CHAPTER 4: STRATEGIES FOR PRICING INFORMATION

4.1 Pricing Information Goods

Case Study: Pricing problem- Encyclopedia Britannica

The *Encyclopedia Britannica* has been regarded as a classic reference work for more than two hundred years. And, as a classic, it has commanded a premium price: a few year ago a hardback set of the thirty-two volumes of the Britannica costs $1600. In 1992 Microsoft decided to get into the encyclopedia business. The company bought rights to *Funk & Wagnalls*, a second tier encyclopedia that had been reduced to supermarket sales by the time of the purchase. Microsoft used the *Funk & wagnalls* content to create a CD with some multimedia bells and whistles and a user friendly front end and sold it to end users for $49.95. Microsoft sold *Encarta* to computer original equipment manufacturers (OEMs) on even more attractive terms, and many computer manufacturers offered the CD as a freebie.

Britannica started to see its market erode and soon realized that it needed to develop and electronic publishing strategy. The company's first move was to offer on-line access to libraries at a subscription rate of $2000 per year. Large libraries bought this service- after all; it was the *Britannica*- but smaller school libraries, offices and homes found CD encyclopedias adequate for their needs and much more affordable. Britannica continued to lose market share and revenue to its electronic competition. By 1996, its estimated sales were around $325 million, about half of 1990 sales.

In 995, Britannica made an attempt to go after the home market. It offered an online subscription for $20 per year, but this attracted very few customers. In 1996 the company offered a CD version for $200, still significantly higher than Encarta.

Unfortunately for Britannica, consumers were not willing to pay four times as much for its product as for Microsoft's, and Britannica was soon on the ropes. In early 1996, Jacob Safra, A Swiss financier, bought the company, disbanded its sales network of 110 agents and 300 independent contractors, and started aggressive price cutting. He slashed the yearly subscription to $85 and experimented with a direct mail campaign offering CDs at different prices in an attempt to estimate demand. Everyone agrees that the quality of the product is high; PC Magazine gave it the top rating in its comparison of multimedia encyclopedias. But these efforts yielded only 11,000 paid subscribers. The big question Britannica now face is whether it can sell to a large enough market to recover its costs. Meanwhile, prices for CD versions of encyclopedias continue to erode. Britannica now sells a CD for $89.99 that has the same content as the thirty-two-volume print version that recently sold for $1600.

4.1.1 The cost of producing information

One of the most fundamental features of information goods is that their cost of production is dominated by the "first-copy costs" i.e. it is very costly to produce the first copy and very cheap to produce subsequent copies. It is often said, for example, that the "first copy costs" are more than 70% of the cost of an academic journal. With recent advances in information technology, the cost of distributing information is falling, causing first-copy costs to compromise an even greater fraction of total costs than they have historically.

Information delivered over a network in digital form exhibits the first-copy problem in an extreme way: once the first copy of the information has been produced, additional copies cost essentially nothing.

Information is costly to produce but cheap to reproduce

In the economist view, the fixed costs of production are large, but the variable costs of reproduction are small. This cost structure leads to substantial *economics of scale:* the more it is produced; the lower will be the average cost of production.

The fixed costs of producing information goods are sunk costs, costs that are not recoverable if production is halted. Investment in the construction of a building can be recovered by selling it. But if Movie flops, there isn't much of a resale market for its script. Sunk costs generally have to be paid up front, before commencing production. In addition to the first-copy sunk costs, marketing and promotion costs loom large for most information goods. Since attention is scarce in the information economy, and sellers of content have to invest in marketing new products to grab their potential customers' attention.

The variable costs of information production have different cost structure: the cost of producing an additional copy typically does not increase, even if a great many copies are made. Normally there are no natural limits to the production of additional copies of information: if production of one copy can reproduce a million of copies at the same unit cost. It is this combination of low incremental costs and large scale of operation that leads to the 92 per cent gross profit margins enjoyed by Microsoft. The low variable cost of information goods offers great marketing opportunities. Since information is experience goods, the seller can distribute free samples to experience it to know what it is. Telecommunication Industry also exhibit the same cost structure characteristic-large fixed costs and small incremental costs, that is, substantial economics of scale. It costs a lot to lay optical fiber, buy switches, and make a telecommunication system operational. But once the first signal has been sent, it costs next to nothing to send additional signals over the fiber, at least until capacity is reached. The market for information goods (eg. academic journal) tends to be much more like the automobile market. The high-fixed-cost/low-incremental-cost structure forces this outcome. To see why, let us suppose that there are several producers of a "generic" database. By this it mean a standardized set of data that anyone can produce: CD ROMs containing telephone directory listings, for example. There may be very large costs to producing the first copy of such a database, but subsequent copies can be stamped out at less than $1 a piece. Suppose that several firms have produced such CDs. If the products have similar user interfaces and similar data, consumers will buy only from the cheapest producer. But then the producers with no sales all have an incentive to undercut the competition, and there is no natural floor on prices except the $1 a copy reproduction costs. Since this price is likely inadequate to recover fixed costs, producers will be forced out of

business until only a single seller remains. This single seller can now operate as a monopolist unconstrained by competition.

4.1.2 Cost and Competition

The cost characteristics of an information goods include:

- Information is costly to produce but cheap to reproduce.
- Once the first copy of an information good has been produced, most costs are sunk and cannot be recovered.
- Multiple copies can be produced at roughly constant per unit costs.
- There are no natural capacity limits for additional copies.

Some view information as a commodity and use this perception to make a case for regulating its flow just as other commodities are regulated. If information is thought of as being on a "Continuum ranging from raw data to finished information", its regulation will be affected in the future by the value of information as it is perceived by tax authorities. But it is not easy to assign value to ideas to even to determine ownership, even though information can be very expensive to produce. Hence, information commodity market does not work. Competition among sellers of commodity information such as phone numbers, news stories, stock prices, maps, and directories pushes prices to zero.

Example of Information commodity market failure

CD phone books first appear in 1986 when Nynex developed a directory of the New York area. Nynex charged $10,000 per disk and sold copies to FBI, the IRS, and others. The Nynex executive in charge of the product, James Bryant, left to set up his own company, Pro CD, to produce a national directory. A consultant who worked on the project, Claude Schoch, had the same idea and created Digital Directory Assistance.

The phone companies wouldn't rent their computerized listings to the CD companies at a reasonable price, since they didn't want to cannibalize their $10 billion Yellow Pages services. So Pro CD hired Chinese workers to do the transcriptions in a Beijing factory, at a cost per worker of $ 3.50 per day. These Chinese workers typed in all the listings in every phone book in the United States- in fact, they typed them twice to check for errors!.

The resulting database had more than 70 million listings. These data were used to create a master CD, which was then used to create hundreds of thousands of copies. These copies, which cost well under a dollar a piece to produce, were sold for hundreds of dollars in the early 1990s and made a huge profit.But other producers caught on: within a few years competitors such as American Business Information adopted essentially the same business model, with minor variations. By now there are at least a half-dozen companies that produce CD phone directories for less than $20, and there are also several directory listings on the Internet that provide the same service for free, covering their costs through advertising.

Once several firms have sunk the costs necessary to create the product, a CD-competitive force tend to move the price toward marginal cost, the cost of producing an "additional" copy.

Market Structures for Information Goods

The high sunk cost, low marginal cost feature of information markets has significant implications for the market structure of information industries. In the final analysis, there are only two sustainable structures for an information market:

1. The *dominant firm* model may or may not produce the best product, but by virtue of its size and scale economies it enjoys a cost advantage over its smaller rivals. Microsoft is everyone's favorite example, since it controls the market for operating systems for desktop computers.
2. In a *differential product* market, a number of firms producing the same "kind" of information, but with many different varieties. This is the most common market structure for information goods: the publishing, film, television, and some software markets fit this model.

Many software markets involve both differentiated products and disparate market shares. Under such situation, the basic principles of competitive strategy are to:

Differentiate product by adding value to the raw information and a*chieve cost leadership* through economies of scale

4.1.3 Product Personalization

There are two methods of extracting the most value from the information that have been created, which are:

- Product personalization or customization to generate the customer value.
- Price arrangement that capture as much value as possible.

Example: Pointcast

News provider, Pointcast provide a good example of how information technology can be used to personalize information services and add value. The news stories that a user sees are highly personalized. Pointcast can be instructed to show the news headlines and stories on personalized topics such as Computer Industries, International business. It will personalize the advertisement also- ads having to do with baseball, fast food promotions, and discount travel agencies. This ability to customize and personalize advertisement is a very powerful marketing tool that Internet businesses are only beginning to understand and exploit.

Intermediaries like DoubleClick and Softbank Interactive Marketing sell ads targeted by day of week, time of day, continent, country, state, or operating system, and they are adding more capabilities each day.

Search engines such as Yahoo! provide another example of this kind of personalization: when you search for Web sites about, say, 'fishing', you will be shown a list of sites having to do with fishing...along with an ad for some fishing-related product.

"Search engine spamming" is a variant on this theme. For example, one Web site selling children's clothing added hidden tags containing the words, "child care". The operators of this site figured that people looking for child care would also be interested in children's clothing.

4.1.4 Product Pricing

In addition to making its easy to personalize product, the Internet also makes it easy to personalize price. If the information product meets the interest of customer, the seller can have price flexibility in the absence of generic competitive products in the market.

The purest examples of tailored goods are research reports, such as those produced by Gartner Group and Forrester Research and the Research Board. The Research Board, for example, sells research reports to CIOs that are highly targeted to their interests and needs. In exchange, member companies pay subscription fees, simply because it's hard to find such detailed and personalized information elsewhere.

Price Discrimination

If all customers for the product place essentially the same value on the product, the profit maximizing pricing decision is easy: just price the product at this common value and charge what the market will bear. The difficulty arises when consumers' willingness's to pay are heterogeneous.

In this case the producer's choice is not so obvious, since fewer consumers will buy at higher prices. Furthermore, if willingness-to-pay differs across customers, the producer would generally find it advantageous to charge different users different prices.

Example: Electronic Book

Let's take and example for the demand of an electronic book having the cost structure of $7 to produce the first copy, and the second copy can be produced at zero incremental cost.

Example 1. There are two consumers, A and B, A is willing to pay $5 for a book, B is willing to pay $3 for the book.
Note that the total benefits 8 = 5 + 3 exceed total cost, 7, so it is socially desirable to produce the book. However, the producer cannot recover his costs at any uniform price: if he charges $5 only one consumer will buy the book, so his revenues will be $5. If he charges $3, both consumers will buy, but revenues will only be $6. If the producer can price discriminate—*sell to different users at different prices*—then it will be possible to cover the development costs of the book.

Example 2. A is willing to pay $8, B is willing to pay $3.
In this case, total benefits minus total costs would be maximized if both parties got copies of the book. But again this outcome cannot be supported at any uniform price: the highest price at which both parties would buy is $3, and this generates inadequate revenues to cover the cost. However, if the producer could charge different users different prices, he would find it profitable to sell books to both consumers.

Example 3 A is willing to pay $20, B is willing to pay $8.

In this case, a producer who is only interested in cost recovery could price the book at $3.50 and be assured of recovering his costs. But a profit-maximizing producer would pursue a very different strategy: it is in his interest to price the book at $20 and sell only to the high end of the market. Note that this is the case *even though consumer* B *is willing to pay the entire cost of production!*

Forms of Differential Pricing

There are three different forms of differential pricing:

- **Personalized pricing**: Sell to each user at a different price.
- **Versioning** : Offer a product line and let users choose the version of the product most appropriate for them
- **Group pricing**: Set different prices for different groups of consumers based on membership or identity, as in student discount.

4.1.5 Personalized Pricing

Personalized products can be sold at a highly personalized price. This phenomenon is also known as "*mass customization*" or "*personalization*" and is also referred to as "*first degree of price discrimination*". The vendor may offer different consumers different prices as a form of market research. Sellers place much emphasis on "*owning the consumer*." This means that they can understand their consumer's purchasing habits and needs better than potential competitors. For example, a seller can offer prices and goods that are differentiated by location, by demographics, or by past purchase behavior and/or characteristics. Sometimes the vendor has a good idea of what the price responsiveness of the different groups might be and sometimes it is conducting market research to discover price responsiveness. For example, *Encyclopedia Britannica* has conducted a direct mailing campaign to determine the consumer demand. The vendor selling via catalog can charge different prices to different consumers by personalizing the price.

Personalized pricing allows firms to charge prices closer to the reservation price for each consumer.

Consumers can personalize their front page at many on-line newspapers and portals. They can buy a personally configured computer from Dell, and even purchase computer-customized blue jeans from Levi's. Amazon charge different prices to different customers depending on their behavior as market experimentation. Companies will find it much more attractive to fine-tune pricing in Internet based commerce, eliminating the Catalog pricing. Internet retailers revise their prices much more often than conventional retailers.

Personalized pricing is being used to charge the user of their interests with different prices, offering customized products or services.

The information is also being sold at highly personalized prices. The online database provider Lexis-Nexis sells to virtually every user at a different price. The price it charge depends upon the type of the enterprise (corporate, small businesses, government, academic), the size of the organization, time to access database, the volume of database, mode of operation such as viewing only, storage etc.

Different consumers have different values for product and hence charge different prices based on their buying habits and other characteristics.

Personalized pricing on the Internet

Internet provide a unique characteristics of instantaneously change the price, unlike catalog pricing, and offer sales, close-outs and other forms of promotional pricing. These promotions are attractive in moving product, and estimate market response to price changes.

Promotions to estimate price sensitivity are very easy on the Internet.

Virtual Vineyards tracks the clickstream of each user and can instantaneously make them special offers based on their behavior. Amazon.com tracks the purchases of each consumer and recommends additional, related books the next time the user longs on.

The internet offer unique marketing opportunities that are extremely difficult to pursue via other media. American Airlines and Cathay Pacific have run several successful auctions for seats on their flights and cruise lines are beginning to fill up empty cabins with last-minutes sales using similar techniques. In fact, the airline auctions sell off unused seats, and help estimate the demand for their services with the change in the price. Computer retailers such as Egghead and CompUSA are using e-mail to push special offers at attractive prices to sell overstocked merchandise and to discover the price points that move their products.

Another issue relating to personalized pricing and mass customization is advertising. Many of the services that use personalization also rely heavily on revenue from advertising. Search engines, for example, charge significantly more for ads keyed to "hot words" in search queries since these ads are being shown to consumers who may find them particularly relevant. Google, for example, currently has over 100,000 advertisers who bid on keywords and phrases. When a user searches for information on one of these keywords, the appropriate ads are shown, where the bids are used to influence the position in which the ads appear.

Lessons in personalized pricing

>> Personalize product and personalize pricing
>> Knowing customer
>> Differentiating prices
>> Use promotions to measure demand.
>> Personalized pricing raises privacy issues when the information about the customer buying behavior is sold to third party without prior consent.

4.1.6 Versioning

Second-degree price discrimination refers to a situation where everyone faces the same menu of prices for a set of related products. It is also known as "*product line pricing*," "*market segmentation*," or "*versioning*." The idea is that sellers use their knowledge of the distribution of consumer tastes to design a product line that appeals to different market segments. Automobiles, consumer electronics, and many other products are commonly sold in product lines. Books are available in hardback or paperback, in libraries, and for purchase. Movies are available in theaters, on airplanes, on tape, on DVD, and on TV. Newspapers are available on-line and in physical form. Traditional information goods are very commonly sold in different versions.

Information versioning has also been adopted on the Internet. For example- 20-minute delayed stock prices are available on Yahoo free of charge, but real-time stock quotes cost $9.95 a month. In this case, the providers are using "delay" to version their information.

Often consumers with high willingness to pay will be attracted by lower-priced products that are targeted towards consumers with lower willingness to pay. This "*self-selection problem*" can be solved by lowering the price of the high-end products, by lowering the "quality" of the low-end products, or by some combination of the two.

Versioning is good in that it allows markets to be served that would otherwise not be served. This is the standard output-enhancing effect of price discrimination. Versioning is being widely adopted in the technology-intensive information goods industry. Microsoft sells a number of versions of their operating systems and applications software, and even Hollywood has learned how to segment audiences for home video. The price difference between the two versions is much greater than the difference in marginal cost.

4.1.7 Group Pricing

It is also referred to as "*third-degree price discrimination*." of selling at different prices to different groups. It is, of course, a classic form of price discrimination and is widely used.

The following are the main four reasons to group pricing:

- **Price sensitivity:** If member of different groups systematically differ in their price sensitivity, seller can profitably offer them different prices. Examples: student and senior citizen discounts
- **Network effects:** If the value to an individual depends on how many other members of his group use the product, there will be value to standardizing on a single product. Microsoft has exploited this desire for standardization with its Microsoft Office suite.
- **Lock-in:** If an organization chooses to standardize on a particular product, it may be very expensive for it to make the switch owing to the costs of coordination and retraining. Again, Microsoft serves as the obvious example.
- **Sharing:** In many cases it is inconvenient for the individual user to manage or organize all information goods that he or she want to consume. Information intermediaries such as libraries or system administrators can perform this coordination task.

Price Sensitivity

A profit maximizing seller will want to charge a lower price to consumers who are more sensitive to price. This price sensitive strategy is commonly used for information goods that are sold internationally. A textbook that sells for $70 in the United States sells for $5 in India.

Localizing the information will provide different versions of the book, targeted to different countries. An economics textbook that used examples in rupees and GDP figures from India wouldn't be very appealing to the US market but would be highly welcome in India. Differentiating the product in this way allows for differential prices and has the potential to make all parties to the transaction better off.

It is common to see localized versions of software and dubbed versions of Movie. The global Internet will localize all sorts of information goods because this will benefit producers in two ways: it allows them to sell to a larger market, and it prevents inexpensive foreign sales from cannibalizing domestic sales.

Network Effects

Network effects arise when the value one user places on a good depends on how many other people are using it. Such effects can arise for a variety of reasons, out of which the most relevant one is the desire for standardization within an organization.

Sellers of software can exploit this desire for standardization and make it attractive for organizations to choose their product by offering them quantity discounts or site licenses. Typically, site licenses have applied to members of an organization or business at a particular physical location, but the Internet may well change this practice since geographic proximity is not as important as it

used to be. Software companies offer a plethora of licensing arrangements, based on the number of concurrent users, number of workstations, number of servers, geographic site, and type of industry to which they are selling.

Lock-In

Wall Street Journal's major asset is its reputation as the premier source for business and economic news. To maintain this reputation, the Journal has created a Newspaper in Education program that offers inexpensive subscription to students in business and economics classes and it offers free subscriptions to the faculty members. This has two effects. It gives faculty members the incentive to require, or at least encourage, the students in their class to subscribe to the Journal, and it encourages the professors to refer to Journal articles in lectures. Both effects have helped to maintain and enhance the Wall Street Journal's reputation.

The above network effects illustrate the common source of switching costs. It becomes very costly to switchover to something new, if a product is ubiquitously being used in an organization. Then the vendor of such product has control over the price setting and contract terms.

Microsoft originally offered Microsoft Office using a variety of arrangements, including per-seat and concurrent user licenses. Recently they dropped the concurrent licensing policy, reasoning that their product was used by virtually everyone in the organizations that dropped it.

Sharing Arrangements

Site licenses are only one example of what we might call, "sharing arrangements." Academic journals that sell at a high price to libraries and a low price to individuals are another example. Libraries are willing to pat the higher price since the material is shared among many users. Videotapes are another good example: some videos, especially children's videos, are priced for household purchase, but some are clearly priced for rental store use only. The consumers then "share" the rental store copy. In these cases the library and video store serve as "information intermediaries" that organize and manage the information for the end users.

One of the early appearances of "pricing for sharing" was the so-called "circulating libraries" in 18th century England. During this period novels become a highly popular form of entertainment, so popular that printers has a difficult time keeping up with demand. In desperation, retail bookstores started "renting" out the latest hit novels. Many book sellers found this practice so lucrative that they dropped the selling side their business and went entirely to the rental business, becoming, in effect, for profit libraries.

Transaction costs determine whether it is better to sell or rent information.

The library and video examples show that rental and purchase arrangements coexist. By offering the product both for sale and for rental, the producer can segment the market.

SUMMARY

Information is costly to produce but cheap to reproduce. The economic rule that parallels this theme is that while fixed costs of production are large (ie: creating an original music CD), variable costs of reproduction (making multiple copies of that first CD) are small. Producers of information goods will want to consider the possibility of differential pricing, letting prices vary both across consumers and across qualities of the good.
This chapter focuses on the special cost structure of information, and outlines effective ways to sell information good to identifiable markets. It discusses how to develop a basic strategy based on what industry you operate in, and illustrates how the unique characteristics of information markets offer new opportunities to implement time-tested principles of competitive strategy (differentiating your product, achieving cost leadership, first-mover advantages). The authors also examine strategies for customizing information by personalizing your product, and by various means of personalized pricing.
Quality variation may take the form of offering a degraded quality in order to sell to the low end of the market while still maintaining revenue from the high end of the market. Such quality variation can generate additional revenue to cover costs as well as increasing access to the good making all parties to the transaction better off. Bundling articles, journals and services together may be attractive as additional means of raising revenue.

Company Examples: Pointcast, Nynex, Encyclopedia Britannica, Microsoft, Eggshead.

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