4.2 Versioning Information Goods

Introduction

One prominent feature of information goods is that they have large fixed costs of production or first-copy costs, and small variable costs of reproduction (or very low incremental costs). The challenge in pricing is to find a way to sell to a broad enough audience to cover those high first-copy costs. *Cost-based pricing* makes little sense in this context; *value-based pricing* is much more appropriate. Different consumers may have radically different values for a particular information good, so techniques for differential pricing become very important. Hence, different prices to different customers, according to how much they are willing to pay for it. The two approaches in value based pricing are *personalized pricing* and *group pricing*.

Personalized pricing requires knowledge about individual customers. The best intelligence about customers comes directly from them, as when customers communicate their needs and indicate the products they would like to see or the categories of information of interest to them. One can learn a great deal about customers by offering them a menu of products and seeing which one they choose.
For example, if a product line is offered with one product targeted for professional users and one product for amateur users to split a market, then this strategy is called "versioning", means offering information product in different versions for different market segments.

Two basic principles for designing a product line of information goods are as follows:
Offer versions tailored to the needs of different customers. A full line of information products will maximize the total value of the information you are providing.
Design these versions to accentuate the needs of different groups of customers. Emphasizing customer differences to extract more of the value that has been created, as each customer select the version that best meets his or her needs. Economists call this as **self selection**.

> ### In Value -based pricing
> Don't need to price by identity
> Offer product line, and watch choices
> Design menu of different versions Target different market segments
> Price accordingly (self selection)

> ### Making Self-Selection Work
>
> May need to cut price of high end
> May need to cut quality at low end
> Value-subtracted versions
> May cost more to produce the low-quality version.
> In design, make sure you can turn **features off!**

There are many forms of differential pricing such as *quality discrimination* or *versioning*. These terms describe situations in which the producer provides different qualities/versions of a good which sell at different prices. The point of versioning is to get the consumers to sort themselves into different groups according to their willingness to pay. This means offering a product line of variations on the same underlying good. The product line is designed so as to appeal to different market segments, thereby selling at a high price to those who have a high value for the product, and a low price to those who value it less. In other words, consumers with high willingness to pay choose one version, while consumers with lower willingnesses to pay choose a different version. The producer chooses the versions so as to induce the consumers to "self select" into appropriate categories.

Versioning is a common strategy for conventional information goods. Books are issued first in hardback and then in paperback; impatient, high-value users buy the hardback, while others wait for the paperback. Movies come out in theaters first, and then are released 6 months later in home video. But the flexibility of digital media offers many alternative forms of versioning.

Different types of versioning dimension have been identified which includes:

1. **Delay:** Twenty-minute delayed stock quotes are given away, while a real-time feed may be costly.
2. **User interface**: The professional version has an elaborate user interface; the popular version has a simple interface.
3. **Convenience:** The low-price version is hard to use, but high-price version is simple to use.
4. **Image resolution**: Low-resolution images sell for a low price; high-resolution images sell for a high-price.
5. **Speed of operation:** The low-speed version is cheap; the high-speed version is expensive.
6. **Flexibility of use:** A low-end software product may be used only for certain tasks while the high-end product is more flexible.
7. **Capability**: The professional version has more capability and can do more things than the low-end version.
8. **Features and functions**: The high-end version has more features and functions.
9. **Comprehensiveness**: A high-end database or information service could be more comprehensive than the low-end.
10. **Annoyance**: The low-end product uses "nagware,'' such as start-up delays or reminders, to induce the consumer to upgrade to a more expensive version.
11. **Technical support**: The low-end product has no technical support; the high-end product offers this feature.

Delay

Information is like an oyster: it usually has the greatest value when it is fresh. This is especially true of "strategic" information, such as information about stock market or interest-rate movement, where individuals possessing the information have a strategic advantage over those lacking it. Those customers who want the latest information will pay more for the fresh and timely delivery of information. But consumers differ widely according to how eager they are for various types of information. This makes the common versioning tactic of *delay*.

Delay is a tried and true tactic for companies selling various services, nit just information. FedEx offers two classes of service, a premium class that promises delivery before 10 A.M. and a "next day" service that only promises delivery some time the next day. To encourage the senders to self-select, FedEx will make two trips to an address rather than deliver nonpremium packages before 10 A.M. They realize that providing premium service for "ordinary" packages would reduce the value of premium service.

User Interface

Another possibility is to provide high-paying customers with more powerful search capabilities i.e. offering different search interfaces to experienced and inexperienced users. In many cases, experienced users tend to be users with high willingness to pay; they are the customers who first signed on to purchase the information and generally use it more intensively.
Smart design of user interfaces supports the idea of a more elaborate interface for more experienced users. Casual users typically welcome a stripped-down interface, while advanced users can handle additional capabilities. This makes the search interface an ideal option for versioning.

Example: The **Knight-Ridder company** Dialog uses this strategy in its Web-accessible databases. One product, DialogWeb, is offered to "information professionals, on-line searchers, researchers, and other professionals". Another much cheaper and less powerful product, DataStar, offers a subset of the full Dialog database, with a much simplified user interface. DataStar advertises that "no training is required", which is attractive to nonprofessional searchers. But DataStar lacks the power of the full Dialog, making it unattractive to professionals. By versioning its product with different user interfaces, Knight-Ridder can simultaneously maximize the value of its database to customers and capture a large fraction of that value for itself.

Convenience

A versioning strategy that is closely related to delay is control of convenience by restricting the time or place at which an information service is used. For example, **Divx** offers DVDs that can be viewed only during a particular forty-eighthours period. Another example could be the off-hour internet access and downloading features at a much cheaper price than normal or busy hours.

Companies can also restrict access by location rather than time. For example, some online database providers have offered libraries licenses that allow unlimited use by patrons within the library but restrict use by off-site patrons.

Image Resolution

Visual resolution can also be used to discriminate between users. For example, **PhotoDisc** has a library of royalty-free stock photographs on the Web. Professional users want high-resolution images than can be printed in commercial journals; non-professionals want medium- or low- resolution images for newsletters. PhotoDisc sells different size images for different prices; 600K images (72 dots per inch resolution) for $19.95 and 10 Mb images (300 dots per inch) for $49.95. Its on-line catalog offers small, thumbnail images called "comping images" that potential purchasers can examine. Once users choose the image they want using the low-resolution version as a guide, they can then download a medium- or high- resolution version, depending on their needs.

Speed of Operation

When selling software, a common strategy is to sell versions with different capabilities. *Welfrom Research* Inc. sells a version of Mathematica, a computer program that does symbolic, graphical, and numerical mathematics. At one time, the student version of Mathematica, disabled the floating-point coprocessor, slowing down mathematical and graphical calculations. To implement this strategy, Welfram had to add a floating-point library to the package at additional cost to itself, even though the software package with a floating-point library sold for a much cheaper price. The student version sold for a bit over $100; the professional version sold for over $500.

The *IBM Laser printer Series E* was functionally identical to the standard Laser Printer, but printed at 5 pages per minute rather than 10. The reason was the presence of a chip which induced wait states.

Intel followed the same strategy with its 386SX chip, designing the chip with an integrated mathematical coprocessor, disabling it. This allowed Intel to sell a low priced chip to those who didn't need floating-point calculations while still maintaining a relatively high price for the math-enabled CPU.

Flexibility of Use

Another important dimension of information that can form the basis for versioning is the ability to store, duplicate, or print the information. Back in the days of copy-protected software, some software companies (such as Borland) sold two versions of their software- a low priced version that could not be copied and a high-priced version without the copy protection. Nowadays, Lexis/Nexis imposes charges on some users for printing or downloading information. If customers differ significantly in their willingness to pay for storing, copying, or transferring information to other media, this, too, can form the basis for profitable versioning.

Capability

Table 3.1 summarizes the product line of Kurzweil, a software producer of voice recognition products. The products are distinguished by the total size of the vocabulary included and by the addition of vocabulary appropriate to specific professions. Note the dramatic differences in prices: the high-end version for surgeons is a hundred times more expensive than the entry-level software! Kurzweil has correctly recognized that different market segments have different needs- and that the high-end will pay much more for the enhanced capability.

Product	Price	Description
Voicepad Pro	$ 79	Vocabulary of 20,000 words
Personal	295	Vocabulary of 30,000 words
Professional	595	Vocabulary of 50,000 words
Office Talk	795	General Office Staff
Law Talk	1195	Legal vocabulary
Voice Med	6000	Medical Offices
Voice Ortho	8000	Special purpose medical vocabulary

Features and Functions

Features of as product can also be used to segment a market such as Intuit's versioning of *Quicken*. The Quicken Deluxe version offers a mutual fund finder, a mortgage calculator, an insurance needs estimator, and other features valued by high-powered users. The basic version of the software offers only the core checkbook software. Intuit has pursued the same strategy with TurboTax, selling both a stripped-down and a deluxe version

Comprehensiveness

In some cases, comprehensiveness is a crucial dimension: some customers will pay a big premium for more complete information. Information completeness varies a great deal, depending on the context. Consider how people use dialog. Public affairs specialist and journalists like the fact that they can now search newspapers around the country or the world. For marketing purposes, managers often value information that is broken down by customer or offers lots of details about historical purchasing patterns. The difference between the DialogWeb and DataStar rests partly on these distinctions, which are a natural dimensions along which any database provider can base different versions

Annoyance

A prime example of this is "nagware", a form of shareware that is distributed freely but displays a screen at the start or end of the session encouraging customers to pay a registration. Public television stations use this strategy in their fundraising drivers.

Support

The final dimension is a technical support. Netscape originally made its browser available for free download and for a price on a CD that come with a mutual and access to technical support. By offering a downloadable version for free, Netscape gets around the "experienced good" problem, i.e. anyone can try the product with little or no risk to see if they like it.

McAfee Associates offers its virus detection software in a free, shareware version or as part of a subscription service that provides professional advice, notification, and technical support. This strategy is somewhat dangerous for two reasons: If customer needs technical support, they may think of this software as low quality product and technical support is costly to provide. Promises to offer support that are not delivered can be disastrous in terms of public relations.

**Product dimensions Susceptible to versioning and
Their likely Users/ Uses**

Product Dimension	Likely Users	Likely Uses
Delay	Patient	Impatient users
User Interface	Casual	Experienced users
Convenience	Business	Home users
Image resolution	Newsletter	Glossy uses
Speed of operation	Student	Professional
Format	On-Screen	Printed users
Capability	General	Specific uses
Features	Occasional	Frequent users
Comprehensiveness	Lay	Professional users
Annoyance	High-time-value	Low-time-value users
Support	Casual	Intensive users

These are just a few of the dimensions on which one can version information goods. A notable feature of these dimensions is that it often involves first building the high-end product (the immediate, high-resolution, elaborate userinterface version) and then *degrading* it in some way to produce the low-end version. Often *extra* processing or programming is needed to create the low-end version of the product.

This, of course, raises public policy questions: should such deliberate product degradation be allowed? From the viewpoint of economic analysis, the critical issues are the size of the product degradation and whether the price differentiation increases or decreases the size of the market. The precise statement is this: *if price differentiation reduces the size of the market, aggregate welfare necessarily decreases*. On the other hand, *if price differentiation increases the size of the market aggregate welfare may easily increase*.

Consider a simple example: a textbook sells in the US for $50 and a paperback, newsprint version of the same book sells for $5 in India. Does the low-quality version increase overall welfare? To answer this question we have to ask what version *would* have been produced if only one version were allowed. In this case, the likely answer is that only the high-quality; high-price version would have been produced. The ability to produce the low-quality, low-price version increases the availability of the good, and increases overall consumer surplus.

An even more dramatic example can be constructed where the cost of production is such that the product could not be produced at all without access to both the US and Indian revenue streams. Here the ability to version, and price discriminate, is critical to the economic viability of the product in question. This case is rather common with information goods, due to the high first-copy costs.

Versioning tends to increase overall welfare.

Value-subtraction Versions

In selecting product line, the firm develops the high-end version first and then degrades to obtain lower quality versions. Information good vendors usually adopt such a high-to-low or "**value-subtraction**" versioning strategy to exploit the cost savings in content, design, and code reuse.

For physical goods, it is usually more expensive to produce an extra unit of the high-quality versions. A nineteen-inch TV is more costly to build than a fifteen-inch TV. But with information, it generally costs just about as much to distribute the fancy version as the plain version. In many cases, in fact, production of the low-quality version incurs additional costs, since it is often a degraded form of the high-quality version.
For example, a financial service firm that offers real-time and delayed stock prices needs added storage capacity to offer the delayed service. For image resolution, the images have to be scanned using a high resolution and then degraded to produce the low resolution.

Avoiding pitfalls in versioning

One of the pitfalls in degrading the quality of the information goods is that it discourages high-willingness-to-pay consumers from purchasing it. To overcome this problem is to offer the high-end product only, with a premium price. In dealing with customer choice, the cheaper versions will enhance consumer choice; customers picking them are revealing that they value the option to buy a low-end version of the product at a discount.

The key issue in designing an information product line is to pick the right dimensions on which to adjust the quality and to make sure that the quality adjustment cannot be undone by clever consumers or intermediaries.

For example, Microsoft offers two versions of its Windows NT software: the *Windows NT Workstation 4.0* sells for about $260 and Window NT Server, which sells for $730−$1080, depending on configuration. Workstation NT can run as a Web Server, but accepts only 10 simultaneous sessions; the Server version will accept hundreds of simultaneous sessions. According to an analysis by O'Reilly Software the two operating systems are essentially the same. In fact, the kernel (the core component of the Operating system) is identical in the two products and relatively minor tuning can turn Workstation NT into Server NT.

Examples of quality adjustment

There are many examples of this sort of quality adjustment to support self-selection. Airline pricing is an obvious example. Airlines sell discounted fares that involve various restrictions—advance purchase, Saturday night stayover, etc. Business travelers choose unrestricted fares, while tourists choose the restricted fares. Even though the cost of carrying a business traveler is essentially the same as carrying a tourist, unrestricted fares can sell for 3-5 times as much as restricted fares. In this case reducing the "quality" of the good by imposing additional restrictions allows the producer to segment the market and induce self-selection so that prices can be based on willingness-to-pay.

Quality adjustment in transportation in order to induce self selection is a very old strategy. Consider, for example, this commentary on railroad pricing by Emile Dupuit, a nineteenth century French economist. It is not because of the few thousand francs which would have to be spent to put a roof over the third-class carriage or to upholster the third-class seats that some company or other has open carriages with wooden benches. What the company is trying to do is prevent the passengers who can pay the second class fare from traveling third class; it hits the poor, not because it wants to hurt them, but to frighten the rich. And it is again for the same reason that the companies, having proved almost cruel to the third-class passengers and mean to the second-class ones, become lavish in dealing with first-class customers. Having refused the poor what is necessary, they give the rich what is superfluous. (Ekelund [1970])

Online and Off-Line Versions

Information is available both on online and offline version. In many cases, offline information is actually more convenient to use. For example, many readers feel that it is easier to read text book on paper than on a screen.

It is much cheaper to sell information online since there are no production or distribution costs. Esther Dyson suggests that information provision as a service rather a good. A practice of the National Academy of Science Press offers both online and printed versions of its books. Since online version of a book is convenient for browsing and the printed copy is for actual reading, the online version adds value because it gives the reader a way to browse without cannibalizing the sales of the hard copy.

In many ways, selling information online and offline is like selling physical products through two separate channels of distribution. In deciding which "channel" to promote, and how to price into each channel, not only the costs associated with that channel and the character of demand through it is considered, but also the extent of channel split-lover or cannibalization. If an online download of information displaces a hard-copy sale, revenue may well be lost. On the other hand, if today's download enhances demand tomorrow for both online and offline information, sacrificing some current revenue to make more in the future may make good business sense.

If an online version is a substitute for the offline version, its cost can be recovered through fees or advertising, or versioning; not to compete with the offline version. If it complements offline version, then aggressive promotion is done by encouraging the sales of the offline product.

Often, providing information online enables the suppliers to add value in ways that would not be possible offline. This in turn creates opportunities for new versions. Perhaps most obvious and important fact is that online information can be searched, sorted or filtered electronically. Online information can also provide cross-references through hyperlinks to further information. West Publishing sells CDs containing legal references materials with hyperlinks to its online subscription service. These CD sales thus promote West's subscription revenues. Merely posting something that is available in print online does not add value to it.

Two strategies in different versions include:
         Market Analysis, and
         Product Analysis

Design the high-end product first, and then remove features to make the low-end version

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Goldilocks pricing

The number of versions of a product offered should be equal to the number of types of consumers in the market. If there are business travelers and tourist travelers in the market, then it makes sense to have two broad "versions" of airline tickets. But what happens if there is no obvious market segmentation? What if the number of "types" is huge? Are there any useful rules of thumb? A common choice is to have two versions: a "*standard*" and an "*enhanced*" version. However, some recent work in marketing suggests that the optimal number of versions in this case is not two but three. The reason is due to what psychologists call *extremeness aversion:* if the only two sizes of drink that you offer are small and large, then some consumers will be on the margin between choosing one extreme or the other. *Some* of these consumers will choose the small version, thereby reducing producer revenues. But suppose the producer adds a "jumbo" version, and renamed the sizes "*small*," "*medium*," and "*large*," with the current medium being the same size as the previous large version. In this case, the medium size serves as a focal point for the indecisive: those who would have chosen small, end up compromising on medium, thereby increasing revenues.

This effect can be significant. Simonson and Tversky describe a marketing experiment in which two groups of consumers were asked to choose microwave ovens. One group was offered a choice between two ovens, an Emerson priced at $109.99 and a Panasonic priced at $179.99. The second group was offered these ovens plus a high-end Panasonic priced at $199.99. By offering the high-end oven, Panasonic increased its market share from 43% to 73%. More remarkably, the sales of the mid-priced Panasonic oven increased from 43% to 60% apparently because it was now the "compromise" choice. According to Smith and Nagle, *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.

If this same psychology applies to information goods as well as physical goods, then the producer may be better off providing standard, professional, and "gold" versions than it would be if it just provided standard and professional versions even if very few consumers choose the gold version.

> **In "Goldilocks pricing" in the absence of any additional information having three versions rather than two may be attractive due to "extremeness aversion" on the part of consumers.**

Extremeness aversion is used all the time in marketing. Every restaurateur knows that the best selling wine is the one with the second lowest price on the menu. A common practice is to offer and obviously low quality wine at the bottom end, and set the price of the next wine up to be only slightly higher. This makes it seem like a really good deal, virtually guaranteeing significant sales.

While selling the middle product, the high-end products push people toward the compromise choice. Hence, offering an immediate notification service of news events while selling a newsletter or offering a superhigh-resolution version while selling images is just a few examples of using extremeness aversion of information goods.

One important strategy is to offer premium quality technical support as the main differentiator of the "gold class". This might be something like an "immediate response" line that connects users to technical support people without delay. This costs very little to offer. As long as too many people do not choose the gold version, the cost of adding this kind of support will be small.

Customizing the Browser and content

Consider a browser used to view on-line newspaper articles. If the owner of the content controls the browser, then it can choose the features of the browser to enhance the quality of consuming the content. For example, if the consumer is viewing page 7 of the article, it is likely that page 8 will be the next piece of content he looks at, so the browser could download page 8 in the background. Controlling the browser allows the seller of content to increase the quality of what it is selling.

It is also advantageous to *reduce* the quality of a good in order to segment the market. Hence controlling the browser—or more generally, the conditions under which the information good is consumed—can be very advantageous to the content owner since it makes versioning easier. This may well be one of the factors that make use of Java-based viewers attractive. Java could be used to customize information about the user behavior, and hence help in versioning information. Using Java, some of the features that makes information more valuable to the user, can be turned off for some classes of users and offer professional access to this information. Users with high willingness-to-pay pick the system that displays more quickly.

> **Java based viewers allow allows you to vary the ways in which consumers can access your information and give you a new tool to induce self-selection.**

3. Bundling
Versioning creates different qualities of the same product in order to allow price discrimination. It occurs when suppliers do not know the characteristics of any individual, but can guess differences across groups of potential purchaser. A different tactic of suppliers is bundling.

Definition

> Another very attractive form of price discrimination is known as product *bundling*.
> It to the practice of selling two or more distinct goods together for a single price.
> A special form of versioning in which two or more distinct products are offered as a package at a single price.
> Bundling is the joint supply pf more than one product to reduce the need for price discrimination.

Bundling occurs when distinct products are sold together as a package. This is particularly attractive for information goods since the marginal cost of adding an extra good to a bundle is negligible. One of Microsoft's most successful products in recent years has been Microsoft Office, which is a bundle of different software products such as word processor, s spreadsheet, a database, and a presentation tool. Each of these products is also offered separately. This is what distinguishes bundling from tying, in which the individual products are offered only in the package. Similar,

academic journals are a bundle of articles, and a subscription to a journal is a bundle of issues. More recently, producers have been offering bundles of subscriptions of related journals at special rates.

Microsoft Office has been phenomenally successful, capturing over 90 percent of the market for office suites. There are several reasons for its success. First, the products are "guaranteed" to work well together: material can be cut and pasted or linked from one document to another. Furthermore, the components parts use shared libraries so that the Office applications take less disk space and work together more effectively than would be the case if separate versions of the applications are being installed.

Even without these benefits flowing from integrating the different pieces of the bundle, bundling can be attractive and profitable. Since the price of the bundling is usually less than the sum of the components prices, a bundle of two products is effectively a way of offering one to customers who would buy the other product at a smaller *incremental price* than the stand-alone price. If each of the two components sells for $70, and the bundle goes for $100, the incremental price of the second component is $30, less than the stand-alone prices of $70. Dun & Bradstreet follows precisely this approach in selling detailed information about the consumer purchases of branded products, information obtained from scanner machines at the supermarket checkout counters and other retail locations. Manufacturers purchasing Dun & Bradstreet data in one geographic area get a discount on data obtained in other areas.

In considering bundling, you need to determine whether you would like to offer a targeted discount on one to customers who would purchase the other product anyway. For example, if customers who value current-year information highly also are likely to value year-old information highly, it makes little sense to offer a discounted bundle containing information from both years. The online *Wall Street Journal*, offers a discount to the subscribers of its paper version, since the people who already read the paper version get less value from the online than nonsubscribers. But note that the Journal does not offer the paper subscribers a discount for the archives. They correctly realize that the online version is worth less to the paper subscribers, but the archives, if anything, are more attractive to paper readers, so there is no need to discount the price. Of course, you may be forced to offer such discounts if competitors do so as a way of attracting the most lucrative customers.

There are two distinct economic effects involved: *reduced dispersion of willingness to pay*, which is a form of price discrimination, and *increased barriers to entry*, which is a separate issue.

Dispersion in customer value

Bundling software applications can increase the value by reducing the dispersion in their willingness to pay. To see how the price dispersion story works, consider a software producer who sells both a word processor and a spreadsheet. Table 3.3 illustrates Mark and Noah's willingness to pay for two pieces of software. Mark works in the marketing department, where he uses a word processor most of the time and has occasional need for a spreadsheet. Noah works in accounting, where he mostly uses his spreadsheet but occasionally makes use of a word processor.

	Word Processor	Spreadsheet
Mark	$120	$100
Noah	$100	$120

Mark is willing to pay $120 for the word processor and $100 for the spreadsheet. Noah is willing to pay $100 for the word processor and $120 for the spreadsheet. If the vendor is restricted to a uniform price, it will set a price of $100 for each software product, realizing revenue of $400. But suppose the vendor bundles the products into an "office suite." If the willingness to pay for the bundle is the sum of the willingness to pay for the components, then each consumer will be willing to pay $220 for the bundle, yielding revenue of $440 for the seller.

Bundling increases revenues in this example because the willingness to pay for the bundle is less dispersed than the willingness to pay for the components. This will happen when the customers with a high willingness to pay for one component tend to have low willingness to pay for another component, that is, when there is a negative correlation across components in consumer value. In a flat rate pricing, goods are charged as much as the most reluctant purchaser is wiling to pay - in previous example, its $100. Hence, in a flat rate pricing, techniques that reduce dispersion of willingness to pay will tend to increase revenues. Bundling can serve this function.

> **Bundling significantly enhances firm profit and overall efficiency, but at the cost of a reduction in consumer surplus.**

Dispersion is not much of a concern in differential pricing because users with high values can be charged high prices. Dispersion only matters if flat prices are being charged.

Bundling can reduce dispersion even when consumer values are positively correlated simply because the sum of a large number of values will tend to be less dispersed than any single value. As long as values are not perfectly correlated, there will be some reduction in dispersion by bundling.

Bundling TV channels

Price discrimination is only needed when different customers behave differently. Suppose one really wants a news channel and another really wants a sports channel. Table 3.4 shows the valuations Edward and Peter put on each channel. Their tastes for a particular channel differ a lot. Their tastes for a bundle of channels are more similar.

Table 3.4: Bundling TV channels (user value in $000s)

	News	Sports
Edward	6	10
Camilla	10	6

If sky TV knows the exact characteristics of each viewer, it gets $3200 in revenue by perfect price discrimination. It charges Edward $6000 to receive the news channel, and $ 10,000 for the sports channels; and charges Peter $10,000 for the news channel and $6000 for the sports channel. If the price were higher, Edward and Peter would not sign up to take sky TV.

Now assume Sky executives don't have enough detailed information about users to charge different prices to different people. They have to set a single price per channel. For the news channel, if they charge $10,000 only Peter will sign up. If they charge $6000 they can get both to sign up. Sky does best by charging $6000 for each channel, making $24000 total revenue (2* 2*$6000). This is way below the $32000 that price discrimination would yield. However, to sell a channel to the second subscriber, Sky has to cut the price a lot for the person who would have happily paid more.

Bundling reduces this diversity of tastes. Suppose Sky only offers the two channels as a package. Edward would pay up to $16000 to get both, so would Peter. Sky gets $32000. Bundling is just as good as perfect price discrimination in this example because Edward and Peter place the same total value on the total package. Sky TV gets more revenue than by selling channels separately at a uniform price to each user.

Although bundling beats uniform pricing across users, it is usually less effective than perfect price discrimination. Suppose in table 3.4 that the sports channel is worth $4000 rather than $6000 to Peter. The most Peter will pay for a total package is $14000. Selling a package for $14000 to each of Edward and Peter earns Sky $28000. Note that since Edward still values the total at $16000, price discrimination across users would earn Sky (m $16000+$14000), an extra $2000 in revenue.
However, Sky's informational requirement about individual customers would then be huge. Bundling is often the best suppliers can do in the circumstances.

Other reasons for Bundling

There are many other reasons to bundle information goods such as computer software. One important consideration is *option value*. A consumer may find Microsoft Office an attractive purchase even if she doesn't currently use a spreadsheet, since she might use a spreadsheet in the future.

If the customer does decide to use a spreadsheet in the future, she will naturally choose the one that is "free" in the Microsoft Office bundle. Of course, the spreadsheet really isn't free- the consumer paid for it when she purchased the bundle- but it does have a zero incremental cost once the bundle has been purchased.

Information Bundles

Information is commonly sold in bundles now: magazines are bundles of articles, and subscriptions are bundles of magazines. There is a considerable variation in how much users would be willing to pay for different articles in a magazine. One reader of the *Economist* may read only the articles about America but get a lot of value out of them. Another reader might read only the articles about Europe and feel the same way about her choice. By bundling these articles together, the *Economist* reduces the dispersion in willingness to pay for the collection of articles it sells. If the publisher had to sell each articles on a pat-per-read basis, it would likely get significantly less revenue.

The same thing holds true for subscriptions. Owing to lack of interest or lack of time, reader probably doesn't read issue of every magazine to which he subscribe. But he may still be willing to pay for the subscriptions because there are some articles in some issues that are valuable to him.

Certainly there are other reasons to bundle articles together into issues. There are economics of scale in printing, binding, shipping, and marketing. But even if many of these economies of scale were reduced- as they are for electronic publications- it may still pay to sell articles bundled together into subscriptions for just the reason described above: *bundling will generally reduce the dispersion in willingness to pay, thereby enhancing revenue*.

Customized Bundles

Information technology allows for some interesting twists on bundling. Currently, pop music is sold on CDs, which are typically bundles of individual songs. This is in accord with the rationale described above: people have different favorites, and bundling the songs together reduces dispersion in willingness to pay.
Technologies are now becoming available that will allow users to create their own CDs. MusicMaker allow users to choose from its database of 30,000 different tracks and create own customized CD for less than $20. This is a great example of *mass customization of information*.

In a "*personalized newspaper*", user chooses a set of categories and a software agent assembles articles in those categories for delivery. This technology allows a users to create his or her own bundles of articles. Customized textbooks are also available.

Quantity discounts can play the same role as bundling. In fact, quantity discounts can be thought of as a generalized form of bundling and are useful for much the same reasons that bundling is useful. MusicMaker, the custom CD site mentioned above, uses just this form of quantity discounts: the minimum order is five songs for $9.95, with additional songs costing only $1 each.

Promotional Pricing

It is a commonly used marketing strategy which may take many forms such as:
>   Sales (limited-time reductions in price)
>   Coupons
>   Rebates and so on.

All of these techniques impose some inconvenience cost on the consumer. In the case of sales, the customer has to watch for the sales to occur. In the case of coupons, the customer has to clip the coupon and remember to take it to the store. In the case of rebates, the consumer has to remember to fill out the rebate form and mail it in. If everybody uses the coupons, the seller may as well cut the price and eliminate the cost of dealing with the coupons. The coupons are worthwhile only if they segment the market.

Sales and other forms of promotions are often ways to segment the market into price-sensitive and nonprice-sensitive components.

If IT lowers search costs to find the lowest price, then sales are no longer a very good way to segment the market. Or suppose that software agents can costlessly search the net for coupons, then coupons serve no useful functions.

How can you get valuable data about customers without customer-provided profiles, without expensive marketing data, and without consumers' active involvement? Answer: By offering them a menu of products and seeing which one they choose. This chapter examines ways to "version" information goods so as to make them appeal to different market segments who will pay different prices for the different versions. Strategies for versioning are

illustrated with examples and include: delay, user interface, convenience, speed of operation, flexibility of use, support, and others. It also explores issues such as: how to avoid common pitfalls in versioning, how to determine how many versions to offer, and the value to be gained from product bundling.

Lessons learned

- Adjust the characteristics of information products to emphasize differences in what customer's value. i.e.; offer different versions that have differential appeal to different groups, adjusting the price if necessary to sort the consumers.
- Version products along a variety of dimensions such as delay, user interfaces, image resolution, speed of operation, format, capability, features, comprehensiveness, annoyance, and support.
- Add value to online information to differentiate it from hard copy.
- If market is segmented naturally, information product line is designed to match with the market that segment. For example, of there are professional and amateur users, offer versions that are designed and priced to appeal to each of these markets segments.
    - If the market not segmented naturally, then three versions are chosen (just like Goldilocks).
- Control the browser: Controlling the browser by using Java or similar technologies helps modify the display of information, version and pricing market.
- Bundling makes sense if it reduces variation in willingness to pay. Combining complementary goods increases revenue if it decreases the variation across customers in their willingness to pay.
    - Nonlinear pricing can also be used to let consumer build their own bundles. quantity discounts can increase usage and revenues at the same time.
    - Promotional pricing is valuable only if it segments the market.

Summary

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