For the development of the different product versions, Deneckere and McAfee (1996) as well as Shapiro and Varian (1999, 69) recommend that the high-end version be created first, from which versions with reduced quality can then be derived. This creates two advantages:

On the one hand, the low-end version can be used to advertise the qualitatively superior product. The users of stripped-down versions of mailing programs, encyclopedias or database offers are very quick to recognize the added value of the higher-priced offers. Every user of Adobe's free Reader will quickly come to appreciate the usefulness of being able to create PDF-documents oneself, which requires the priced version of Adobe Acrobat. Providers can use the low-priced versions to reduce information asymmetries quite easily and to build up trust on the customers' side (Wirtz & Oldero, 2001, 199).

On the other hand, the range of reactions to competition is larger when the highest-quality version is developed first. Should the competition offer high quality at relatively cheaper prices, the already available premium offer can quickly be repositioned. The new, or re-development of a high-end version from a version of low or medium quality is much more time-consuming.

How many versions should the customers be offered? In theory, one could fashion an individual version for each customer if versioning costs are negligible, which would allow one to achieve the ideal of perfect price differentiation. Too many product versions bring with them two disadvantages, however. On the one hand, the provider incurs more costs if he must manage many offers at the same time ("menu cost"; Wu & Chen, 2008, 165). On the other hand, there is the danger of a too large variety of offers confusing the customers (Iyengar & Lepper, 2000). The consumers must be able to clearly recognize the service differences in order to base their shopping decision on them. If the perceptible difference is not sufficient, there is a danger of the higher-quality offers not being recognized as such and thus not bought (Zerdyck et al., 2001, 188). The provider must thus tread carefully between answering customers' demands on the one hand and necessitating rising service costs as well as possibly making excessive demands on the customer on the other hand.

There are several empirical analyses according to which at least three versions should generally be offered (e.g. Simonson & Tversky, 1992; Smith & Nagle, 1995). At least three versions because consumers tend to the middle, usually avoiding the extremes.

When buying products, consumers normally try to avoid extreme choices—they fear they'll have to pay too much if they go for the most expensive version, and the worry they'll get too little if they opt for the cheapest. They are drawn instead to a compromise choice—a version in the middle of the product line (Shapiro & Varian, 1998, 114).

According to Simonson and Tversky (1992), buyers follow to the Extremeness Aversion Hypothesis:

The extremeness aversion hypothesis derives from the notion that disadvantages loom larger than the respective advantages, which extends the notion of loss aversion (Simonson & Tversky, 1992, 292).

If the buyer only has two offers to choose from, he will frequently choose the cheaper one. If, on the other hand, there is a high-end, gold, maxi or premium version, this will promote the medium—formerly most expensive—version. The goal of the introduction of a third, high-quality variant is not primarily to sell it in huge quantities, but to change customers' perceptions regarding the cheaper versions and to make low-end buyers settle for the higher-value (medium) product.

Adding a premium product to the product line may not necessarily result in overwhelming sales of the premium product itself. It does, however, enhance buyers' perceptions of lower-priced products in the product line and influences low-end buyers to trade up to higher-priced models (Smith & Nagle, 1995, 107).

The middle products thus gain acceptance. It can even be empirically demonstrated that sales of the second, respectively next-to-last, product can be boosted by increasing the number of versions from two to three or more (Stahl, 2005, 202).

When developing the product offer, however, Bhargava and Choudhary (2004) recommend that information providers pay close attention to the way customers' willingnesses to pay are distributed. The introduction of a low-end version only makes sense if more customers are won for this offer than are "lost", i.e. than no longer buy the higher-grade version.

Introduction of a low quality product into the market has two effects: it causes some low-value consumers (who would not otherwise have purchased the product) to enter the market, but it also causes some high-value consumers to shift to the low quality product ... When marginal costs are negligible, the reduction in revenue is equivalent to a reduction in profit ... The overall reduction in profit makes price discrimination suboptimal (Bhargava & Choudhary, 2004, 5).

There are many information offers that exist in exactly three versions, e.g. tax programs such as Lexware (2011) with Basic, deluxe and Home&Business, or Adobe products with their differentiation of Standard, professional and 3D. A key factor in designing the top version is that it be clearly different to the lower ones. In order to safeguard this, one might even offer software features that go far beyond most buyers' needs (Shapiro & Varian, 1999, 73; Simonson & Tversky, 1992, 293-294). Even if versioning results in noticeable costs, it is always recommended to offer a clearly distinguishable high-end version and—if costs are not too

high–lower-quality versions (Sundararajan, 2004, 1671). A further argument for the offer of premium versions is in their quality perception. High-priced offers are frequently regarded as high-quality by customers (Völckner, 2006; Stahl, 2005, 297). The premium offer's positioning can thus positively influence the perception of the entire offer.

In pricing, it should be noted that demand for the high-grade premium versions can be increased in different ways. When working with linear price increases, quality and extent must increase disproportionately (Heitmann et al., 2006, 11). Even better, though, is not working with linear price increases. As Heitmann et al. (2006, 12) show with the example of telephone providers, it is recommended to increase only the services offered in a linear way and to increase the prices less than proportionately. This is because customers glean the value of an offer from the relation of price and performance, where the performance serves as a reference value. The bigger performance package is then seen as relatively cheaper. If, on the other hand, there is definitely not enough performance in the larger package, customers will still tend to buy the cheaper version.

Now, what does the other side of the versioning spectrum look like? How many versions should be offered at most? Shapiro and Varian (1999, 70) regard the absolute upper limit as the number of clearly distinguishable customer segments that should all be served with different versions as long as they are perceived as clearly separate from each other. With regard to cognitive costs for the customers and the provider's costs of maintaining the range of services, Hui et al. (2008) recommend offering a manageable number of versions. They also regard three as sufficient.

Some more concrete statements are found in Stahl (2005). He observes, on the basis of an empirical analysis of digital content, that a very large number of versions can result in sales increases if they are reduced to a number smaller than ten. From a dynamical perspective, a reduction of versions will first lead to a reduction in sales, but this will be overcompensated for in the following periods. Stahl (2005, 203) suspects that a reason for this is that customers have to recover their bearings after the known version falls away before they buy again, from the reduced catalog this time. He (317) calculated six to be the number of versions for which sales and profit are maximized.

Depending on what kind of information good we are dealing with, and what value it is deemed to have by the customer, the provider's decision as to how many versions to offer—in the context of the envisaged bandwidth—will vary. Due to the low versioning costs for digital information costs (Zerdick et al., 2001, 191), however, this is not a problem. For companies, versioning is thus a suitable field of experimentation for achieving increased sales (Shapiro & Varian, 1998, 113–114.).

Versioning is a form of 2<sup>nd</sup> Degree Price Differentiation, because buyers reveal their individual willingnesses to pay via their choice of version. Economically, this is the **Principle of Self-Selection** (Shapiro & Varian, 1999, 54). The provider no longer has to find out, in detail, what value his customers ascribe to his products. Versioning can be an effective strategy, particularly when customers cannot

be clearly distinguished on the basis of external characteristics (Klein & Loebbecke, 1999).

Versioning can be performed in different ways, as displayed in Table 18.1. As can be clearly recognized, versioning costs only play a subordinate role.

Form of Versioning	Degree of Versioning	Examples
Up-to-dateness	Immediate or delayed access	Onvista: Stock exchange information in real time or with time delay (onvista.de) Ökotest: Price according to the test's age (oeko-test.de)
Availability of information	Unimedial or multimedial  Access possibilities	Falk: Road and city maps as printouts or E-Mail  LexisNexis-Databases: On-Screen or as downloads; Database access on-campus or off-campus (lexis-nexis.de)
Range of services	Few or many functionalities  Low or high depth of information  Extent of support	Adobe Photoshop CS3 or CS3 extended with many additional functionalities (adobe.com) OpenBC/Xing: Comprehensive Research options with premium membership (xing.com) Dialog Web vs. Dialog Professional with differing extents of background information (dialog.com) Abstract vs. full text of a market study Shop software xt:Commerce with and without support
Friendliness of design	Low or high image resolution	Fotolia: Price grading in dependence of pixel size (de.fotolia.com)
Processing speed	Low or high speed	Mathematica: Performing the symbolical, graphical and numerical operations at different calculating speeds (wolfram.com)

Table 18.1: Forms of Versioning.



### 18.2.4 Bundling

Another form of **2<sup>nd</sup> Degree Price Differentiation** is bundling: two or more (information) goods are summarized in one single offer and sold as a package or set at a (generally lower) total price. There is price and product bundling; both forms are two inseparable sides of the same coin, as we are dealing with the creation of different offer services and the simultaneous price determination in the same breath (Diller, 2008, 240). We will regard bundling as price bundling in this context.

Adams and Yellen (1976) were the first to comprehensively analyze this pricing strategy. The core aim of bundling is to reduce the variance of consumers' appreciation of, and thus their willingness to pay for, a good in comparison with retail. How well this works depends on how the willingnesses to pay for the single goods within the bundle correlate to each other. A precondition here is that the products not be (moderate or strong) substitutes; they must be either independent or complementary (Tellis, 1986, 155; Venkatesh & Kamakura, 2003, 229).

A positive correlation is when customers who are ready to pay a lot for a good in the bundle also have a high willingness to pay for the other good (Figure 18.7). This is also valid on a lesser price level, i.e. if there is a low willingness to pay for both goods. One speaks of negative correlation, on the other hand, when willingness to pay is high for one good and low for the other. Simple statistical calculations can demonstrate that bundling results in a homogenization of willingness to pay. This is more pronounced the more negatively willingnesses to pay correlate.

Consumer's valuation for a collection of goods typically has a probability distribution with a lower variance per good compared to the valuations for the individual goods. The larger the number of goods bundled, the greater the typical reduction in the variance (Bakos & Brynjolfsson, 1999, 1614).

The stronger the homogenization resulting from bundling, the greater the provider's revenue potentials will be. In Figure 18.8, this can be recognized in the extension of the profit area when comparing Bundle I (not very pronounced homogenization, or heterogeneous demand structure, respectively; Figure 18.) and Bundle II (very pronounced homogenization, or homogeneous demand structure, respectively).

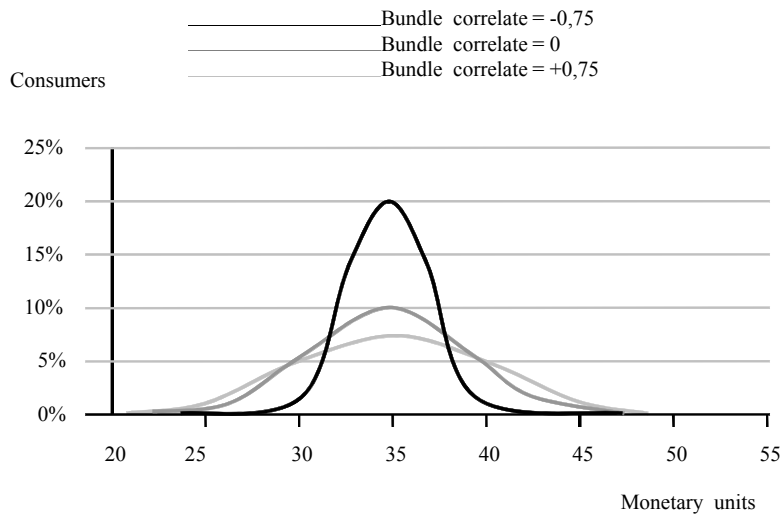


Figure 18.11: Correlations of Willingnesses to Pay and the Homogenization Effect. Source: Olderog & Skiera, 2000, 143.

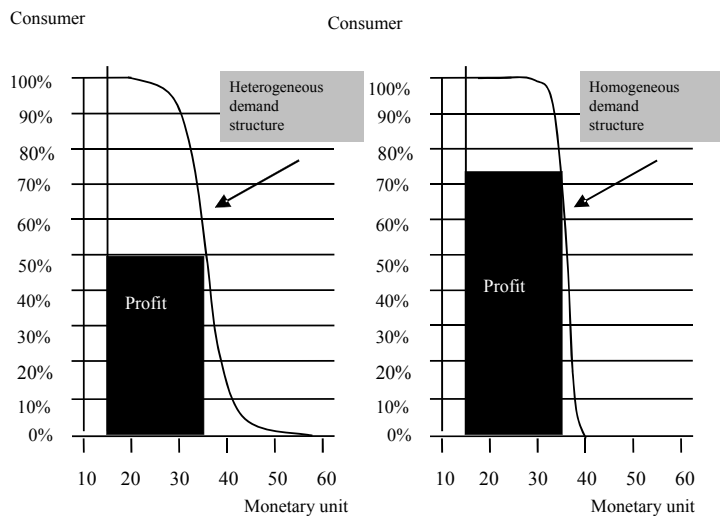


Figure 18.8: Forms of Bundling. Source: Olderog & Skiera, 2000, 143.

Bundling is a profitable variant of price differentiation for digital information goods in particular, as marginal cost for adding a further good to a bundle are negligible (Varian, 2003, 19). Conversely, it has been empirically proven that bundling becomes increasingly unattractive as marginal cost rises, e.g. for information offers on data carriers such as video cassettes or DVDs, but also for physical goods (Bakos & Brynjolfsson, 1999, 1626).

If we consider the example of two Microsoft products, like Word and Excel, and two customers with different valuations of these products, it can be clearly recognized how the dispersion of willingnesses to pay are reduced by bundling (Shapiro & Varian 1999, 75 et seq.).

	Word	Excel
Customer A	€ 120	€ 100
Customer B	€ 100	€ 120

Table 18.2: Willingnesses to Pay for Software Products. Source: Following Shapiro & Varian, 1999, 75.

Depending on how prices are configured, the provider will achieve different profits. If he chooses uniform fixed prices for the products, e.g. €100 or €120, he will earn either €240 or €400. In the first case, the customers only bought either Word or Excel, in the second case each bought both. Now the company is considering offering a package consisting of both programs. As willingness to pay is the same, in sum, a price of €220 for the “Office Suite” would result in a 10% increase to profit, to €440. The company is exploiting the fact that dispersion of willingnesses to pay is less pronounced for the bundle than it is for the single components. The interesting thing is that customers allocate the single prices individually. A receives, from his point of view, the less valuable Excel for €100, B the less valuable Word, yet both value the bundle exactly the same.

The result, according to Bakos and Brynjolfsson (1999), is a “predictive value of bundling”, i.e. bundling reduces the insecurity of the provider with respect to customers’ subjective valuation. Even without an exact knowledge of customers’ individual ratings, bundling can provide for a demand-oriented price determination. It is easier to estimate the customers’ valuation for a whole set of goods than for each good individually. This is generally valid, as long as the goods offered in the bundle are not too closely related and their reciprocal valuation by the customer does not influence itself too significantly (Bakos & Brynjolfsson, 2000, 63):

As a result, a seller typically can extract more value from each information good when it is part of a bundle than when it is sold separately. Moreover, at the optimal price, more consumers will find the bundle worth buying than would have bought the same good sold separately.

We can now differentiate between different forms of bundling (Wirtz & Olderog, 2001, 200-201). In **pure bundling**, also called tying, there are only product packages with multiple components. This is the preferred method for newspapers and magazines, as articles are not sold individually but only as part of the entire issue. The counterexample, which strictly speaking is not an example of bundling at all, is **pure unbundling**. Here the services are only sold individually. This procedure is interesting in so far as here services are often offered now that previously were only available in a package. The download options for music (formerly only complete cassettes, LPs, CDs) or press products must be mentioned in this respect. **Mixed bundling** offers the customers both variants, i.e. they can buy the package or the individual offer. Mixed bundling is often found for software, when, as in the case of Microsoft Office, the single programs are offered separately and in sets for private individuals, professional users or companies.

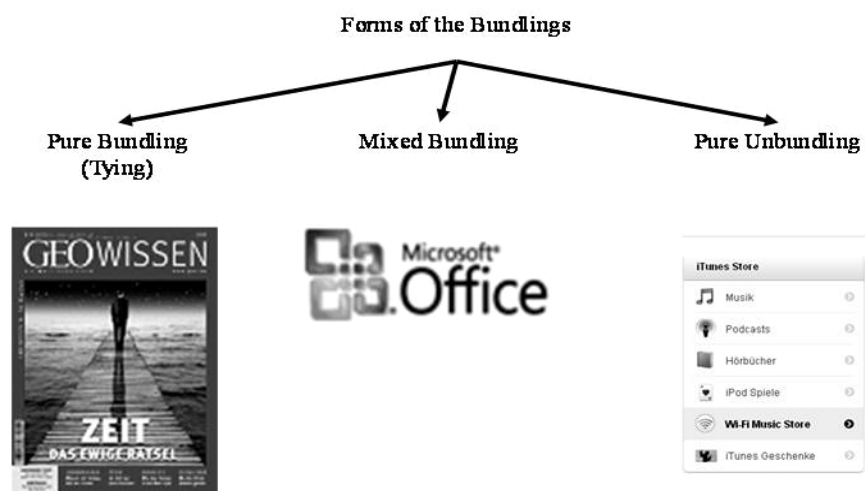


Figure 18.9: Forms of Bundling.

Via bundling consumers' willingnesses to pay can be skimmed off. This is more successful the closer one comes to perfect (1<sup>st</sup> degree) price differentiation. Adams and Yellen (1976, 481) observe three optimality conditions:

- Customers whose willingness to pay is below marginal cost should be prohibited from buying (Exclusion),
- Customers whose willingness to pay is above marginal cost should be encouraged to buy (Inclusion) and
- Transactions should not result in consumer surplus (Complete Extraction).

We can see that next to the dispersion of willingnesses to pay, variable costs have a decisive influence on whether and how a bundling strategy can be used.

For information providers, bundling is generally very suitable (Bakos & Brynjolfsson, 1999, 1626). Let us consider once more the software offers Excel and Word, this time focusing on a customer C, whose willingness to pay is €40 for Excel and €140 for Word. It is clearly observable how the package offer leads to the so-called “transfer of consumer surplus” (Wirtz & Olderog, 2001, 203 et seq.). Let us assume that the asking price for each of the products Word and Excel is €110. In the case of individual prices, customer C would only buy Word, perhaps because he is a journalist, but not Excel, because at that price, he would prefer to settle his finances with a text processing program. Without variable costs, the provider aims at a contribution margin of €110. This violates two of the above conditions, as the customer does not buy Excel even though his willingness to pay exceeds marginal cost (Inclusion) and he achieves €30 of consumer surplus when buying Word (Extraction). So what happens if the company changes its pricing strategy and offers a package at €180? Here it must be noted that the bundle price is not merely a result of the addition of individual prices but is calculated via an autonomous optimization procedure on the basis of willingness to pay (Olderog & Skiera, 2000, 140 et seq.). The total price of a bundle is frequently below the sum of the individual prices. If, however, the single components are worth less in isolation than they are in the bundle, that is if an added benefit is created, e.g. via seamless interplay, the bundle price can also be more than the sum of the individual prices (Huber & Kopsch, 2002, 619).

In our context, the sum of the customer’s willingnesses to pay corresponds exactly to the price for the bundle and the optimality conditions are completely fulfilled. In his mind, the customer transfers the consumer surplus applicable for Word in comparison with its individual price to the lesser-valued Excel. The provider arrives at a contribution margin of €180 and there is, all in all, no more consumer surplus. If the provider’s price does not meet the sum of willingnesses to pay as exactly as in this example, the customer will either not pay (sum of willingnesses to pay < package price) or create consumer surplus (sum of willingnesses to pay > package price). Even if the latter is not ideal from the provider’s perspective, as the condition of Extraction is not met, he can still use bundling to appropriate the consumer surplus transferred from one product to the other by the customer and must merely do without the part that goes beyond.

What pricing strategy is the most advantageous, then: the determination of single prices (pure unbundling), pure bundling or the combination of both in mixed bundling? For the case of two products offered, it can be said (without considering the costs), with regard to the distribution of customer preferences on a demand curve (Simon & Fassnacht, 2009, 303 et seq.):

- Pure unbundling is recommended if the customers’ willingnesses to pay for the offered products are at the outer ends of the demand curve, i.e. if the preference for one of the two products is dominant and the preference for the other product is very low or even zero.

- If the willingnesses to pay for both products are rather balanced, i.e. if the customers are interested in both products and thus have a relatively high preference for the bundle, too, pure bundling is recommended.
- If there are multiple customer groups with both extreme and balanced willingnesses to pay for both products, mixed bundling is of advantage.

Mixed bundling is frequently the strategy of choice, because it is able to combine the advantages of both pure pricing strategies:

The advantage of pure bundling is its ability to reduce effective buyer heterogeneity, while the advantage of unbundled sales is its ability to collect a high price for each good from some buyers who care very little for the other. Mixed bundling can make use of both of these advantages by selling the bundle to a group of buyers with accordingly reduced effective heterogeneity, while charging high mark ups to those on the fringes of the taste distribution who are mainly interested in only one of the two goods (Schmalensee, 1984, 227).

What happens if there are still variable costs, if, for example, both products are offered in elaborate packaging with a booklet included, but the market situation precludes the raising of prices? In such a situation, variable costs result in a short-term reduction of the provider's contribution margins. This is problematic in bundling when the marginal cost is above the customer's willingness to pay for one of the products in the bundle (Excel in Figure 18.10). In such a case, the condition of Exclusion is violated (Wirtz & Olderog, 2001, 205), i.e. there are customers who buy products even though their willingness to pay is below the marginal cost. The provider thus consciously incurs losses with regard to the individual product. He can only appropriate the consumer surplus of the higher-rated product as long as the marginal cost for the lower-rated product is beneath the corresponding willingness to pay. Otherwise, he must use it to "cross-subsidize" the Exclusion violation, i.e. to make up for the difference between willingness to pay and marginal cost. This he can keep up for as long as there is sufficient consumer surplus available. If, however, this difference is greater for the lesser-valued product but greater than the available compensatory consumer surplus, the contribution margins will come under attack. As can be clearly seen in Figure 18.10, this is the case: the consumer surplus for Word is insufficient to compensate for the lack of willingness to pay for Excel.

Nevertheless, it can be sensible to offer while incurring a loss, e.g. when the goal is to build up an installed base. When Sony offers its Playstation 3 below marginal cost, the positive contribution margins of games that are offered as part of the package are used for cross-subsidization. The same goes for mobile telephone providers, who only offer their end product cheaply in a package with a contract, generally running two years. The providers' goal is to compensate for the losses of today with future winnings. It becomes very clear, though, that the larger

marginal cost, the more it restricts the provider's scope of action. This goes for cross-subsidization within the bundle, but also for possible bundle discounts.

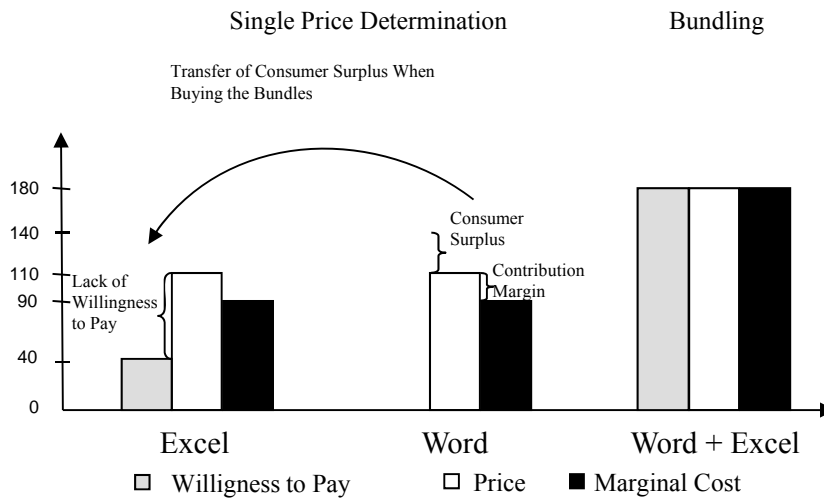


Figure 18.10: Transfer of Consumer Surplus. Source: Following Wirtz & Olderoog, 2001, 204.

If we take another look at Figure 18.10, this statement can be made very clear. If the provider sets prices per unit, he will only sell Word to customer C for €110, and only registers a contribution margin of €20, because marginal cost is €90. In the case of pure bundling, for the package price of €180, the customer will receive both products, but the provider is left with no contribution margin. He must use both the consumer surplus transferred in comparison with unit prices (€30) and his contribution margins (€40) in order to compensate for the lack of willingness to pay for Excel (€70). From the buyer's point of view, this looks a little different: he subtracts from the package price (€180) what the maximum price he would pay for the more valuable product (Word, €140), and thus gets—to his thinking—the price he is required to pay for Excel (€40), and which he is prepared to pay. The missing difference to marginal cost (€90) must be “financed” by the provider by transferring consumer surplus (€30) and by foregoing a contribution margin for Word (€20). The provider is thus in a worse position than he would be when selling only one product. If he were then to opt for mixed bundling and offer a package price of, say, €200, customer C would be someone who will decide against the bundle and only buy Word.

## Marginal contribution

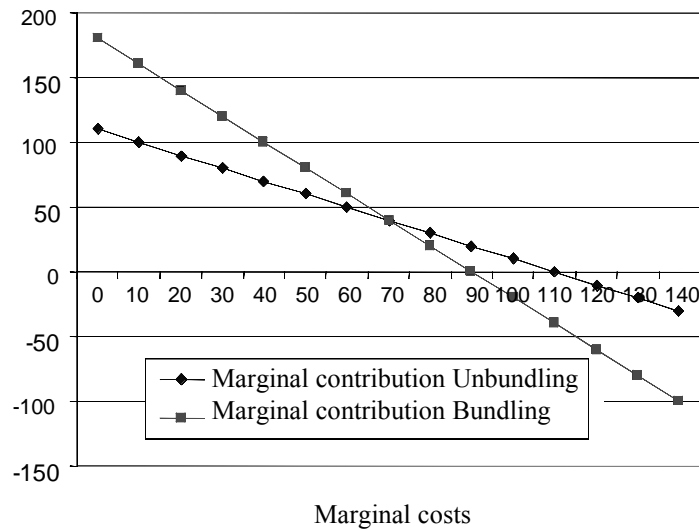


Figure 18.11: Profit Comparison of Word and Excel in Case of Bundling at €180 and Unbundling at €110.

The influence that marginal cost has on the profits to be expected is displayed in Figure 18.15. What is compared is the profit from selling to customer C that is made in case of bundling and in case of unbundling when marginal cost for both products rises concurrently. The break-even point is reached when marginal cost is €70; after that, the bundled offer at €180 is no longer profitable compared to the single offer at €110. This point even shifts further forward as the unit price is set higher. If it is not at €110 but, for instance, at €140, marginal cost of €40 will already make the single product offer more profitable.

Hence, if not only the potential customers' willingness to pay is considered, as above, but also the variable costs of goods and services, the following additional insight can be gained for the assessment of bundling:

Rising marginal cost shifts the advantage of a bundling strategy in favor of the setting of unit prices. The reason for this is that a violation of the Exclusion condition (release of the product below marginal cost) in the bundle becomes ever more probable. When setting unit prices, this cannot happen unless aimed for.

The chief defect of pure bundling is its difficulty in complying with Exclusion. The greater the cost of supplying either good, the greater the possibility of supplying some individuals with commodities for which reservation price falls short of cost (Adams & Yellen, 1976, 482).



From the provider's perspective, only thing left to do is decide whether pure unbundling or mixed bundling is the better alternative.

Like pure bundlers, therefore, mixed bundlers face a trade-off between more complete extraction and more complete exclusion. The dilemma is simply less pronounced in the case of mixed bundling (Adams & Yellen, 1976, 483).

According to Chuang and Sirbu (2000) it is generally to be assumed that mixed bundling is the ideal pricing strategy for information goods. Whether pure bundling or pure unbundling is to be preferred as the next best thing depends on marginal cost and the economies of scale that can be implemented via bundling (Chuang & Sirbu 2000, 155). As soon as marginal cost enters the scene and cannot be significantly lowered via economies of scale (via bundling), there is the danger, described above, of violating the Exclusion condition. The provider must thus weigh the implications of saving expenditures via bundling and incurring losses to contribution margins due to insufficient willingness to pay on the part of a group of customers. The higher the cost of violating the Exclusion condition, the more pure unbundling is recommended (Chuang & Sirbu 2000, 155; Adams & Yellen 1976, 488).

Applied to the market for scientific journals, Chuang and Sirbu (2000, 161 et seq.) recommend that a publisher always offer single articles next to the customary bundles. A further increase in profits can be realized when additional "super-bundles" are offered, which comprise several magazines or online accesses. The option of general access (site license) as the largest possible bundle goes in the same direction (Bakos & Brynjolfsson 2000, 129 et seq.). Recently, there have also been all-in-one offers, such as Napster's music flatrate ([www.napster.com](http://www.napster.com)), for which there is not a one-off but a monthly fee. In creating music bundles, one should take care not to merely combine one or a few attractive titles with several weak ones. This leads to customers—if they have the choice—picking out the good songs and ignoring the album. Profits will be lower than they would be for pure bundling (Elberse, 2009).

The advantages of bundling thus depend on the relation of willingness to pay and variable cost (Buxmann et al., 2008, 117; Olderog & Skiera, 2000, 144). The smaller this difference, the more unbundling seems like the better option.

Hitt and Chen (2005) recommend so-called customized bundling as another, relatively new variant next to mixed bundling. If marginal cost is low but not zero, and buyers' preferences are directed at a relatively small (and perhaps diverse) number of single products, they suggest to leave it to the customer to decide which package, limited only by number, from the complete offer he wishes to choose. This could be, for a newspaper, 25 online articles, or for a music platform, 10 albums or 50 songs at a fixed price. Customized bundling is generally preferable to pure bundling, because it is better suited for dealing with heterogeneous groups of

buyers. There is only one price for the entire bundle. This offer is unsuitable for doing justice to customers with different budgets, nor can it adequately cater to buyers who want a different number of goods (in the package) (Wu et al., 2008). The example of music buyers can serve to explicate the first case: one only buys music sporadically and would be prepared to spend €100, while another consumes €1,500 worth of music per year. The second case fits customers of commercial television, for example, where one only wants a small package of movies while another wishes to use the entire range of offers.

As long as customers differ in the number of goods they positively value, customized bundling dominates pure bundling and individual sale and enhances welfare (Wu et al., 2008, 610).

A specialized form of customized bundling can be found in the recommendation by Altinkemer and Bandyopadhyay (2000). They take the example of music and suggest analyzing customers' buying habits and fixing corresponding bundles on the basis of these insights. Other than the completely free compilation via the customers, which comes closer to a bulk discount, this option allows the provider to accommodate less popular songs or new, as yet unknown offers in the bundle. This is only possible, however, as long as customer preferences for the admixtures aren't too low or even negative.

Bundling is a pricing strategy that can entail advantages for both the provider and the customer. Apart from the previously named aspects, bundling leads to further advantages from the provider's point of view (Tillman & Simon, 2008, 523 with additional literature). On the one hand, it bears the potential for cost reduction (Point 1 in Figure 18.12). If packages are made up of several goods, this can lead to a reduction of manufacturing, transaction, information or even complexity costs. On the other hand, bundling contains potentials for increasing profits (Point 3). In empirical studies, these are set at between 5 and 40 per cent compared to unit pricing.

How large should bundles be made? In a model-based approach, Bakos and Brynjolfsson (2000, 120 et seq.), state that the demand curve for information goods with a heterogeneous valuation becomes more elastic as the size of the package increases. This is due to the fact that the more goods a package comprises, the greater customers' average valuation is concentrated around the median.

For example, some people subscribe to America Online for the news, some for stock quotes, and some for horoscopes. It is unlikely that a single person has a very high value for every single good offered; instead most consumers will have high values for some goods and low values for others, leading to moderate values overall (Bakos & Brynjolfsson, 2000, 121).

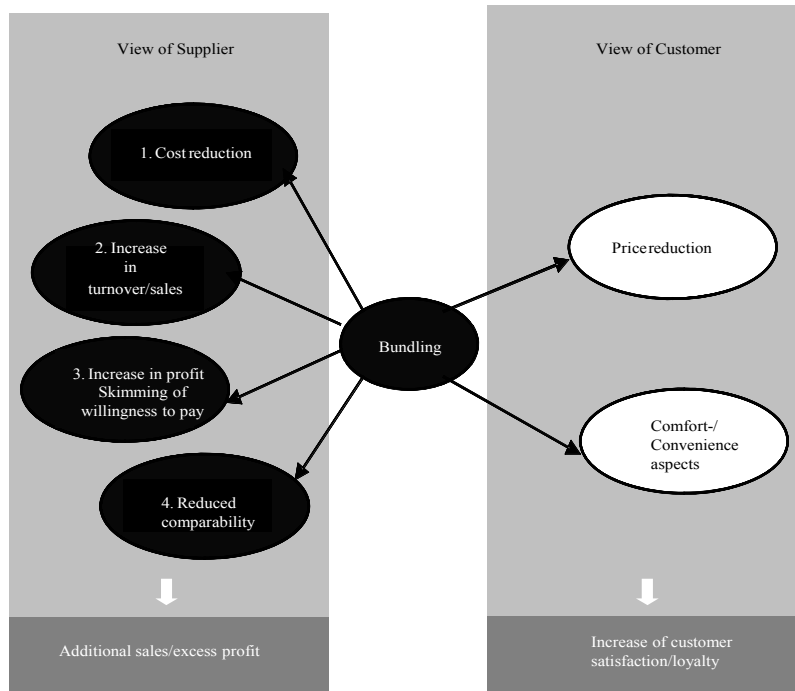


Figure 18.12: Bundling Advantages for Provider and Customer. Source: Tillmann & Simon, 2008, 523.

Geng et al. (2005) qualify this by noting that the making of large packages is only ideal in the case that the valuations of the individual goods on offer decreases slowly. Nevertheless, we can draw some far-reaching conclusions for the competitive position of information providers from the analyses of Bakos and Brynjolfsson (2000). For content and software providers we can generally say that providers of large bundles enjoy competitive advantages, vis-à-vis both smaller “bundlers” as well as, more pronouncedly, providers of individual products on services. In detail, this means that:

- Providers of large bundles have advantages in shopping, e.g. for content. They can offer higher prices because their profit expectations through sales are higher (Bakos & Brynjolfsson, 2000, 70).
- Providers of large bundles have particular advantages vis-à-vis providers of single information goods. They can demand higher prices and realize a greater market share as well as higher profits (Bakos & Brynjolfsson, 2000, 72). For new competitors, this worsens the prospects of a successful market entry, even if they have a cheaper cost structure and higher-quality products (Bakos & Brynjolfsson, 2000, 76).

This phenomenon can be observed in the software markets. For instance, Microsoft Office includes numerous printing fonts as part of its basic package. This is easy to do given the low marginal cost of reproducing digital goods. This strategy has drastically reduced the demand for font packages sold separately while allowing Microsoft to extract some additional value from its Office bundle (Bakos & Brynjolfsson, 2000, 72).

- Providers of large bundles can enter new markets at relative ease, if they add an information good to their pre-existing package (e.g. via cooperation or acquisition) that is offered on its own by an established competitor. In an extreme case, that competitor can even be forced off the market via the selling of bundles (Bakos & Brynjolfsson, 2000, 77).
- The impetus to innovate and enter new markets is systematically less pronounced for providers of individual services. The danger alone of providers of large bundles incorporating the new product into their package serves as a deterrent. Conversely, bundle providers can achieve profits on new markets more easily, which makes innovation more attractive to them (Bakos & Brynjolfsson, 2000, 78).

These insights have been formulated without taking into consideration network effects. What vistas will open up if network effects are explicitly incorporated? Lee and O'Connor (2003) dealt with the repercussions of network effects on the introduction of new products in detail, as well as, specifically, with the role played by bundling (Lee & O'Connor, 2003, 249). On network effect markets, the compatibility of basic goods and complements plays an important role. Bundled offers are a good instrument for decreasing customer insecurity as to whether all components work well together. A further appeal of the package is a product warranty that holds for the entire bundle. Thus it is much more attractive for the normal user, for reasons of usability, to buy Microsoft's Office Suite containing Excel, Word, PowerPoint and Access than it is to compile their own package—which might even be more powerful due to the special functions of its applications—from, say, Lotus 1-2-3, Word Perfect, Coreldraw and Dbase Plus. Bundling is also well suited for forcing sales of the basic product by bundling it with complements. As we have seen above, bundling decreases the dispersion of willingnesses to pay and facilitates higher turnover. Bundling can be used not only as a structuring instrument, but also for the further building up of an installed base, if, for example, new software versions are offered at a moderate price together with attractive complements. Microsoft practiced this—albeit contentiously, from a legal standpoint—in developing its operating systems, from DOS to Windows, Windows 95 etc., by bundling them with different applications (Arthur, 1996, 106), such as Internet Explorer or Windows Media Player.

The situation is slightly different for established networks: if standardization is well on its way and the customer can choose from different manufacturers' com-

patible complements, it can be hazardous to make pure bundling offers (Simon 1998, 143). In such a case, customers can compile their single (compatible!) products or services, with complete disregard as to who provides them, individually. Were a provider to only ever offer his PCs as a bundle of CPU, monitor, keyboard and mouse, he would have to expect that many customers will either choose another provider's package, perhaps because they prefer a certain monitor, or prefer an individual solution—almost invariably with other providers' components (Brandtweiner, 2001, 108).

Brooks et al. (2001) demonstrate, on the example of an experimentally tested model, that bundling strategies must be regarded as dynamic, not static, if profits are to be maximized. They thus recommend keeping a permanent eye on the market and always making sure that the bundle offers are suited to the market conditions.

Bundling is to be used particularly cautiously if you are the dominant provider on the market, as it can lead to complications with competition law (Köhler, 2003). The recent sentencing of Microsoft for bundling its operating system with its server software or Windows Media Player is a prominent example.

We can record, as a general statement, that bundling is only profitable if the demanders' willingness to pay for the single components of the package are above their marginal cost (Olderog & Skiera, 2000, 157).

Bundling verges—as windowing does—on versioning. A specific form of versioning is the offer of an unchanged first copy of an information good in different packages. This is common practice in music, where finished songs are often featured on different albums. The concurrent offer of different bundles can be termed versioning bundling (Schumann & Hess, 2006, 72). Here it must be noted that this is only versioning on the level of the entire package, not of the single product. However, further versioning options come up here, particularly for information goods, i.e. if the single information good must be modified before entering a bundle.

#### 18.2.5 *Follow-the-free*

In **3<sup>rd</sup> Degree Price Differentiation**, as displayed in an overview in Figure 18.2 above, the provider does not leave the choice of products to the customer but separates the customer groups himself and makes them group-specific offers. An overview of this was provided in Figure 18.3. Of the three traditional forms of 3<sup>rd</sup> Degree Price Differentiation (personal, spatial, temporal), we are particularly interested in the last, the temporal form in connection with information goods. In general, we speak of temporal price differentiation when the same product or service is offered at different prices over the course of a certain period in time (Simon & Fassnacht, 2009, 276). This form of pricing is recommended if demand fluctuates heavily in dependence of time. In order to take advantage of the temporary differences in demanders' preferences, they are charged different prices at different times of the day (telephone, electricity), days of the week (cinema, car rental), seasons (airplane, hotel room) or in dependence of the product's life cycle (special

prices at new products' market entry) (Meffert, 2005, 556). As temporal arbitrage is eliminated in most cases, the market segmentation is fully effective.

Skimming strategy	Penetration strategy
<ul style="list-style-type: none"> <li>- Realisation of high short term benefits, less affected by discounting</li> <li>- If there are real innovations, benefits in the course of time with a monopolistic market position, reduction of long term competitive risk, rapid amortisation of R&amp;D-expenditure</li> <li>- Profit realisation in early stage of life cycle, reduction of obsolescence risk</li> <li>- Establishment of a downward price potential, exploitation of positive price change effect possible</li> <li>- Gradual skimming of consumers willingness to pay is possible (temporal price differentiation)</li> <li>- risk of price increase prevented (secure calculation)</li> <li>- High price as a positive indicator of prestige and quality</li> <li>- Prevention of high capacities, lower demands on financial resources</li> </ul>	<ul style="list-style-type: none"> <li>- High aggregate profit margin with faster sales growth despite low unit contribution margin</li> <li>- Constitution of a long term strong und predominant market position due to positive intra-personal (consumer item) or inter-personal (consumer good) carryover effects (higher prices and/or higher sales volume in the future)</li> <li>- Exploitation of static Economies of Scale, short term cost reduction</li> <li>- Fast rise of the cumulative amount due to a fast "shut down" on the experience curve, achievement of a cost advantage difficult to overcome for the competitors</li> <li>- Risk of failure reduced due to a low offering price and minor flop percentage</li> <li>- Deterrence of potential competitors to enter the market</li> </ul>

Figure 18.13: Skimming vs. Penetration Strategy. Source: Simon & Fassnacht, 2009, 329.

The latter variant, setting market entry prices, is particularly significant for information goods. The two variants for setting prices previous to market entry, long known, are the skimming strategy and the penetration strategy (Dean, 1951; Diller, 2008, 289). In skimming, the provider initially sets high prices and then gradually lowers them in order to slowly address new layers of customers. In the penetration strategy, low entry prices are set, with the goal of raising them later, after the market has been covered accordingly and a strong market position is achieved. A comparison of both strategies can be found in Simon and Fassnacht (Figure 18.13).

A central difference of both strategies is in the profit expectations, which are initially high and then low in skimming, and are vice versa by the penetration strategy.

Skimming represents the traditional pricing strategy for introducing innovative products, in which companies try to operate as cost-effectively as possible from the outset by using high prices to address the customers with a high willingness to pay (Lee, 2003, 248).

For digital information goods, however, the penetration strategy is more common (Reibnitz, 2003, 13). It is often found as a special form called "Follow-the-free" (Zerdick et al., 2001, 191), or Dynamic Pricing (Wendt et al., 2000, 2), in

which products are sold for an extremely low price or even for free. Prominent examples are Avira's antivirus programs, Netscape's and Microsoft's browsers or Acrobat Reader.

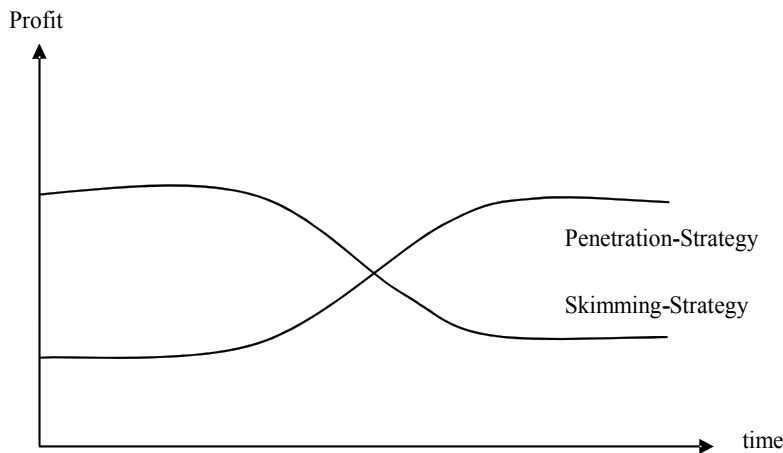


Figure 18.14: Profit Expectations of Skimming and Penetration Strategy. Source: Simon & Fassnacht, 2009, 330.

This strategy, seemingly irrational at first glance, has a solid economical background: Follow-the-free is the consequent implementation of the strategy, suggested as early as the mid-nineteen-seventies by Henderson (1974), of the very low starting price. He propagates the acceptance of early losses in the introductory phase and the building up of a head start in terms of cost vis-à-vis the competition by lowering unit costs as quickly as possible via experience curve effects. He identifies the preconditions as high price elasticity, in order for low prices to rapidly effect increased consumption, as well as pronounced degression effects. As soon as unit prices sink below the selling price, sales become profitable and a certain pricing leverage is realized vis-à-vis the competitors.

Cost degression is famously very pronounced for information goods, and if the products are not sold but given away, the provider will have to ask himself the question whether the saturation quantity—and thus the market potential—will be enough for him overall.

There are further reasons for using the Follow-the-free strategy for information goods, though. Due to the relatively unpronounced search qualities, offering products free of charge is a suitable measure for giving buyers the opportunity to check their quality.

Free products are provided to overcome the problem of quality uncertainty and, ultimately, to generate profits (Choi et al., 1997, 243).

However, the central role in this form of price differentiation is played by the creation of network effects. The provider wants to use the free offer to build up an installed base as quickly as possible. The plan is two-pronged: as long as the initial (extrinsic) network effect value is low, willingness to pay is low. Only when the number of customers increases will network effects make the offer more and more attractive to new customers. In marketing, one speaks of carryover effects when sales in one period influence sales over the following periods (Diller, 2008, 293). For network effects, we can say: the higher sales are in the previous period, the higher they will be in the period to follow. Besides, network effects create switching costs for the existing customers, which in an extreme case scenario lead to a Lock-In effect. For customers that have already gotten used to a product (e.g. Windows) that is used by many others, and who perhaps have already incurred additional expenses in the form of hardware or applications, it costs money to move to another provider. Apart from any costs of buying the new product, the customer must get used to a new layout, for example, different formats or even new functionalities, as well as lost the advantage of having acquaintances who use the known, compatible products. If these costs are prohibitive, the customer is in a Lock-In, switching products is no longer economically rational (Shapiro & Varian, 1999, 103 et seq.; Varian, 2003, 20 et seq.). We will address the different forms of switching costs in more detail in the section dedicated to Lock-In.

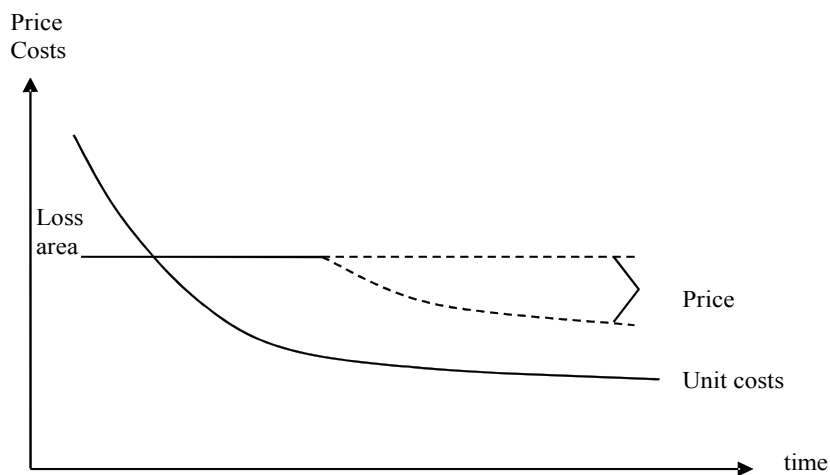


Figure 18.15: Strategy of the Extremely Low Starting Price. Source: Simon & Fassnacht, 2009, 332.



But how does the product that is given away earn money? The decisive point is always the same: will the company succeed in creating network effects? If so, there are different courses of action.

First, one might proceed as provided in the penetration strategy and raise prices. If the network is attractive enough, new as well as existing customers will be ready to pay. Based on a simulation, Xie and Sirbu (1995, 914) observe that

the optimal pricing path [...] is *increasing* if the positive effect of the installed base in the potential demand is strong.

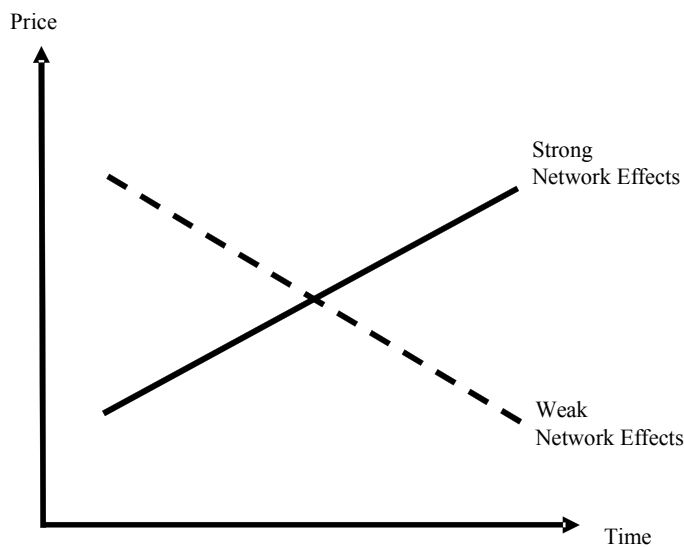


Figure 18.16: Development of the Ideal Price Path for Strong and Weak Network Effects. Source: Following Xie & Sirbu, 1995, 921.

Network effects are responsible for increasing new customers' willingness to pay so that prices can be raised. If in addition to this, existing customers are in a Lock-In, the danger of losing customers must be viewed as negligible in spite of the raised prices. This procedure has been successfully put into practice by eBay. In the beginning, its services were free of charge, until at the end of January, 2000, listing fees were introduced (Möllenberg, 2003, 171). eBay was able to make up for the initial sharp decline because many sellers returned to eBay as other platforms did not offer them the same chances of making a profit. Other auction platforms such as Andsold, eHammer or iTrade did not manage to take this step successfully and had to give up (Möllenberg, 2003, 172). Here a possible problem of the Follow-the-free strategy reveals itself: the customers get used to, or are already

used to free offers from the internet. If the network effects are not strong enough, raising the prices is either impossible or at least extremely difficult to achieve. If there is a fundamental willingness to pay, one should avoid surprising customers with a price increase. It is recommended to communicate the phase of low prices or free offers as Promotional Pricing (Fritz, 2004, 207), i.e. to make it abundantly clear that these are (introductory) offers for a limited time only. Such limits can be temporal (30-day trial version, as for Salesforce) or quantitative: the accounting software QuickBooks by Intuit can be used for 20 clients, above which number a priced version must be bought (Anderson, 2008).

If direct price increases for existing customers cannot be implemented, there are various other possibilities for combining Follow-the-free with other price differentiation strategies such as versioning or bundling with complements.

Versioning, for one, provides some very interesting starting points: as a provider, one can offer the existing customers more up-to-date (upgrade) and/or higher-performance (premium) product versions (Zerdick et al., 2001, 193):

Network Associates (formerly McAfee) initially distributed their antivirus programs free of charge. This allowed them to win a third of the market for virus protection software. From this strong market position, they achieved significant profits from selling upgrades. A further positive side effect of free product offers is the voluntary incorporation of users in the further product development. Due to the sizeable installed base and the high customer loyalty, a multitude of viruses is recognized, which can then be disabled via upgrades. These indirect network effects improve product performance and thus stabilize the market position.

On the other hand, profits can also be generated via sales of complementary services (separately or in a package). If this is profitable enough, it will even be advisable to offer the basic good (such as Acrobat Reader or RealPlayer) free of charge (Parker & Van Alstyne, 2000, 34). This path has been chosen by Sun, for instance, with their free offer of Java to support server sales.

The free product may persuade adopters to employ standards-supported or complementary goods offered by the firm, thereby fueling network externalities in related markets (Gallaughner & Wang, 1999, 70).

A variant of this tactic is used in the reverse direction by both Microsoft and Google, who make free additional offers (antivirus programs and word processing programs, respectively)—even in markets with priced offers—in order to bolster sales or the use of their core products (operating systems and search).

In many cases, Follow-the-free apparently works permanently well for **software**. The resulting network effects can also be used to plausibly explain other

success stories, such as ICQ's (Fritz, 2004, 192) or the Apache Web Server's (Zerdick et al., 2001, 194; Web Server Survey, 2007).

Generally, open-source products have the best preconditions for bringing about network effects in terms of price. As development costs are spread over many heads and there are no aspirations to recoup them via sales, the products can generally be distributed free of charge, even from an economical perspective. Ollhäuser (2007, 196) thus speaks of the open-source principle as a "Free for all". Whether these products will assert themselves against the established, priced competing products (e.g. Linux vs. Windows; Fritz, 2004, 192-193) is thus at least no longer a question of cost price. Here the customer may assume that the open-source software of his desire will be available free of charge permanently. Providers of proprietary software cannot readily and convincingly claim that they will not raise the price of their software after an introductory period in order to redeem the development costs.

From this perspective, one might assume that providers of proprietary software wouldn't have a prayer in asserting themselves on the market against open-source products and generating income from selling licenses. This statement becomes relative, though, if we consider how open-source products actually make money. Financing is mostly via sales of complementary services, such as implementation services, support or schooling. As bundling with advertisements is rejected within the open-source community, donations are used as an alternative source of funding (Sabel, 2007, 205-206).

There are thus two cost components for the customer; pure acquisition costs and oncosts following from usage. The so-called Total Cost of Ownership is thus relevant for the customer. Maaß (2006, 131-132) was able to demonstrate, on the example of the market for server/system software, that this total cost plays the most important role in the decision to make an investment. As training and support costs can significantly exceed acquisition costs, the isolated amount of the introductory price only plays a subordinate role within this industry segment. This is reinforced by the segment-specific short innovation and product life cycles, which make it harder to enforce a price increase for ageing products over several periods. A penetration pricing strategy is thus not generally advisable. Its application depends on the concrete product and market circumstances.

Now how does this apply to **content**, which is not meant for repeat usage, like software, but is tendentially consumed only once to a few times? Stahl (2005, 237 et seq.) demonstrates empirically that the Follow-the-free strategy is of advantage for the offering of digital content, as well. The more comprehensive—seen from a static point of view—the offer of free content is, the greater sales of priced contents will be. Furthermore, it is also the case dynamically that extending the free offer in period one will increase sales of priced content in the following period. This form of pricing thus generates network effects, switching costs and Lock-In effects for content, too.

The named effects are particularly advantageous if a specific form of bundle is being "sold", namely the connection between the information good, normally of benefit, and corresponding (frequently undesired) advertisements. Many cost-free

offers are not based on making profits from the product itself, but from advertising revenue. Profits in the newspaper and magazine market only consist partly of sales of the information good, but consist to more than 50% of advertising revenue (Wirtz, 2006, 179). Free newspapers offered via the Follow-the-free strategy, for example, even eliminate sales revenue altogether and generate nothing but advertising revenue. The case is similar for (private) television and radio channels, here, too, 90% of profits are from advertising (Wirtz, 2006, 360, 427). Owen et al. (1974) stated as early as the nineteen-seventies that TV channels were not there to produce programs.

TV Stations are in the business of producing *audiences*. These audiences, or means of access to them, are sold to advertisers. The product of a TV station is measured in dimensions of people and time. The price of the product is quoted in dollars per thousand viewers per minute of commercial time (Owen et al., 1974, 4).

Advertising as a form of revenue has long been used on the mass markets for content. Lately, though, it has started to be used in an individualized way and been transferred to software. Google's business model is mainly based on context-specific ad displays, largely for the search results. Since the acquisition of YouTube, Google has been working more intensively on individualized ads for video clips. The same principle is employed by flickr, where the viewing of images is accompanied by ads. Adobe, on the other hand, is considering ad-financed software offers (Koenen, 2007).

Obtaining customers' profiles in return for the free usage of information goods is of benefit for financing via advertising, facilitating addressee-specific ads. As far as the profiles have been created truthfully, individualized advertising offers have the opportunity to go from an undesirable information "bad" to a useful information "good" and the combination of requested information and customer specific, substantial advertising will effect an increase in usefulness for the consumer. New forms of advertising are moving in this direction. Under the term "user-initiated online advertising", for example, the customer can actively click on objects in videos in order to be shown ads for them. This can go as far as money being paid for specific advertisements (Anderson, 2008). The reciprocity between the amount of users and informative advertising offers can lead to a mutual benefit, which is termed "promotional circulation spiral" (Hass, 2007) in media economics.

What a complement strategy of cost-free (including ads) and priced offers might look like for content is shown in the cross-media concept of "Deutschland sucht den Superstar" (DSDS, the German version of "American Idol") (Schumann & Hess, 2006, 62 et seq.):

Apart from the TV show "Deutschland sucht den Superstar", which formed the core of the product line, the media that were mainly served

are magazines, CDs, DVDs and the internet; mobile applications were also developed. The DSDS product line thus encompasses several TV shows (including the DSDS show as well as interviews, short segments etc.), a DSDS print magazine, the CD albums “We Have a Dream”, “United” and “Take Me Tonight”, the internet presence “deutschland-suchtdensuperstar.rtl.de” as well as a series of merchandise articles (T-Shirts, mgs etc.).

All in all, it becomes clear that the network effects that occur for information goods facilitate, but at the same time require, new and manifold pricing variants. Versioning in particular plays a prominent role. The general recommendation here was to offer several versions as a matter of principle. If this statement is linked to the realization that free offers are of great advantage for network goods, it is an obvious choice for companies to always check whether a basic version might not be offerable at a low price or even free of charge (Wirtz & Olderog, 2001, 199-200). As Jing (2000) shows formally even for the monopoly scenario, profits from high-quality information goods can, in case of existing network effects, be increased precisely by distributing lower-quality versions free of charge.

The free low-quality product is essential for expanding market coverage and enhancing consumer valuation of the high quality (Jing, 2000, 2).

The cannibalization effects that occur (buying the lower-quality product instead of the higher-quality one) are overcompensated for by the network effects and the resulting increased willingness to pay for the higher-quality product. The low-quality good is thus the gateway drug, so to speak, because

the low quality helps inflate the network and the high quality extracts the network benefits and is the primary source of revenue (Jing, 2000, 8; originally in italics).

The more pronounced the network effects are, the higher the price can be set for the premium offer. Brynjolfsson and Kemerer (1996) found out, for the market for spreadsheet programs (without versioning), that an increase of the installed base by 1% was concurrent with a price increase of 0.75%.

For software offers, Gallagher and Wang (1999, 81) empirically observed that it is very well possible to ask premium prices if one makes simultaneous trial offers. In the web server market they investigated, companies with trial offers were able to surcharge up to 60% compared to companies without trial versions.

Network effects represent a certain protection for the established provider. In order to gain market share as a second mover, the Follow-the-free strategy can be easily implemented. Buxmann (2002) shows, with the help of simulations, that this is the case first and foremost if the established provider’s installed base is large and the network effects pronounced. If they are very strong, it may even

make sense not only to give away the product, but even to pay for it in order to attack a securely established provider. This way, we can easily explain why Microsoft was able to win the browser wars with Netscape relatively easily. It was because of the help of strong network effects and a large installed base of operating systems and Office applications. In the same way, though, the market for business software, which is characterized by weak network effects, shows that low-price strategies are of little help in this latter case (Buxmann, 2002, 14 et seq.).

A particular variant of price differentiation is used by companies who tolerate pirated copies. Many private individuals, for example, use software in infringement of copyright law, whereas companies and administrations generally opt for legal usage. Even if companies go on the record to criticize this situation, it can be assumed that they would practice price differentiation of their own volition under perfect legal circumstances. On the one hand, this is because private individuals' willingness to pay is generally far below companies', and on the other hand because of habituation effects. If pupils and/or students illegally use software, it is not wholly improbable that they will, once they become decisionmakers in a company, buy these products. A relatively low price for the one target group (pupils and students) thus leads to increased sales in the other target groups (companies) (Wiese, 1991, 49). A further reason is the network effects that are generated if the installed base is large. We will address this line of argument in more detail in the chapter devoted to copyright management.

In conclusion, the different forms of 2<sup>nd</sup> and 3<sup>rd</sup> Degree price differentiation are summarized in Table 18.3. However, we must particularly emphasize the role played by versioning, which is especially easily implemented for information goods. It represents an autonomous form of 2<sup>nd</sup> degree price differentiation, but can also be combined with other variants of price differentiation, be it as versioning windowing or versioning bundling. The former is practiced if, for example, the DVD contains additional material compared to the film that ran in cinemas, which is meant to increase willingness to pay. The latter exists as rebundling (Stahl et al., 2004, 60) or as compilation (Heitmann et al., 2006, 11). In rebundling, single newspaper articles on a certain subject are compiled and offered as a package online, for example. A compilation contains songs by different artists. In both cases, an increase in demand is to be expected, because bundling levels the different preferences. The consumers accept the fact that they will buy, in a larger package, articles or songs for which they have a very low willingness to pay, or even none at all, individually. Versioning can also be easily combined with the Follow-the-free strategy, which is then applied to the low-end version only.

Object	Information Content (First Copy)		Medium		Timing of the Offers		
	identical	varying	identical	varying	singular	sequential	simultaneous
<b>Form of Price Differentiation (PD)</b>							
<b>2<sup>nd</sup> Degree</b>							
<b>Windowing</b>	Traditionally: unchanged original product	Different versions along the exploitation chain	May change between the individual exploitation windows		Set sequence of offers in the different exploitation windows	Partly: TV reruns	Partly: Video/DVD remains available in parallel to subsequent offers
<b>Versioning</b>		Different versions of the same original product	Choice of media as a form of versioning (availability of information)				Simultaneous choice of alternatives for customers
<b>Bundling</b>	Package offer with unchanged original products	Versioning: - identical product in different packages (Rebundling, Compilation) - Product variants in the package offer	Traditionally: identical medium				For several bundles: simultaneous choice of alternatives for customers
<b>3<sup>rd</sup> Degree</b>							
<b>Follow-the-free</b>	Traditionally: unchanged original product	As a bundle in connection with a advertising or other complements	Traditionally: identical medium		Standard price at one time only		

Table 18.3: Special Forms of Price Differentiation for Information Goods.

A variant, recently proposed by Chang and Yuan (2008), is Collaborative Pricing. They suggest a model in which the customer compiles his own personal bundle from the company's range of products, and is even able to make versioning sug-

gestions. We would label this versioning Customized Bundling: the provider makes a price offer on the basis of the customer data (customer profile, buying history etc.) and the specific versioning effort, which the customer may accept or reject. In case of a rejection, the process will begin anew. This is a very far-reaching and innovative form of individual dynamic pricing:

An interactive pricing process can be considered as a combination of collaborative prototyping, needs prediction, price estimation, and profits maintenance (Chang & Yuan, 2008, 638).

The allocations in the chart below relate to finished information goods, but can also be applied to information goods yet to be created. The entries in italics are the more recent variants of versioning that are based on digitalization and can be implemented in relation with other forms of price differentiation. The represented forms of price differentiation not only contain the known textbook variants, such as quantitative, personal or spatial differentiation. These are also applicable, but do not represent an exception.

### **18.3 Conclusion**

Only available in the printed version.
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