Pricing of Media and Information

Eli M. Noam, *Media and Digital Management*, https://doi.org/10.1007/978-3-319-72000-5_11

11.1 Setting a Price

11.1.1 Introduction

When a firm plans and produces a good or service, it does so with the intention of selling it to generate a profit. But at what price? "Pricing" is a critical part of business strategy and marketing because it translates a product into a revenue stream. As Thomas Nagle and Reed Holden observe, pricing tries to capture the value created by the design, production, and marketing efforts of the firm.[1] Where pricing is done in an ineffective way it offsets the company's other efforts. To analyze the pricing issues in the media, communications, and information sector, this chapter will cover:

- How to set a price based on cost and profit margins;
- How to use auctions;
- How to set the price dynamically and instantly;
- How to engage in price differentiation;
- How to measure price sensitivity;
- How to charge a price above cost;
- How to set prices strategically;
- How to set intra-company prices;
- How to hedge against price risks;
- How to stay inside the law in pricing;
- How to use technology for micro-pricing.

Setting a price is more complex than one would think. Many factors have an impact. They include, most obviously, cost, but also strategic objectives, customer perceptions,[2] competitors, marketing positioning, general economic price trends, and expectations.

This chapter will examine how prices for information products are, or should be, set. Unique pricing difficulties exist within the information and media industries, and this chapter discusses them. Pricing requires good judgment and experience, but it is also an application of the analytical approaches of micro-economics and marketing. Quantitative and analytical reasoning and good judgment must be based on a solid understanding of why some pricing strategies succeed and others fail.

Historically, price setting was never just a simple economic transaction. In medieval society, merchants were, at least in theory, obligated to charge a price close to cost, and prices were often closely regulated by guilds or by law.[3] More recently, price constraints exist in many countries and for many products. Even in the USA under a Republican President, Richard Nixon, temporary price freezes were imposed by government to mitigate inflation. In the Soviet Union, charging a price higher than the official price was a criminal offense. In severe cases, such "profiteering" was punishable by death.

To many economists and financial practitioners, the prices of stocks that are traded in stock exchange markets have achieved the status of distilled collective wisdom. They believe that these prices summarize all the information and expectations about the prospects of a company, of a bad harvest, or of a political event. The efficient market hypothesis (introduced by Eugene Fama, a 2013 Nobel laureate) argues that it is impossible to "beat the market" because stock market efficiency causes existing share prices to incorporate all relevant information. This process becomes ever-more efficient and rapid as technology progresses and spreads information more quickly and widely.

11.1.2 Special Problems in the Pricing of Information Products

11.1.2.1 High Fixed Cost, Low Marginal Cost

As discussed repeatedly, high fixed costs and low marginal costs prevail in most media activities. In the case of software, it may cost over $10 million to write a computer program but less than $2.50 to produce and distribute a CD-ROM, and almost nothing to copy and distribute it online. These cost characteristics mean substantial economies of scale, which create incentives for each competitor to expand in order to obtain them. It also results in prices dropping toward the low mar-

1 A source that has been invaluable to this chapter and deserves much credit is the excellent book by Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. Saddle River, NJ: Prentice Hall, 2002. Nagle's subsequent editions were with John E. Hogan, Joseph Zale, and Georg Müller.

2 Warner, Ala, and Chris Goodwin. *Pricing for Long-Term Profitability*. London: Prentice Hall Financial Times, 2002.

3 Heilbroner, Robert. *The Making of Economic Society*. Englewood Cliffs, NJ: Prentice-Hall, 1962.

ginal cost, since under competitive pressures, the price for the content or service is the marginal cost, which is close to zero. Most likely, prices will eventually be below average cost, meaning that they will not cover the fixed cost of initial development. With newspapers, for example, retail prices barely cover the basic costs of paper and delivery (i.e. the marginal cost) and do not cover the substantial cost of content creation. If advertising revenues drop—as they did with the advent of online media as vehicles for local ads—the fixed cost becomes higher than revenues, and the newspaper runs a deficit.

11.1.2.2 Price Deflation

Information has become cheaper for many decades, and it is becoming difficult to charge anything for it. This is demonstrated by the proliferation of free online music, publishers, and newspapers.

The implication is that the entire information sector is subject to a gigantic downward price spiral. Examples are long-distance phone calls, cell phone services, online advertising, semiconductors, and consumer electronics hardware. This downward price spiral in the information sector represents one of the fundamental economic trends of our time.

Consider the price of telephony. The price of international telephone calls has dropped dramatically. In terms of hours of work equivalents, a three-minute call from New York to London took, in 1927,[4] 200 hours of work; in 1936, 56 hours; in 1945, 20 hours; in 1970, 5 hours; in 1995, 0.2 hours; and by 2003 with Internet telephone service, virtually zero.[5] Similarly, the average monthly price paid by users per minute for a mobile service (including the various miscellaneous charges and basic subscription) in the USA dropped from 1994 with an average revenue per minute of 47 cents to 7 cents in 2004.[6] A similar price drop has characterized electronic hardware, whether laptop computers, TV sets, video players, or mobile phones. Prices on all of these devices have dropped and/or performance has been rising.

At its basic level, these price changes are due to the rise in performance per dollar—known as "Moore's law," which observes a doubling of performance of semiconductor microprocessors every two or so years, that is, an increase of about 40% compounded annually. This law can be phrased differently in terms of price for the same performance. That price decline, with performance held constant, proceeds at a similar rate.

Thus, storage, transmission bandwidth, processing power, content, and applications have been moving to a zero price. It seems that nearly anything associated with competitive online technology moves down the path to being free.[7]

Even when price is not literally zero, as is the case for a transistor in a microprocessor, it becomes so cheap that their price is not a major factor. Furthermore, for information products price arbitrage becomes fairly easy, and it is difficult to charge some people—or local markets—a hefty price while giving it to others for free.

Prices may drop, but they are also volatile. As prices decline companies cannot cover costs, and entire industries go through crises. Eventually some competitors fail and go out of business, companies consolidate, price competition moderates, and companies become profitable again. This attracts new entrants, and competition re-emerges. A new cycle of investment, overproduction, competition, and price collapse appears again.

Thus price deflation leads to cyclical volatility of prices, instability in the entire information sector, and difficulty in price setting. This economic situation is beneficial for consumers yet can be disastrous for producers and their employees.

11.1.2.3 Intangible Products and Public Goods

Intangible assets such as information, data, entertainment content, software, scripts, and technology innovations are difficult to value and price. Additionally, many of these intangible information products can be consumed by multiple people in a "non-rival" fashion. One person's consumption of the product does not diminish it for another, as would be the case with, for example, an automobile.

4 Odlyzko, Andrew. "Internet pricing and the history of communications." February 8, 2001. *AT&T Labs – Research*. Last accessed August 2, 2011. ► http://www.dtc.umn.edu/~odlyzko/doc/history.communications1b.pdf.

5 Prices fell, in particular, after competition was introduced in the 1980s. Before that, international calls were run cooperatively by an international cartel of national monopolies, which kept prices at a fairly high level. Once competition was introduced, prices dropped dramatically.

6 Calculated using average local monthly bill and average minutes of user per subscriber per month from the Cellular Telecommunications & Internet Association, October 2004.

7 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ► http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

Also, potential users are hard to exclude from consuming the product. Broadcast television is a good example. Unless one can encrypt the signals, nobody can be excluded from watching. Non-excludability and non-rival consumption are the characteristics of "public goods"—products and services outside a market or pricing system, such as national defense or the environment. The existence of public good characteristics leads to "market failure": customers have no incentive to pay the price at all, and the market will hence be unstable.[8] Market prices become extremely low, with no firm recovering its cost, or there is no equilibrium market price at all. Examples include natural resources such as fish in the ocean, broadcast "over-the-air" radio/TV broadcasting, street lights, and national defense. Possible responses to market failure are:

- Governmental intervention to control resources, to require broadcast licenses, operate street lights, and provide national defense;
- Cooperation of providers of this good to form a cartel and only offer the good at a certain price;
- Find technical methods to make the good excludable (e.g. encrypt TV broadcast signal);
- Find ways to monetize the consumption of the good in ways other than by charging a price for it (e.g. include advertisements on over-the-air radio/TV).

11.1.2.4 Presence of Non-maximizers of Profit

Normally, economic analysis assumes the presence of rational actors who maximize profits. But in the media industry this is frequently not the case. Many creators of media content do not seek to maximize profit. They seek status and influence, or simply enjoy the creative process. For these producers of content, the setting of optimal prices to compensate them for their efforts is secondary. As an example, many performers provide free music as a means of self-marketing and of gaining the attention of record labels.

11.1.2.5 Role of Government

Another factor that poses a special problem for the pricing of information products is the typically active role of government in the information sector. Protection of access to information and networks leads to frequent government controls over retail and wholesale prices in some information sector markets. There exists a special sensitivity for monopolistic pricing within the media and information industries, and strong policies to make access to information and media services afford to all. That is why throughout the world there exist free public libraries, subsidized phone or Internet service, "free TV" in even remote corners of a country, as well as uniform pricing across cable TV users, regulated interconnection prices for networks, and non-discriminatory prices for content providers over Internet Service Providers (ISPs).

To conclude, the pricing of information products is subject to long-term pressures and short-term shocks. An information economy is a boom–bust economy, with unstable prices, and a general downward price trend. Pricing strategies in the media and information sector are both difficult and critical.

The problems of the pricing of media and information products can be seen in the following case, the rise and fall of *Encyclopaedia Britannica*.

11.1.2.6 Case Discussion

Encyclopaedia Britannica—Overview

The *Encyclopaedia Britannica* (EB)[9] was first published in Scotland in 1768, but it has been American-owned since 1901. By 1929, EB was mainly operating from the USA, with a permanent editorial team located in Chicago. In 2009, a poll in the UK named EB one of Britain's top consumer brands (10th place) in terms of reputation and reliability.

EB used to be one of the world's largest publishing firms. It featured highly respected contributors, such as Sigmund Freud, Albert Einstein, Henry Ford, W. E.

8 Groves, Theodore and John Ledyard. "Optimal allocation of public goods: A solution to the" free rider" problem." *Econometrica* 45, no. 4 (May 1977): 783–809; Bergstrom, Theodore, Lawrence Blume and Hal Varian. "On the private provision of public goods." *Journal of Public Economics* 29, no. 1 (1986): 25–49.

9 A note on spelling: in American usage, the books are known as an "encyclopedia." The British usage is "encyclopaedia" or "encyclopædia." EB seems to be using all three spellings.

B. Du Bois, Leon Trotsky, Marie Curie, Milton Friedman, Carl Sagan, and many others. EB was a profitable market leader. In 1988, the encyclopedia was priced at $1200, a leather-bound embodiment of humanity's accumulated knowledge. Libraries around the world were renewing their subscriptions at a rate of 98%. Doting parents and grandparents treated children with the gift of a brand new set for a birthday or other important occasion. In 1990, EB sold 120,000 sets of encyclopedias in the USA alone.

But then the electronic onslaught began. In 1989, *Compton's Encyclopedia* was the first to issue a CD-ROM version. Another encyclopedia, *Funk & Wagnalls*, soon acquired by Microsoft, sold its product as *Encarta* for $49.95 on a CD-ROM. Consumers stopped buying the costly leather-bound print version, revenues plummeted, and by 1996 EB was near bankruptcy. The company was then bought by financier Jacob Safra, a Geneva-based banker and encyclopedia fan. In 1999, EB put basic content on a website, entirely for free, with revenue expected to come through e-commerce transaction. The number of users increased but advertising and transaction revenues were tiny.[10]

But this was just the beginning of the crisis. EB was still the premium product; the problem was how to monetize it. However, a challenge soon emerged for the content itself. After 2005, the free website Wikipedia emerged as a serious threat. Launched in the USA in 2001 by Jimmy Wales and Larry Sanger, Wikipedia presented a free online encyclopedia written by volunteers. It operates with an open community model. Access is free and anyone can make edits to an article. There is no formal editing process, at least in theory, and the hope is that a large community of volunteer editors will quickly detect and correct any mistakes. In contrast, EB had 4500 expert contributors worldwide, many of whom received honoraria for their articles, and contributions went through a team of 100 paid editors before approval. In 2015, there were almost five million articles in the English language version of Wikipedia while EB had "only" 120,000. There are numerous other language editions of Wikipedia, and translation programs make them partly available in English, too.

Was there a quality differential, given that Wikipedia is edited by volunteers? In 2006, the science journal *Nature* compared scientific entries and found that EB was only 30% more accurate than Wikipedia.[11] Thus, without much more credibility, yet with a much smaller number of entries and a much higher price, EB's business kept dropping, from $586 million in 1992 to $50 million in 2008. In 2009, 60% of its revenues came from online operations. Its print sales were primarily to libraries, where subscription renewal rates were still about 98%.[12]

So the question is, what should EB's pricing strategy have been, in such an environment? A price of zero to match Wikipedia's? Or hold it at $1200? Or somewhere in between? Or a higher price than $1200, and focus on libraries and the prestige market, and give up on the consumer market? Different prices for different customers? Pay-per-use? Freemium? Basic subscription fee plus usage-based fees? Individualized price, or single price with lots of discount categories? These are some of the options we will explore in this chapter.

11.2 Pricing Strategies

Firms normally have several basic options for setting prices. They can:

- Be based on the *cost* of production;
- Be determined by the *market*;
- Be based on the *value* of the product to the customer;
- Reflect a firm's market *power*;
- Pursue a company's *strategic* objectives;
- Be *regulated* by government.

We will analyze these options and how they relate to media and communication.

11.2.1 Pricing by Cost

11.2.1.1 Cost-Plus

Companies often set prices by calculating the cost of producing the good or service and adding a percentage of profit on top of it. This is known as "cost-plus" pricing, or as "mark-up" pricing. This is a straightforward and widely used process.

It is often thought that one advantage of cost-plus pricing is its simplicity. Actually, however,

10 Boudreau, John W., Benjamin Dunford, and Peter M. Ramstad. "The Human Capital Impact on E-Business: The Case of Encyclopedia Britannica." In *Pushing the Digital Frontier*. Eds. Nirmal Pal and Judith M. Ray. New York: Amacom, 2001.

11 The Economist. "Encyclopedias: Battle of Britannica." March 30, 2006. Last accessed July 28, 2011. ► http://www.economist.com/node/6739977.

12 Charlton, Graham. "Q&A: Ian Grant of Encyclopaedia Britannica UK." February 10, 2009. *Econsultancy Digital Marketers United*. Last accessed August 2, 2011. ► http://econsultancy.com/blog/3268-q-a-ian-grant-of-encyclopaedia-britannica-uk.

cost is difficult to determine.[13] The first problem is to determine which type of cost should be used. It could be either incremental cost (marginal cost) or average cost. Typically, what is meant by "cost-plus" is average cost. The difference in pricing between the two types of costs is often significant and will be explored later in this chapter. Average cost could be much higher than incremental cost, especially where fixed (upfront) costs are high and incremental costs are low.

Another problem is that what gets included in the term "costs" can be subjective and strategic. Cost definition can vary greatly, depending on the business purpose. Firms have incentives to show high costs for a number of reasons, such as to lower income tax, or to reduce the sharing of profits with investors or licensors, or to show low profits to regulators. Conversely, firms have incentives to show lower costs (and thus higher profits) if they aim to impress investors or gain bonuses for managers. There are many ways to structure and allocate costs, as cost figures can be affected by factors like the expensing versus capitalization of investments, the depreciation rates chosen, or the timing of the cost. They can also be affected by the allocation of overhead and other expenses, the reserves for potential risk, the valuation of inventory, and the allocation of costs among different projects. This is discussed in ▶ Chap. 13 Accounting in Media and Information Firms.

The third problem regarding cost-plus pricing is that cost actually depends on the scale of production, but also, vice versa, the production volume depends on price. Cost depends on price, just as price depends on cost. Unit costs (both average and marginal) change with volume.[14]

But perhaps the main problem with cost-plus pricing is that it is not based on market conditions. Whether demand is high or low, cost-driven pricing leads to the same price, thus being too high in weak markets and too low in strong ones.

Despite these challenges, cost-plus pricing is used, for example in certain procurement contracts with governments. It is also used in price regulation, for example of telecom prices or of compulsory licenses for music.

11.2.1.2 Case Discussion

Cost-plus Pricing

Should EB price its product using a cost-plus approach? What kind of costs would it have to consider?

The actual EB prices were as follows:

- Online: $65;
- Print: $1200.

What do these prices suggest about the use of cost-plus pricing by EB? For the online version, cost-plus is close to actuality (Table 11.1). But for the print version, cost-plus is about 50% lower than actuality. In the online case, competition must have brought down prices to a level of slim profits ($10 per unit, about 18%). For the print version, profits were $500 per unit, or 71.4%. Such a high level is possible only where there is market power or significant product differentiation.

Why would EB take such different pricing approaches to the print and the CD-ROM version? We will discuss this in other segments of the case.

11.2.1.3 Marginal Cost Pricing

Economists favor marginal cost pricing since they consider it to be efficient in sending correct signals to the market. They argue that fixed cost is typically "sunk" and therefore no longer relevant to a firm's pricing decision, at least not in the short run. If the price is set at a level below marginal cost (MC) the firm will spend more on producing the extra unit than it will gain by selling it. Ideally it would set a price above MC so that it would profit for the sale. However, where markets are competitive, the presence of a profit that is "above normal" would attract similarly situated competitors to underprice the firm, and thus drive prices down to MC, which would be the floor. Thus, setting price equal to MC is not the price point a firm

13 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

14 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

Table 11.1 Cost characteristics of *Encyclopaedia Britannica*

	Online version	Print version
Marginal costs	$5	$500
Fixed costs allocated (per unit):	$50	$200
Average Total cost	$55	$700
Cost-plus price (adding a 15% profit margin)	$63.25	$805

would choose voluntarily; rather, it is the level the firm would be forced to set if subject to competitive pressures.

But more of a problem than these conceptual and measurement problems is the economic issue that marginal pricing may lead to prices at a level too low to cover the fixed costs. At that level the firm will lose money.[15] But raising the price above short-run MC is difficult in competition because it will lose sales to competitors.

11.2.2 Market-Based Pricing

11.2.2.1 Commodity Pricing

In many situations of active and competitive markets, firms cannot set a price at a level they like but must follow market prices. For example, for products such as memory chips or for services such as telecom transmission, conditions of supply and demand determine prices. A firm can lower prices to gain a sales volume. But the price cut would often be matched by competitors. This is in particular the case where products are similar and where the initiating firm has no efficiency advantage. The result would be a lower market price equilibrium with lower profits for every firm.

The Internet raises the use of competitive pricing. Companies' prices are usually easily available. Search engines, shopping "bots," and shopping sites make it easy for customers to compare prices. This is particularly true for standardized products. The result is the occurrence of "price wars."

15 To deal with that problem, economists tend to postulate that prices will come down only to long-run marginal costs, which include the elements of fixed costs that are variable in the long run.

11.2.2.2 Market Price Determination Through Auctions

Auctions and competitive bidding are processes that help find a market price for a good or service.[16] Such an auction price then may set the reference price for similar products. There are several main types of auctions. In open-outcry auctions, bids are public at the time of bidding, which gives the various bidders the opportunity of observing each other. In contrast, in a sealed-bid auction, no party knows the other's bid and it may therefore overbid to be on the safe side. The primary purpose of a sealed-bid auction is to prevent collusion. The "sealed first-price auction" is a simultaneous, secret, and one-bid process often used in government contracts.[17]

In "English auctions," prices are ascending, meaning that bids start at a low price and bidders keep increasing the amount. The problem with ascending auctions is that when competition for bids is weak, winners can get a real bargain. For that reason, a minimum "reservation price" might be specified. Bidders can gain advantage by "bid-rigging," that is agreeing not to bid against each other, thus unfairly reducing the price. From the seller's perspective, an English auction reveals the willingness-to-pay of every bidder, except that of the most important one, the last bidder, who in fact might have been willing to bid higher.

Unlike English auctions, "Dutch auctions" start at a high price, and decrease until it is accepted by one bidder. The winner thus reveals his or her willingness-to-pay. This type of descending-price auction incentivizes bidders to act quickly as they do not know when the auction will end. The first bidder gets the deal, whereas in an English auction it is the last bidder. An example of this type of auction is Google's 2004 IPO (initial public offering of stock), in which the company sold 19.6 million shares using a modified Dutch auction.[18] In a "Japanese auction," no new bidder may join and no non-bidders can rejoin. In a "reverse auction" a buyer seeks the lowest bids by sellers. Examples

16 Bichler, et al., "Applications of flexible pricing in business-to-business electronic commerce." *IBM Systems Journal* 41, no. 2 (2002) 287–302.

17 Shor, Mikhael. "Second Price Auction." *GameTheory.net*. August 12, 2005. Last accessed June 12, 2012. ► http://www.gametheory.net/dictionary/Auctions/SecondPriceAuction.html.

18 Hodrick, Laurie Simon. "Google's IPO: A Dutch Auction Works, If You Let It." *Columbia Business School: Hermes*. October 1, 2004. Last accessed August 2, 2011. ► http://www7.gsb.columbia.edu/alumni/news/Googles-IPO.

are "requests for proposals" that solicit the cheapest offers by vendors.

In a "first-price" auction the top bidder pays the amount of the bid. But in a "second-price" auction, the top bidder pays the amount of the second highest bid. William Vickery, a Columbia professor and Nobel Prize winner, designed sealed-bid, second-price auction, known as a Vickery auction. Vickery showed that a second-price auction does not bring in less money than a first-price auction, and possibly more, even if the payment is that of the second-highest bid, because bidding would be encouraged and under-bidding discouraged. The second price auction is hence more efficient than a first-price auction.[19]

Today, Google and Yahoo use a variation of a second-price auction for the sale of search engine advertising. The potential advertiser bids for top placement on specific keywords associated with their product, for example "Venice" for travel agencies.[20] For such a placement, the winning advertiser (based on bid offered plus several other factors) pays the bid amount of the next-highest bidder.

Auctions are also used for spectrum licenses for mobile phone companies, utilizing highly complex auction designs. In the publishing industry, if there is great interest in a project, the book's agent typically organizes a formal or informal auction for it, and publishers bid on the project.[21] A so-called "winner's curse" frequently occurs, with publishers at times getting carried away by wanting to prevail and get publicity, but do so at a price beyond a reasonable chance of profitability.

In the past, auctions had high transaction costs, and this meant that they were limited to high-volume sectors such as finance, commodities, and art. Subsequently, electronic platforms made it much easier to use auctions also for consumers, as typified by the online auction firm eBay, which has created a large-scale auction-style marketplace. In China, Taobao, part of the Alibaba Group, has a strong presence in consumer online auctions.

Another approach is a "name your own price" auction. The basic idea is for a consumer to state his or her price for a hotel, or for a TV set, with conditions on brand or location, by entering a bid (legally binding and backed by a credit card), where the highest bids might be accepted by the seller. The website Priceline used auction pricing first in 1998 for the sale of airline tickets.

Auctions make sense for business-to-business transactions where deals are relatively big and vary, or for special and valuable objects where it is difficult to determine "market prices." But for the consumer market, the main problem, even with the introduction of e-auctions, is that most consumers do not want to negotiate for their goods, preferring simplicity over transacting for a potentially lower price.[22] In the case of hotels, consumers want to know exactly what they are getting. A hotel on the beach is a very different product from one across the highway. Thus, after an initial euphoric embrace of auctions, many economists have concluded that it is often preferable to put a price tag on an item because it reduces transaction costs.

11.2.3 Dynamic Pricing and Peak-Load Pricing

"Dynamic pricing" is a price mechanism that adjusts to short-term changes in demand and supply in a pre-defined fashion.[23] Dynamic pricing is often used by airlines. "Yield management" helps some sellers to vary prices both upward and downward when demand varies and the product cannot be stored. Examples are airline seats, hotel rooms, rental cars, and telecom network capacity. An airline or resort hotel will have a historical booking path for a route or location and a specific date. As the day comes closer it must fill its seats rooms or be stuck with unsold capacity. By comparing its "yield" to previous years it can observe whether tickets sales

19 It is claimed that already in 1797, the author and statesman Johann Wolfgang von Goethe sold a manuscript through what we call today a second-price auction. Moldovanu, Benny and Manfred Tietzel. "Goethe's Second-Price Auction." *Journal of Political Economy* 106, no. 4 (August 1998): 854–859.

20 Varian, Hal R. "Position Auctions." *International Journal of Industrial Organization* 25 (2007): 1163–1178.

21 The Doris S. Michaels Literary Agency. "Outline of the Publication Process." Last accessed July 28, 2011. ► http://www.dsmagency.com/published.html.

22 Bodow, Steve. "Is That Your Final Offer?" *New York*. January 10, 2000. Last accessed July 28, 2011. ► http://nymag.com/nymetro/news/bizfinance/columns/bottomline/1778/.

23 Bodow, Steve. "Is That Your Final Offer?" *New York*. January 10, 2000. Last accessed July 28, 2011. ► http://nymag.com/nymetro/news/bizfinance/columns/bottomline/1778/.

are ahead or behind, and whether to discount prices or raise them.[24]

Broadway theaters use a similar approach in selling their tickets. The online box office agency Ticket.com Inc. claims improved revenue per event of 45% by modifying the price on the basis of supply and demand.[25] However, yield management and dynamic pricing are not used by movie theaters, and movie tickets are sold, for a given time slot, at the same price, whether the particular theater is half-empty or overflowing. The movie theater industry explains the absence of such dynamic and differentiated pricing by several factors: the negative message that it sends out if one prices some films more cheaply; that theatergoers are not price elastic in their choice of a particular film; that the long lines for tickets generate valuable publicity for the film; and that, at a multiplex, people who could not get a ticket to their favored film might settle for another film, so these are not lost sales and might even raise them. Other factors are administrative complexity and unpredictability.[26]

In contrast to film theaters, sports teams have been actively adopting dynamic pricing. Many teams already offer preplanned tickets at prices that use several variables that historically draw larger crowds, such as the date or the opponent. The San Francisco Giants baseball team went one step further by changing prices on a daily basis. The team had experienced a 20% increase in sales when it started the star pitcher Tim Lincecum.[27] The Giants therefore adopted a pricing system and made several million extra dollars each year by charging a higher price whenever Lincecum pitched.

Flexible pricing (i.e. variable by consumer characteristics or demand) becomes easy with online platforms. Prices can change daily, and be different for different types of customers and market conditions. Yet short-term gains might conflict with long-term goodwill. Consumers often react negatively to aggressively differentiated pricing,[28] such as a vending machine that increases prices on hot days. The Coca-Cola Co. got bad publicity when its CEO discussed a machine that would do just that. The company dumped the idea as well as its CEO.

Also problematic was Amazon's use of dynamic pricing, where it quietly charged higher prices to buyers who bought many books and thus appeared to be less price-sensitive. These frequent customers were being charged up to 5% more than the regular price. They were outraged to learn that Amazon charged them higher prices because they were taken for granted, instead of getting a discount for being loyal customers. Amazon denied such a policy and explained it as merely a test-marketing, but observers were skeptical.

Price negotiations based on better information works both ways. Consumers, too, are using the Internet to engage easily in price comparisons. They can then cherry-pick the best offers, with little loyalty to a retailer. This limits the bargaining position of any one website or store to price discriminate.[29]

A sub-category of dynamic pricing is "peak-load pricing" where price variations are already pre-set. For example, electric companies charge more during high usage periods, thus moving some consumption such as running washers and dryers toward periods of lower demand and making more efficient use of capacity.

11.2.4 Indexed Pricing

Prices are affected by the more general developments in the overall economy, in particular by inflation—the rate at which the general level of prices for goods and services is rising. One type of pricing is to adjust regularly the price upward by an index of inflation. Inflation can get out of control and spiral to hyper-inflation. Examples are: Germany in 1923, when inflation reached rates of more than 30,000% per month, with prices doubling every few days; Israel in 1984, with an

24 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.
25 Fleischmann, Moritz, Joseph M. Hall and David F. Pyke. "Smart Pricing." *MIT Sloan Management Review* 45, no. 2 (Winter 2004): 9–13.
26 Orbach, Barak Y. "Antitrust and Pricing in the Motion Picture Industry." *Yale Journal On Regulation* 21, no. 2 (Summer 2004): 317.
27 Fisher, Eric. "Ticketing's Changeup." *Sports Business Journal*. May 31, 2012. Last accessed July 7, 2012. ► http://www.sportsbusinessdaily.com/Journal/Issues/2010/05/20100531/SBJ-In-Depth/Ticketings-Changeup.aspx.
28 Kemp, Ted. "The road to one-to-one pricing; retailers are becoming more customer-centric, and that's driving them toward dynamic pricing to foster customer loyalty and maximize revenues and margins." *Fairchild's Executive Technology* 6, no. 5 (May 2004): 36.
29 Weiss, Robert M., and Ajay K. Mehrotra. "Online Dynamic Pricing: Efficiency, Equity and the Future of E-commerce." *Virginia Journal of Law and Technology* 6, no. 2 (2001). Last accessed July 28, 2011. ► http://www.vjolt.net/vol6/issue2/v6i2-a11-Weiss.html.

annual inflation rate of 445%; or Argentina, when the annual inflation rate reached 12,000% in 1989, and Venezuela's with 13,000% in 2018.[30]

What then are companies to do in their pricing when high inflation hits? They may index their prices to an inflation measure such as the consumer price index. Contract prices, bank debts, or wages would then increase automatically in every period (e.g. quarterly) by the same factor as the price index increases. A variant of this system is for all transactions to be denominated in a relatively stable foreign currency, such as the US dollar or the Euro.

11.2.5 Value Pricing

11.2.5.1 Economic Theories of Value

So far, we discussed pricing based on variations of cost and market conditions. A third approach is to set price based on "value," which can be both objective and subjective. To a firm, the value of an asset can be measured objectively by the net present value of future income streams. But to a consumer, value is more subjective. Price does not mean value. These are two different concepts. To a worried parent of a gravely ill child curable by penicillin, the value of the drug might be almost infinite. But the price in the drug store is only $5.95. The difference is known as the consumer surplus. Conversely, the price of a fashionable handbag may be high, but for consumers who do not care or know about fashion its value would not be higher than that of a regular handbag.

Early economists tried to determine "objective" rules for a product's value. In the eighteenth century, French economic thinkers related value to the cost of production. The classical economists Adam Smith and David Ricardo similarly held that the value of a good is closely related to its cost of production.[31] Karl Marx also followed this line, except that his cost-based value theory recognized only labor inputs. In his 1867 work with Friedrich Engels, *Capital*, he wrote: "the value of a commodity can be objectively measured by the average amount of labor hours that are required to produce that commodity."[32] Thus, if shoes take twice as much labor to make than a TV set, the long run price of shoes would be twice that of a TV set. This labor theory of value ignores several factors, including the contributions of raw materials, production machinery, supply and demand, and risk.

In the second half of the nineteenth century, the "neoclassical" theory of value began to be defined not from the perspective of production but that of user satisfaction. Economists promoted the concept of "utility," which depends on individual taste, needs, and preferences. Utility is varied for individuals, but consumers' incremental utility declines with consumption. This means that the more one has of a good, the less extra satisfaction is gained from an additional unit of that good. The assumption of diminishing marginal utility was important in terms of mathematical and analytical properties of neoclassical economists. The underlying principle is that buyers increase their purchase of a good until their marginal utility (the satisfaction gained from buying that extra unit) balances what they have to give up to get the unit (the item's price).

A newer way to look at prices based on psychology emerged more recently from "behavioral" economists who observe that people's valuations are not necessarily rational or analytical but based on rules of thumb, or "heuristics," Daniel Kahneman was awarded the 2002 Nobel Prize in Economics for his application, with the late Amos Tversky, of such heuristics. They included asymmetries in valuation, where adding a unit provides a lesser extra satisfaction than does subtracting that same unit.[33]

Value pricing is important for information products. But to engage in value-based pricing requires some uniqueness of the product or market power, since competition would otherwise push prices down toward the very low marginal cost.

30 Badkar, Mamta. "10 Hyperinflation Horror Stories of the 20th Century." *Business Insider*. March 19, 2011. Last accessed June 17, 2017. ► http://www.businessinsider.com/10-hyperinflation-stories-of-the-20th-century-2011-3.

31 Rhoads, Steven. "Marginalism." *The Concise Encyclopedia of Economics*. Last accessed August 2, 2011. ► http://www.econlib.org/library/Enc/Marginalism.html.

32 Pryohitko, David. "Marxism." *The Concise Enyclopedia of Economics*. Last accessed August 2, 2011. ► http://www.econlib.org/library/Enc/Marxism.html.

33 Nobelprize.org. "Daniel Kahneman-Autobiography." Last accessed August 3, 2011. ► http://nobelprize.org/nobel_prizes/economics/laureates/2002/kahneman.html.

11.2.5.2 Willingness to Pay

If value pricing is a good method of pricing information products, what, then, would be the optimal price for sellers? The simple answer is this: the seller's optimum price is at each individual buyer's willingness-to-pay (WTP) price,[34] which is the maximum the buyer would pay. Any higher price and the potential buyer will obtain less in added utility than the payment for such utility. Any price that is lower, on the other hand, is a bargain to a consumer and provides a "consumer surplus." But to charge such a WTP price requires a seller's knowledge of what the buyer's WTP is, and also the absence of a price competitor and the absence of arbitrage among buyers.

How does the seller identify the WTP of a customer? One could ask them, of course. But the fundamental problem with measuring WTP through surveys is that buyers are rarely truly forthright, or conscious, about their WTP and instead engage in a "strategic" response that lowballs their actual WTP.

One method for measuring aggregate WTP is by estimating the elasticity of demand with respect to price. Estimating this price elasticity is the basic question for any pricing strategy. The price elasticity of demand is the percentage change in quantity divided by the percentage change in price.

$$\frac{\Delta Q / Q}{\Delta P / P}$$

This measure is used to determine how responsive customers are to price changes for a given good.[35] With minor exceptions, the elasticity will be negative, because an increase in price will reduce demand. Exceptions are where a higher price may lead customers to consider the products as having higher quality or prestige, making it hence actually more desirable.

Although price elasticities are mostly negative, analysts (including this book) ignore the negative sign and just talk about "high price elasticities" when they mean "more highly negative elasticities." If elasticity is 1 or greater, then demand is sensitive to price. Lowering the price of an item will result, through the greater quantity sold, in higher revenue. On the other hand, if elasticity is lower than 1, (e.g. 0.5), then demand is relatively

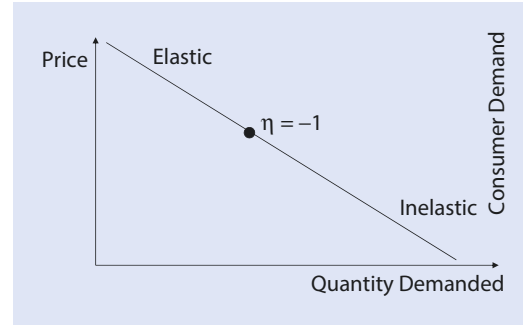

Fig. 11.1 Price elasticity of demand

$$\eta = \frac{\Delta \text{Quantity}}{\text{Quantity}} \Big/ \frac{\Delta \text{Price}}{\text{Price}}$$

insensitive to the price. In this circumstance, a *higher* price, though it would reduce the quantity sold somewhat, still raises overall revenue. At the midpoint, where the elasticity $\eta = 1$ (actually, minus 1), the revenue will be maximized. As seen in Fig. 11.1, elasticity values higher than 1 are elastic, and values smaller than 1 are inelastic.

Factors Affecting Price Elasticity

A number of factors affect an individual's price sensitivity for a product, including:

- How proximate is the product to substitute and rival products?
- How high is the prestige of the product?
- How expensive is it to switch to another product?
- How difficult is it to compare prices?
- How big is the purchase?
- Is the product a necessity or a luxury?

What is the impact of advertising on product prices? On the one hand, advertising allows better product comparison and reduces prices. But advertising also creates brands and barriers to entry, which generates higher prices. Price elasticities are affected by advertising. In formal terms, advertising is paid by the sellers of a product. But it may well end up being paid by the product's buyers if the price increases when the advertising increases demand and makes demand for the product less elastic. From the company's perspective, the most successful advertising is paid for by buyers through higher prices that become possible due to the effectiveness of the advertising.

Price sensitivity for a product is bad news for a company. It can be dealt with by some of the following stratagems:

34 More precisely, where the WTP is above the long-run marginal cost.
35 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.

- Differentiate the product from competing options;
- Raise the costs of out-switching, and lower the cost of in-switching;
- Make comparisons with rival products difficult;
- Promote the product's prestige;
- Strengthen applications and interoperabilities with other products and services, and hence the centrality of the product.

Looking to the future, a relevant question to consider is this: Is the demand for media entertainment getting more elastic (i.e., more price-sensitive)? This question has two answers. Demand for "commodity" entertainment and information, such as news, is getting more elastic, to the point of great resistance to pay anything at all. On the other hand, for *unique* entertainment products and services, demand is not becoming more elastic, or at least not by much. And for essential services, such as broadband and mobile connectivities, price elasticities are declining as customers get more dependent on them. In a competitive market for such services, prices would not rise up to users' WTP. They would therefore enjoy a significant consumer surplus. But in a monopolistic or oligopolistic market, the companies would reap a considerable benefit from reducing this consumer surplus. Hence, the incentives clearly exist for companies in these essential services to reduce price competition.

11.3 Measuring Price Sensitivity

Measuring price sensitivity is part of demand analysis. For the details, see ▶ Chap. 9 Demand and Market Research for Media and Information Products.

11.3.1 Econometric Estimation of Price Elasticities and Hedonic Prices

With enough data one can use statistical methods to estimate variables that explain prices. This is known as "econometrics." It is discussed in ▶ Chap. 9 Demand and Market Research for Media and Information Products. Econometrics generally relies on a number of techniques of "regression analysis," which is basically the determination of a line that best fits the direction of a scatter of data points, with a certain statistical significance, and in multiple dimensions. Such an analysis shows, for example, the contribution of price to sales, and can isolate and separate the impact of other factors. But it must be noted that, since it draws on past data, it makes the implicit assumption that future consumers will keep behaving today and tomorrow like they did yesterday, or follow the same trend as before.

There are two main ways of applying econometrics to pricing analysis. In the first, price is the "explained" variable (also known as the left-hand variable). The task is to determine the factors that seem to explain a price, such as the season, the number of competitors, and the age of the product design. The second type of estimation has price as the "explanatory" variable (or the right-hand variable), which affects a left-hand variable, such as sales or demand. Variations in price affect demand, and hence enable us to estimate demand elasticities with respect to price.

Sometimes price is both the explained and the explanatory variable. For example, price is explained by demand conditions, but it also determines that demand. This is a case for simultaneous equations, and it calls for more complex forms of econometric estimation.

The following equation describes the variable "sales" as a value dependent on three factors: price, advertising, and a set of "other variables."

$$\text{Sales} = b_o\,(\text{price})^{b_1}\,(\text{advertising})^{b_2}\,(\text{other variables})^{b_i}$$

If we take the natural logarithm this equation becomes:

$$\ln \text{sales} = \ln b_0 + b_1 \ln \text{price} + b_2 \ln \text{advertising} + b_i \ln \text{other} + e$$

This can be estimated as a simple linear regression. The coefficients of these logarithmic models are the elasticities (b_1 is the elasticity of sales with respect to price, b_2 is the elasticity of sales with respect to advertising expenditures, etc.).

As mentioned, in most examples, price is a variable explaining sales. But another approach has prices as the explained variable. This approach is known as that of "hedonic" prices, in which several factors explain the value (as expressed in the price) of a product. The hedonic approach

assumes that a price P a consumer is willing to pay is based on the sum of the value of several characteristics β, at a quantity x.

This can be written as $P = \beta_0 + \sum_{k=1}^{K} \beta_k x_k$.

For example, factors in the price of a laptop computer would be its weight, processing speed, and battery life. These are the factors k of the equation, and each has a certain weight β that indicates how much the factor affects the price. When we plug in the actual values for that factor (i.e. x), such as two pounds of weight, 3.6 GHz of processing speed, and six hours of battery, we could estimate the likely price. The impacts of the characteristics are assumed to be additive.[36]

11.4 Strategies to Keep Prices Above Cost

The fundamental struggle in most pricing of information products and services is to maintain prices above the very low marginal cost. This is perhaps the most critical task of media managers when it comes to pricing. There are several basic options and they are discussed in the following.

11.4.1 Integrate Information with Hardware

When information is bundled with a unique hardware device, one can charge for it because it would not be easily available to users who do not buy or subscribe to the device. By creating a mechanism for exclusion and access, it becomes possible to charge a price above marginal cost. When the devices are registered to specific individuals it also becomes possible to price discriminate among them.

11.4.2 Create a "Lock-in" of Customers

Making it difficult for customers to switch to another provider enables a provider to charge a higher price. A customer lock-in can be created by contractual commitments, loyalty programs, or brand specific training. Another way to create a lock-in is to get customers to invest in the supplier's technology by their participation in customization. Customers would thereby raise their own switching costs if they wanted to get out. In order for a seller to lock in customers successfully, the customers will require concessions to agree to be locked in, and the seller must invest in lock-in through upfront discounts.

11.4.3 Bundling

Often, a product is only offered as part of a bundle of several products and services, and the price of the bundle is usually lower than the sum of the individual prices.[37] In 1963, George Stigler (later a Nobel Prize winner in economics) observed that selling products in bundles without the option of purchasing the components separately was actually a way to allow the seller to price discriminate and to reduce consumer surplus.

11.4.4 Establish Market Power Through Monopoly

In a monopoly market, one firm dominates the industry. This firm has a strong influence over the market price. To gain market share, the firm might engage in mergers. It might try to drive out rivals through superior price, product, and marketing. It might have a legal monopoly through a unique patent or an exclusive license.

The constraints on a monopolist's pricing power are market demand conditions and legal rules. Even a monopolist cannot make people shell out more than their WTP, which is defined by the utility of the product to them. How would such a monopolist set prices? If there are legal constraints against price discrimination or arbitrage (reselling) among customers is possible, then the monopolist would charge the same high price to each customer.

But if the price is too high, there will be fewer buyers. If the price is too low, the firm leaves money on the table. The monopolist maximizes

36 The hedonic model can also be written as an exponential equation, with the beta coefficients as elasticities. Brachinger, Hans Wolfgang. "Statistical Theory of Hedonic Price Indices." *DQE Working Papers.* August 2002. Last accessed June 17, 2017. ► http://www.unifr.ch/dqe/papers/files/wp0001.pdf.

37 Noble, Peter M., and Thomas S. Gruca. "Industrial Pricing: Theory and Managerial Practice." *Marketing Science* 18, no. 3 (1999): 435–454.

profit when marginal revenue equals marginal cost: MR = MC. The point defines a quantity sold and a price. In contrast, the pricing for a competitive firm would be P = MC, which is normally much lower. The difference in the price creates a "supernormal profit," also known as the monopoly "rent." The situation where a monopolist can engage in price discrimination is discussed further below.

11.4.5 Participate in an Oligopoly

In an oligopoly, an industry has only a few producers. They each recognize that their price depends on their own actions and those of their rivals. They are not merely "price takers" of a market-determined price. In an oligopoly, companies tend to be rivals but not price competitors. Non-price competition focuses other strategies for increasing market share, such as advertising, innovation, and marketing. Each firm must consider the likely reactions of other firms when making its own pricing decisions. This can quite possibly lead to a cooperation. The price interdependence between the major firms leads them to act jointly by agreement, or to do so tacitly. For the reasons we discussed earlier, the economic characteristics of media and communications often lead to oligopoly.

In contrast to the situations of either competition or monopoly where an analysis of optimal prices is relatively straightforward, the intermediate situation of oligopoly pricing is much harder to analyze.

Game theory is often applied to the analysis of oligopoly pricing. Game theory models look at oligopolistic behavior as strategic moves and counter-moves. A firm in an oligopoly uses the analysis in order to take into account the reasoning of other firms and analyze their strategic behavior. From a management perspective, game theory forces a firm to analyze its own strategic alternatives and to assess how each competitor will respond. We discuss game theory in ▶ Chaps. 8 Managing Law and Regulation and 14 Strategy Planning in Media and Information Firms.

Cooperative games are those in which the participants coordinate their pricing strategies. In non-cooperative games they do not coordinate formally, but each firm takes the other firm's likely response into account. However, price collusion, whether cooperative or tacit, is difficult if there are many firms in the industry or if the product is not standardized. It is easier if there are only a few firms. But even then it pays for each firm to "cheat" on its partner in collusion, lowering its price, quietly granting discounts to gain market share, and increasing profits. To enforce collusion, the other companies, especially through a "price leader" firm, will threaten retaliatory pricing to hurt the maverick. Entry deterrence also needs to be maintained in order to keep out potential new rivals.

11.5 Price Discrimination

For information and digital products, being adept in price discrimination is perhaps the most important skill in pricing. As we have seen, a single price may well be too low to cover overall costs. It will lead to an under-charging of some users below their WTP, while overcharging others and thus losing them as customers. Since different consumers value a product differently, a firm will try to charge them different prices accordingly. "Price discrimination" means to consider pricing via assessing value to different users and charging each of them based on that value.

There are multiple price discount structures such as:

- Trade discounts to favored retailers;
- Quantity discounts;
- Promotional allowances;
- Locational discounts;
- Loyalty programs;[38]
- Price reductions to seniors or students.

Generally, to charge different prices to different customers requires their segmentation from each other. Preventing resale ("arbitrage") is essential for price discrimination. Discounts can be given to categories of potential buyers whose ability to pay is generally lower, such as seniors. Airlines are masterful in price differentiation because they have an effective enforcement mechanism for segmentation. Tickets are tied to an individual, partly for security reasons but also, conveniently, for the purpose of price differentiation. The personal resale of discounted tickets is rarely possible.

38 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.

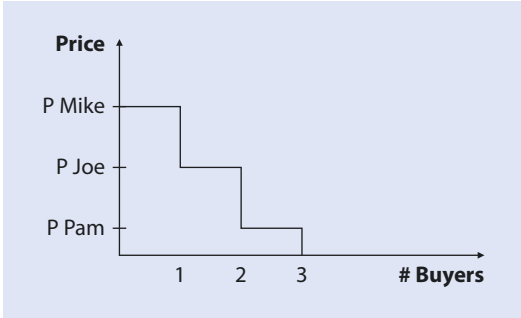

Fig. 11.2 Willingness to Pay

Economists speak of three types of such differentiation. "First degree price discrimination" is selling the same product and same quantity to each user at a different price. "Second degree price discrimination" means offering different prices to users based on the quantity they purchased. And "third degree discrimination" is to change different prices to different categories of consumers, such as students.

While the term "price discrimination" has an odious sound, it has also positive aspects. For example, it may provide the products to people who would otherwise not be able to afford it at the higher uniform price. It also enables production which otherwise would not occur. Suppose a symphony orchestra was in deficit at the uniform ticket price of $30, and even more so when the price was raised or lowered. Instead, it decided to charge students a lower price and engage in price discrimination. Similarly, many of the audience who bought $30 tickets would have been willing to pay more. This is their "consumer surplus." If part of such consumer surplus could be collected through charging them a higher price, the show could go on.[39]

Figure 11.2 shows differentiated WTP. It is a graphical representation of three customers and three prices. If we set a single price (P_{JOE}), it would be too high for Pam but a bargain for Mike. Differentiated prices would eliminate both discrepancies.

For the seller, there are several negatives of price differentiation. They include the cost of maintaining different prices and of segmenting markets to prevent reselling by the low-price customers selling the product to high price customers. There is also a likelihood of consumer resentment. Plus, it may well be a violation of consumer protection and competition laws.

Another problem is that, if customers get used to a discount, they will resist the regular price next time. Some furniture stores, for example, have year-round "sales" because buyers expect a discounted price and will wait for them. Cable TV companies will offer a broadband service at a low introductory price. But when later confronting a subscriber with a low offer from a telecom company, they will prolong the introductory price to "match the competitor." Price differentiation hence may invite bargaining behavior. When price discounts are given freely, they can transform a regular customer into a difficult customer.[40]

But in doing so it is easy to offend loyal customers by taking them for granted while enticing fickle customers.

11.5.1 Optimal Price Discrimination

Given the information sector's fundamental characteristics of high fixed costs and low marginal costs, price discrimination is the key to media profitability.

Assuming that a firm could legally engage in price differentiation, how should it optimally set the different prices? If there is a different price elasticity among different consumer groups, it would charge a higher price to the group with the more inelastic demand and a lower price to the group with a more elastic demand.

The basic rule is known as "Ramsey pricing," which states that optimal price discrimination follows the inverse elasticity rule. The price given to a consumer would be the price average divided by the price elasticity of demand of that consumer or consumer group:

$$P_i = P_{average} / \eta_i$$

Users with a more inelastic demand would be charged a price above the MC and those with a more elastic demand would receive a price closer to the MC.

39 Caves, Richard E. *Creative Industries: Contracts Between Art and Commerce*. Cambridge, MA: Harvard University Press, 2000.

40 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

Table 11.2 Price elasticity and price

Customers	Price Elasticity	Price
Average Joe	−1.0	50
Must Have Mike	−0.1	500
Pennysaver Pam	−10	5

In this example (Table 11.2), we see three consumers and their respective price elasticity of demand. They will each be charged different prices for the same good. Average Joe has a price elasticity of 1.0. Suppose he is charged a price of 50. Must Have Mike desperately wants the good and so his demand is inelastic. He would be charged with the highest price at 500 since he really needs the good. Pennysaver Pam is frugal and price sensitive. She would only be charged a price of 5 (50/50) as long as it covers the marginal cost.

11.5.2 Versioning

First-degree price discrimination is difficult to implement because sellers typically do not have information on the preferences of individual users, so they must try to get consumers to "self-select" themselves by purchasing different quality "versions."[41]

An example of this could be found in the sale of books. A book can be published as a hardback or a paperback. Usually, the hardback will be published first, and then the paperback will follow. That price difference is much larger than the cost difference.

Another way to let consumers self-select is through offering discounts that require some effort to collect. Price-sensitive customers might be offered a discount coupon that must be sent in.[42] However, only about 2% of all coupons are redeemed, presumably, by the most price sensitive consumers.[43]

Another example would be movie release sequences. Movies are first released in theaters and seeing a film on the big screen has the highest perceived value. The cost of seeing a movie in the theater ranges from $10 to $20. With each subsequent release, the price of seeing the movie drops. Discount theaters would price it at $8 per person, pay-per-view would price it at $4, and video rentals would cost $3.

The practical number of versions is often three. Sometimes this is called "Goldilocks pricing," that is, not too hot and not too cold. It utilizes people's aversion to extremes. By having three different versions at a low, medium, and high price, low-end buyers may trade up to a higher priced model. People often avoid the cheapest option or the most expensive option thus making them inclined to pick the medium priced option. Adding an expensive version raises the demand for the medium priced one because it looks like a good deal in comparison with the expensive one. Behavioral economists call this the "isolation effect."[44] A choice looks more attractive next to a costly alternative than it does in isolation.

The price difference of versions are only loosely related to the actual difference in the cost of producing them. An example is the provision of stock market information. A subscription of $50 per month might get real time quotes. For $8.95 per month the user gets stock information with a slight delay. The cost of production and distribution are near identical. Similarly, airlines reduce the attractiveness of a low-price option by placing otherwise unnecessary restrictions on economy class tickets. IBM placed a chip in its cheaper printers to actually slow them down. Federal Express sometimes plans routes to avoid delivering standard packages before 10 a.m. Software packages may come in three types, professional edition (higher priced), consumer-oriented regular edition (lower priced), and student edition (lowest price). In all cases, the companies degrade the quality of the service or product[45] so that they can charge more for a premium version.

41 Shapiro, Carl and Hal R. Varian. *Information Goods*. Boston: Harvard Business School Press, 1999.

42 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

43 Consumers that are even more price-sensitive will not even utilize the coupons.

44 Tellis, Gerard J. "Beyond the Many Faces of Price: An Integration of Pricing Strategies." *Journal of Marketing* 50, no. 4 (October 1986): 146–160.

45 Varian, Hal. "Versioning Information Goods." *Digital Information and Intellectual Property*. January 23, 1997. Last accessed June 17, 2017. ► http://people.ischool.berkeley.edu/~hal/Papers/version.pdf.

11.5.2.1 Case Discussion

Versioning

EB offered distinctly different versions of its product, each with a very different pricing. Its versions were:

- *Encyclopaedia Britannica Ultimate*. This combined the three full encyclopedias (the 32-volume regular EB, the 16-volume *Student Encyclopedia*, and the 16-volume *Elementary Encyclopedia*). The edition offers both collegiate and student editions of the *Merriam-Webster Dictionary and Thesaurus*, as well as collegiate, student, and Britannica editions of the EB atlas and timelines. The bundle was available in a print version or a DVD version. The price of the bundles was significantly below the sum of the separate elements. The print version was priced at $2500.
- The "Deluxe Edition" was a package that included the entire 32 set of books together with other reference sources such as the *Year in Review*, *Merriam-Webster's Collegiate Dictionary*, a thesaurus, and a world atlas. The print version cost $1600.
- The regular "Britannica Print Edition" was a leather-bound 32 volume set priced at the premium level of $1400.
- EB's *Compton's Encyclopedia*, with 26 volumes aimed at high-school students of ages 10–17, was priced at $899.
- The DVD version of the *Britannica Ultimate Edition* described above, cost $450.
- The *Britannica Student Encyclopaedia* (aimed at ages 8–12) of 16 volumes was priced at $449.
- The *Britannica Elementary Encyclopaedia* (ages 5–8), aimed at entry-level students learning to read and developing life-long study habits, consisted of 16 volumes priced at $440.
- The DVD version of the "Deluxe Edition" described above, cost $350.
- A student-oriented "online learning bundle" was available at $130 a year which included the main encyclopedia online along with a children's version of the content.
- Subscription to full online access was priced at $75 a year.
- DVDs were sold at the low price of $40, given its inconvenience of use.
- Mobile app access cost $15/year.
- A per-student per-year access price for school districts was priced at $0.25, consisting of short summary articles (60,000) available online and on a mobile app for free.

11.5.3 Second Degree Price Discrimination

Second degree price differentiation means different prices based on the quantity consumed. Customers with big orders get a lower price as a quantity discount. The better deal is not necessarily based on efficiencies and lower cost. Similarly, repeat customers are given the incentive to return for a benefit that is a kind of discount, for example an airline's "frequent flyer" program. Large-scale buyers are typically more price sensitive than small ones, because even minor price differences add up to more money.[46] At the same time, servicing a larger account costs less on a unit basis. Thus, the cost difference justifies a price discount. The quantity price discount also encourages buyers to make larger purchases rather than smaller and more frequent purchases, shifting some of the cost holding inventory to the buyer.

Conversely, high usage suggests a greater dependency on the product and hence a lower price elasticity. Such a customer could therefore be charged more rather than less. Thus companies such as IBM or Xerox have tied ancillary products or services to the hardware device, in order to charge high-volume users more on a per-unit basis, since they are dependent on the product. It's like charging only a little for the razor and a lot for the razor blades. Heavy shavers end up paying more.

One way to accomplish such price discrimination is a two-part pricing. There is one flat fee plus another fee based on usage. The user

46 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

pays two separate charges for one service or product, one as a flat rate for participation, the other one for actual usage. Phone companies have a fixed basic charge plus added fees based on how many minutes (or buckets of minutes) are used, and the charges have little to do with added cost.

11.5.4 Third Degree Price Discrimination: Differentiation by User Category

In a third degree price discrimination scenario, different customer categories are charged different prices based on observed characteristics of their demand elasticity. Third degree price discrimination can be applied to different geographic markets, product use markets, and customer types. For example, a student or an older person will have a different WTP than a middle-aged consumer because of budget constraints and lower time constraints. Prices increase for consumer categories with a more inelastic demand and decrease for consumers with a more elastic demand. Consumer categories with a more elastic demand are better off with price discrimination.

There are several ways to segment a market. One is location. Grocery chains rank their locations by the intensity of competition. They charge more in rich areas (higher WTP) but often also in poor areas (lower competition). Selective pricing is frequent in international markets; Deutsche Grammophon, for example, sold its records in Europe at a price 50% higher than in America, where competition was higher. Japanese automakers did the same with their cars. To find profitable geographic market segments, companies must look at the relative competition in those sub-markets. It is often better to be a big fish in a small pond than a small fish in a big and crowded pond.

In price discrimination, the key question is what the price elasticity of different consumers or consumer categories are. However, few customers would volunteer to give up information on their willingness to pay if it is used to raise prices on them.

11.6 Strategic Pricing

Strategic pricing is the use of a product's price as part of a broader and long-term company strategy to position itself in the market. There are several major types of strategic pricing.

11.6.1 Skim ("Premium") Pricing

"Skim pricing" refers to using high prices in order to "skim the cream." It works when the revenue from high end clients exceeds the revenue from the middle or lower end buyers. It means that the demand is inelastic. Skim pricing may be used for luxury items to build a premium reputation brand. Premium products do not compete on price. They aim to create a high-quality image for the firm. Examples are Godiva chocolates or Rolex watches. This must be distinguished from a monopolist's high price. Skim pricing is a policy by a competitive company, as a way to differentiate itself.

A second scenario is to charge a premium price during the initial period after the product's introduction to customers who want the new product first. This is known as "sequential skimming," starting with a high price and gradually lowering it. We discussed this earlier as a time-sequencing strategy to price discriminate. It is also known as "slide-down pricing." Some users have a high need to get the product early and are willing to pay more. Savvy buyers will wait for the price to drop. The company can time-sequence its marketing focus, too, concentrating on the different buyer groups with their different price elasticities, one at a time. The sequential approach enables it also to ramp up production gradually and move down the learning curve and scale to lower cost. It is often used for electronic devices, where cost (and price) decline at a rapid rate.

For skim pricing to work, several conditions are required: customers are not highly price sensitive, economies of scale are moderate, and competition is low.[47]

47 Spann, Martin, March Fischer, and Gerard J. Tellis. "Skimming or Penetration? Strategic Dynamic Pricing for New Products." *Marketing Science* 34, no. 2 (2015): 235–249.

11.6.1.1 Case Discussion

Premium Pricing

EB practices premium (skim) pricing with its print edition. It provides a high-quality product priced substantially above its rivals. EB sold its print edition for $1400 in 2008,[48] a higher price even than it had been 2000, despite the competition from CD-ROMs and by Wikipedia. Parents are eager to provide a quality education to their children. EB grasped this and convinced parents that their product was an "investment" in their children's future opportunities. Similarly, EB also persuaded relatives and others that its encyclopedia was a worthy and classy present for special occasions. EB's value proposition relied on two key factors: content and look. The content was of high quality: its authors were authoritative. The "look" of the product was distinguished. Whether actually used or not, it visibly proclaimed "only the best for my child."[49]

In 1994, EB's competitor, Microsoft, priced its *Encarta* CD-ROM at $120. EB, in contrast, introduced its CD-ROM to the market at the price of $1200, the same as its print edition. But this "skim pricing" proved far too high. In 1995, the price of EB's CD-ROM was lowered to $200, in 2000 to $90, in 2007 to $50, and in 2008 to $40.

Thus, the premium pricing strategy did not pan out for EB for its CD-ROM edition because there it faced competition, an elastic consumer base that switched to cheaper products, and a product with substantial economies of scale—not meeting any of the three conditions for a potentially successful skim pricing strategy.

For the print version, EB similarly engaged in skim pricing. It charged $1200, while its competitors charged a much lower $300 to $500. Its price did not drop, in fact it was raised to $1400. EB's perspective was that if it priced the encyclopedia lower, it would cheapen the brand. Here, the skim pricing strategy worked. There was a market with price insensitivity for a product that proclaimed "only the best," whether for a child or for a college library, and whose quality was not matched by a print competitor. The economies of scale in print runs are not particularly high. Thus, EB could maintain a premium price, but the submarket was not large enough to sustain the organization's large overhead.

11.6.2 Penetration ("Value") Pricing

A second major price strategy is "penetration pricing," which means setting a low price used in order to gain market or to discourage new competitive entry by others. An example was satellite radio, where each of the two US competitors, XM and Sirius, tried to drive its rival out of business by charging a low price. But neither of them succeeded. Their costs escalated, as did their losses. Both companies faced bankruptcy. Finally, they merged and then raised the price.

Penetration pricing is favored in the following circumstances, which are the mirror images of the conditions for skim pricing. First, customers are price sensitive. Second, economies of scale are large. A low price can build volume and reduce cost through scale and accumulated experience (the "learning curve"). Third, there are positive externalities (network effects) that raise the value of the service as its user base grows. This creates a snowball effect as consumers' benefit increases while cost declines.[50]

There are downsides to penetration pricing. It may be expensive in terms of foregone revenues. Thus, the firm must balance its desire for high short-run profit based on a relatively high price with long-term profits based on market share.[51] A second problem may be image. Prices tend to signal a quality level. Therefore low priced products can often be viewed as low quality which deters potential customers. Third, the success of penetration price strategy depends on rivals not lowering their own prices. For example, penetration pricing will not be followed by an incumbent where the new rival is only a minor threat.

A step beyond penetration pricing is "loss leader pricing." A company prices a product very low in order to attract buyers for its other products

48 Melcher, Richard. "Dusting Off The Britannica." *Bloomberg*. October 20, 1997. Last accessed June 17, 2017. ► https://www.bloomberg.com/news/articles/1997-10-19/dusting-off-the-britannica.

49 Boudreau, John W., Benjamin Dunford, and Peter M. Ramstad. "The Human Capital Impact on E-Business: The Case of Encyclopedia Britannica." In *Pushing the digital frontier*. Eds. Nirmal Pal and Judith M. Ray. New York: Amacom, 2001.

50 Dewatripont, Mathias and Patrick Legros. "Mergers in Emerging Markets with Network Externalities: The Case of Telecoms." In *Le Nouveau Modèle Européen*. Eds. P. Magnette and E. Remacle. Brussels: Editions de l'université de Bruxelles, 2000.

51 Farrell, Joe and Paul Klemperer. "Coordination and Lock-In: Competition with Switching Costs and Network Effects" In *Handbook of Industrial Organization, Vol. 3*. Eds. Mark Armstrong and Robert H. Porter. Amsterdam: North-Holland, 2007.

or services. The seller uses this method to build customer traffic. Free software and apps ("freeware") to consumers is used in order to increase sales by commercial providers of services to those consumers.[52]

Another reason is to get consumers to sample a product and then hopefully engage them so they keep buying at a higher level of price for the same product. For example, a free three-month subscription is offered to get the user to sample the service. This often requires action to cancel, otherwise subscriptions are maintained.

In 2007, Amazon started selling its most popular titles as e-books on its Kindle tablet device for $10, which was significantly lower than the prices charged by traditional bookstores[53] and even below the cost that Amazon paid the publishers for the license. In other words, Amazon lost money on each sale. Why would it do this? It tried to drive traffic to its site, and to sell its Kindle tablets, of course. But it also wanted to create a standard for e-books and to promote e-book reading more generally. Giving consumers a simple and uniform price would make the e-book experience user-friendly and eliminate reader anxiety.[54]

Another variation of penetration pricing is "complementary product pricing." In this method, the core product is priced low when complementary items such as accessories, supplies, and services can be priced with a higher premium. The classic example is selling a cheap razor and an expensive razor blade or selling a cheap camera and expensive film, as Polaroid does.[55] Amazon's Kindle followed the same model. In the case of early radio or today's iPhone, the opposite tack was taken: the content is free, in order to induce a purchase of hardware.

52 Huber, Peter. "Two Cheers for Price Discrimination." *Forbes*. September 27, 1993, 142.

53 Amazon found that a book that would sell 100,000 copies at $14.99 would sell 174,000 copies at $9.99. Amazon says the lower price ($10) was justified because consumers expect a significant discount relative to a print copy because there is no printing. Also, there are no over-printing issues, no lost sales due to being out of stock, no storage fees, and no secondary market (i.e. no opportunity to resell). Francis, Diane. "Amazon's tactics not novel." *National Post*. August 5, 2010. Last accessed June 17, 2017. ► http://www.pressreader.com/canada/national-post-latest-edition/20100805/282368330937114.

54 Bishop, Todd. "Amazon: Why $9.99 e-books are better for everyone, including Hachette." GeekWire. July 30, 2014. Last accessed June 17, 2017. ► http://www.geekwire.com/2014/amazon-9-99-e-books-better-everyone-including-hachette/.

55 Noble, Peter M. and Thomas S. Gruca. "Industrial Pricing: Theory and Managerial Practice." *Marketing Science* 18, no. 3 (1999): 435–454.

11.7 Other Types of Pricing

11.7.1 Flat Rate vs Usage-Based Pricing

Flat-rate pricing—"all-you-can-eat"—is the predominant form of pricing on the Internet. In economic terms such pricing it is often inefficient since it encourages wasteful over-usage, and because it discriminates against low-usage customers by charging them a high price relative to usage. This can lead to the 20% of heavy users who account for 80% of traffic being subsidized by the others, while clogging up the network for everyone, lowering quality, and raising uncertainty.

But flat rate pricing is easier to administer than usage-based charges. And many users tend to prefer flat rate prices because it removes the need to keep track of their consumption and to ration it. For Internet access, in 1996, AOL was the first to switch to an affordable flat rate pricing. Over the next year, usage per person tripled and demand surged ahead of supply. AOL was barely able to expand fast enough to keep up.[56] Another consideration in evaluating the efficiency argument is whether the payments based on usage are in fact cost-related or a way to price discriminate. If the incremental cost imposed by a user doubling his or her consumption is miniscule because the last mile and network core connection are under-utilized yet the user is charged double the price, then the economic arguments invoking marginal cost pricing are flawed.

It should be noted, furthermore, that a flat rate does not necessarily mean a low rate, except for heavy users. If an airline offered unlimited flying on its routes for $20,000 a year, few consumers would be interested, but some business travelers would jump at the option.

Flat rate pricing makes billing predictable and it provides protection against unexpected large bills. For the same reason, many providers offer complex pricing, so as to make the real price less transparent. But this can backfire once users have experienced unexpectedly high bills. One study of cellphone consumers in Canada shows that proactively matching customers' usage patterns with the rate plans that are optimal for their needs

56 Odlyzko, Andrew. "Internet pricing and the history of communications." February 8, 2001. *AT&T Labs – Research*. Last accessed August 2, 2011. ► http://www.dtc.umn.edu/~odlyzko/doc/history.communications1b.pdf.

reduces customer churn, even if short-term profitability is lower in terms of revenues. Loyal customers are also important by making positive referrals to others.

The economics of efficient resource allocation conflict with strong consumer preferences for simplicity, and the value to them to avoid transaction costs. Because of the advantages on both sides, intermediate arrangements are often offered such as flat rate plans with various caps, baskets, buckets, and tiers, which are flat up to their ceiling and then cost more for the overage.

11.7.2 Regulated Pricing

In many cases media pricing is regulated by government, especially for telecommunications and cable TV service. Wireline telecommunications frequently has a *retail* consumer price regulation, including the requirement to offer services in rural, low-density, high-cost areas at the same price as in metropolitan areas. In European countries and Japan, government sets a monthly TV viewing charge payable by viewers, called a "license fee" or "viewing charge." In India, the Telecom Regulatory Authority TRAI also sets the prices of cable, pay-TV, and satellite broadcasting.[57]

Also often regulated are *wholesale* prices charged by network providers with market power over essential network elements to competitors that must use them. This is particularly the case for telecom and ISP wholesale prices. But it can also affect the price of content.

In various countries, including the USA, there are also "compulsory licenses" where music performers or channels may perform the music or create variations, but must give notice and make payments to the rights holders, to songwriters, and often to artists. This relates to recordings, radio stations, and online music channels. The price of the compulsory license is set by a government agency, in the USA the Copyright Royalty Board. For recordings, this license fee was 9.1 cents per song, or 1.75 cents per minute of playing time. For commercial online music channels, it is 0.19 cents per unique listener per song.

At what level should one set such a regulated price? One governmental approach to setting prices is so they will enable the company to earn a "fair profit" and not more, but also not less. This is the "rate-of-return system." Prices are set at a level that permits the provider of the service to achieve a reasonable return on its invested capital, plus compensation for legitimate operating expenses and for the depreciation of its assets.

An alternative is price regulation. This method became popular in telecoms around the world when state-owned operators were privatized in the 1980s but maintained market power to set monopoly prices.

Another alternative for setting prices by regulation is called yardstick pricing. In the cable TV industry, prices for the monopoly franchise territories had to be similar to those prevailing for the cable franchises that had more than one provider and were thus competitive.

11.7.3 Transfer Pricing

In big firms, various divisions of the same company buy and sell from each other. For example, Disney-produced films are bought by Disney's ABC TV broadcast network. Films by Warner Brothers have been using Warner Music's songs. How do these various divisions of the same company "pay" each other? These payments are known as "transfer prices."

Why does the transfer pricing method matter? Is it not simply shifting money from one pocket to the other? Internally, an efficient transfer pricing can create better operational efficiency by providing a clearer picture of costs and profits of the various activities and corporate divisions.[58] Externally, transfer prices can be motivated by a desire to understate reported profits. The incentive is to manipulate transfer prices in order to shift profits away from projects where they must be shared. In the film industry, there has been historically the incentive to overload transfer payments in order to reduce a profit that would have to be shared. A still more preva-

57 Kohli-Khandekar, Vanita. "Why price regulation for TV?" *Business Standard*. August 17, 2010. Last accessed June 17, 2017. ► http://www.business-standard.com/india/news/vanita-kohli-khandekarprice-regulation-for-tv/404713/.

58 KPMG. "Transfer Pricing for the Telecommunications Industry." 2006. Last accessed June 20, 2007. ► http://www.kpmg.ca/en/industries/ice/documents/TransferPricingForTelecomIndustry.pdf.

lent incentive exists to use transfer prices to shift profits to low-tax jurisdictions. A company would do so by having an input from the low-tax jurisdiction internally priced very high, thus lowering the profit achieved in the high-tax jurisdiction. Because such transfer prices could otherwise be set arbitrarily, tax laws often limit how transfer prices can be set.[59] Most countries' tax systems require the trading between two associated companies to be conducted on an "arm's-length" basis.[60] However, the reality is another matter. How would one determine the arm's length price unless it is a commodity that is widely traded?

How would a firm determine its internal transfer prices? The options are for such transfers to be free, or to be cost-based, or to be market-based, or to be set by upper management in a quasi-regulatory way.

The market price is often the starting point from which the internal transfer price is calculated, followed by a variety of adjustments.[61] For example, if NBC charges the unrelated cable company Charter $1.50 per subscriber per month for the channels NBC, MSNBC, and CNBC, then this would be the arms length price that it would charge its own sister-company, Comcast.

Another option is a discounted or adjusted market rate price. This method discounts the market price by eliminating certain costs that exist for external deals but not for internal ones, such as the cost of negotiation or the cost of risk for uncollectable debt. NBC might then discount the Charter price of $1.50 by, say, one-third of an internal transfer, if it can justify the difference.

A third major option is a cost-based transfer price where one division pays the other based on the cost of producing the product, but below the market price.[62]

59 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.

60 KPMG. "Transfer Pricing for the Telecommunications Industry." 2006. Last accessed on 20 June 2007. ► http://www.kpmg.ca/en/industries/ice/documents/TransferPricingForTelecomIndustry.pdf.

61 Baldenius, Tim, Stefan Reichelstein, and Savita Sahay. "Negotiated versus Cost-Based Transfer Pricing." *Review of Accounting Studies* 4, no. 2 (June 1999): 67–91.

62 ACCA. "Transfer Pricing." Last accessed June 17, 2017. ► http://www.accaglobal.com/us/en/student/exam-support-resources/fundamentals-exams-study-resources/f5/technical-articles/trans-pricing.html.

11.7.4 Protection from Price Variations: Hedging

Often, buyers or sellers would want to protect themselves from the risk of changing prices. Such protection is called "hedging." Some tools for hedging are options, futures, forwards, swaps, or derivatives.[63]

A futures contract is for buying a commodity or security on a future date at a price fixed today. Forward contracts are custom-made contracts, and unlike futures are not traded in a market. Forward contracts are most commonly done with currency; for example, if a company's chief financial officer (CFO) believes interest rates will rise, he or she could make a forward rate agreement with a bank. A company that plans to buy another firm but soon expects that interest rates will rise between now and then could purchase a futures contract to lock in today's interest rate.

A TV network firm might consider forward contracts if it knows that it will require significant transatlantic transmission capacity in September, due to a major sports event such as the Olympics. Similarly, a telecom firm might fear that prices will fall in the near future. By selling a "telecom capacity future" at today's price, rather than at a possibly lower price in the fall, it can protect its downside.

A "short hedge" is hedging risk by selling futures. This is what the telecom company is doing. A "long hedge" is hedging risk by buying futures, which is the TV network's strategy. Those who believe the price will rise in the future will buy it at today's lower price. A "call option" gives its owner the right to *purchase* an underlying asset at a set price within a set period of time. A "put option" gives the owner the right to *sell* an underlying asset at a set price within a set period of time. The "striking price" or "exercise price" is the price at which one has the right to buy or sell the asset.[64]

11.8 Legal Aspects of Pricing

11.8.1 Ethics of Pricing

Companies are not entirely free in choosing their pricing since government and society also play a role in the price setting beyond direct regulation.

63 Brealey, Richard A. and Stewart C. Myers. *Principles of Corporate Finance.* New York: McGraw-Hill/Irwin, 2003, 758.

64 Rendleman, Jr., Richard J. *Applied Derivatives, Options, Futures and Swaps.* Malden, MA: Blackwell Publishing, 2002.

In the first instance, transactions must be voluntary and not forced on a desperate party by another, such as on a man dying of thirst. Laws restrict the exploitation of duress, or of dependency in the cases of medical drugs, or of payphones in emergencies.

The second level of ethical and legal constraints deal with transactions with unequal information about the exchange. An example is the selling of a product with a hidden defect unknown to the seller. Laws and liability rules lead to disclosure which affects price.

The third level of ethical constraint states is more complex. It deals with the limits of profits. Under a notion of moral constraints, a seller, it has been argued historically, should take only a "fair" profit from the sale of "necessities." In medieval society profiteering was considered a mortal sin. Traders were morally obligated to charge a price close to the cost. But this admonition was not matched by reality. Sellers and traders often priced substantially above cost, which explains the wealth of some families and cities. Under Soviet Communism, charging a price higher than the official price was a criminal act, even if the state did not supply the good. In some cases, profiteers were put to death.

The notion of the "just price" is hard to define, still harder to operationalize, and even harder to enforce.[65] The concept depends on many variables that change over time.[66,67] Psychological experiments survey people's reception of "fairness" in changing prices. The results show an asymmetry. It is generally considered "fair" for a firm to raise prices or cut wages when its profits are declining. It is also considered fair to maintain prices at the same level even though production costs were falling. But it is considered "unfair" to take advantage of rising demand by raising prices.[68] Raising prices on necessities such as housing rents or medical drugs is considered "profiteering." For that reason they are sometimes controlled by price regulation.[69]

65 Davidson, Kirk. "In search of fair prices." *Marketing News* 31, no. 12 (1997): 4.

66 de Roover, Raymond. "The Concept of the Just Price: Theory and Economic Policy." *The Journal of Economic History* 18, no. 4 (December 1958): 418–434.

67 Gielissen, Robert. "Perceptions of Price Fairness: An Empirical Research." *Business & Society* 47, no. 3 (2008): 370–389.

68 Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. "Fairness as a Constraint in Profit Seeking: Entitlements in the Market." *The American Economic Review* 76, no. 4 (September 1986): 728–741.

69 Heilbroner, Robert. *The Making of Economic Society*. Upper Saddle River, NJ: Prentice-Hall, 1962.

11.8.2 Legal Constraints

In Western liberal democracies and market-based economies, legal constraints on pricing include:

- Antitrust laws prohibiting price fixing and discrimination;
- International trade laws;
- Laws about vertical price fixing (resale price maintenance, RPM);
- Anti-predatory pricing laws and anti-dumping trade laws.

11.8.2.1 Price Fixing

In the USA, the Clayton Act of 1914 prohibits agreement among firms aimed at price fixing and its close cousins, restriction of output and market division of territories or customers. Similar prohibition are set in the UK Competition Act 1998. Article 101 of the EC Treaty[70] prohibits agreements among firms to fix prices or share markets. Article 102 prohibits firms in a dominant market position from abusing their power (e.g. predatory pricing aimed at removing competition). The Japanese Antimonopoly Law was enacted in 1947 as part of the Economic Democratization Policy introduced by the occupation forces. Originally based on US antitrust laws, in time it acquired features unique to Japan. China's Antimonopoly Law came into force in 2008.

In the USA, there are several ways for harmed competitors, customers, or suppliers to seek remedies, including:

- A court order such as a cease-and-desist order of pricing practices by the relevant government agency or court;
- In private antitrust lawsuits, a winning complainant can get three times the actual damages plus attorney fees;
- Rivals can be forced to collaborate with competitors or suppliers by granting patent licenses, or by stopping certain marketing tactics;[71]
- Rivals that have a chronic history of violations might be broken up to enhance a competitive market structure.

Some pricing practices are banned outright. For example, in the USA, price agreements among

70 European Commission. "Antitrust Overview." Last accessed June 17, 2017. ▶ http://ec.europa.eu/competition/antitrust/overview_en.html.

71 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

competitors are not allowed. Price discrimination, RPM, below-cost pricing, dumping, or price fixing are also mostly prohibited.[72] Under the antitrust laws (governed mostly by the Sherman Act of 1895) a firm could be split up if it engages in unfair pricing practices. In the past, firms that were split up included the Hollywood studios from their film theaters; the telecom giant AT&T; and the dominant NBC radio company. Microsoft and IBM narrowly escaped. The Sherman Act states that a firm can be fined up to $10 million and individuals can be fined up to $350,000. There is also a possible prison sentence of up to three years.

The general problem is that uniform prices across competitors can mean two radically different things: either harmful collusion or the opposite, perfect competition. Rivals can reach the exact same price in order to stay competitive. In the USA, courts held that "parallel behavior" by competitors itself is insufficient to prove a price fixing conspiracy. One must find evidence for secret meetings, calls, letters, or other direction coordination to find a conspiracy. Parallel market behavior that cannot be explained except as the product of concerted action can also be a factor.

11.8.2.2 Resale Price Maintenance

For much of a century, any agreement by which a supplier set the prices at which retailers could resell their products to consumers has been "per se" illegal in the USA. More recently, in the case of Leegin Leather Goods, the US Supreme Court eliminated the automatic ban on RPM for maximum prices in favor of a case-by-case approach.

According to the European Commission's Guidelines, RPM falls under a "hardcore restriction" and is therefore illegal. In 2010, the Commission softened this stance: it might be possible for RPM to be exempted through efficiency arguments.[73] In practice, RPM is present and legal for most book sales, where it is known as the Fixed Book Pricing Agreement. These exist in most EU countries,[74] as well as in Japan, South Korea, Argentina, and Mexico. The public policy rationale is to protect small book stores from large chains which compete against them through price discounts to consumers but do not offer the same level of service and variety.

11.8.2.3 The Law on Price Discrimination

In the USA, price discrimination is not permitted for commodities of similar "grade and quality." (Only products are covered but not services.) It is also illegal to provide indirect price rebates through differentiated fees for handling, processing, and so on. There are two legal defenses against charges of price discrimination: (a) cost justification, that is the lower price is based on actual cost reductions due to volume; and (b) to meet the price offered by a competitor.

Price discrimination by dominant manufacturers is prohibited in Europe by a "hardcore provision" as an abuse of market power (if market power is present) for which no exception or justification is possible. Examples of EU price discrimination cases include the 2015 Disneyland Paris case, where the theme-park had to stop charging different online prices to different nationalities.[75]

11.8.2.4 Predatory Pricing and Dumping

Predatory pricing means selling below cost in order to eliminate a competitor. The basic elements of predation are prices set below marginal cost and a subsequent recoupment, of the losses by raising prices.[76] Yet an anti-predation rule that is too strict might ban favorable price reductions that are not actually predatory, and which benefit consumers. Conversely, anti-predation rules that are too lax might allow monopolists to emerge and protect their turf.[77] Because price cutting is typically a benefit to consumers, and because

72 Montgomery, Stephen L. *Profitable Pricing Strategies*. New York: McGraw-Hill, 1988.

73 Botteman, Yves. "(Minimum) Resale Price Maintenance Under the New Guidelines: A Critique and a Suggestion." *Competition Policy International*. June 14, 2010. Last accessed June 17, 2017. ► https://www.competitionpolicyinternational.com/minimum-resale-price-maintenance-under-the-new-guidelines-a-critique-and-a-suggestion/.

74 Except for the UK, Sweden, Ireland, Czech Republic, and Poland.

75 Brunsden, Jim and Duncan Robinson. "Disneyland Paris ditches pricing policy." *Financial Times*. April 15, 2016. Last accessed June 17, 2017. ► http://www.ft.com/cms/s/0/e472eec2-031b-11e6-af1d-c47326021344.html#axzz4lkcDRxz3.

76 Hemphill, C. Scott. "The Role of Recoupment in Predatory Pricing Analyses." *Stanford Law Review* 53, no. 6 (July 2001): 1581–1612.

77 Edlin, Aaron S. and Joseph Farrell. "The American Airlines Case: A Chance to Clarify Predation Policy." *IDEAS*. January 9, 2004. Last accessed August

there is a fine line between predatory pricing and promoting a business, courts have been reluctant to rule against companies lowering prices accused of predatory pricing.[78]

It is not easy to apply predatory pricing laws to information sector companies, because it is difficult to determine what "below cost" is when marginal costs are naturally very low. If the requirement for predatory pricing is "below marginal cost pricing," it will rarely be met. An international example is the French ISP Wanadoo. From 1999 to 2002, this subsidiary of the national telecom incumbent France Telecom (now Orange) priced its broadband service at a loss, allegedly to drive out competition. Its market share peaked at 72% of broadband and 90% of digital subscriber (DSL) lines. In 2003, Wanadoo was fined €10.35 million by the European Commission for predatory pricing, and the judgment was upheld by the European Court of Justice.[79] However, the tiny size of the fine relative to the company's revenues (~0.25% of just one year's revenues) is not exactly a strong deterent.

Dumping is a method similar to predatory pricing. It occurs when a foreign manufacturer undercuts domestic prices below its costs or below its price in the foreign market in order to gain a share in the domestic market.[80] Remedies for international predatory pricing are to impose tariffs on violating firms equal to the difference in their price and a "fair price" plus damages. Unlike predatory pricing laws, US anti-dumping laws are aimed at protecting US businesses rather than the consumers. The standard for dumping is much less rigorous than US laws on predatory pricing. They only need to show that low pricing is harming domestic businesses. Economists have argued that this is detrimental to the economy as a whole since low prices are beneficial to domestic consumers. The World Trade Organization determines what remedies are available to countries and it handles disputes over the legality of anti-dumping laws.[81]

11.9 The Futures of Pricing

11.9.1 "Free"?

Online guru Steward Brand popularized the idea that "information wants to be free." Free in content, and free in price. But on the other side of the equation, media and digital companies as well as many creators want information to be relatively expensive so that it can pay for its often costly creation. This is a key tension in the media environment.

Many information products move to a free model, that is, to a zero price. This has been called "freeconomics."[82] The "free" but advertising-supported model, however, is often not enough to support a service. Many media firms found that paid subscriptions, in addition to advertising, are needed. It was also observed that giving away content for free works best for big firms with a larger user base for advertisers[83] or where the firm offers complementary services to commercial customers, who then pay in order to be able to reach the consumer user base clustered around the free service. Their model can be described as a "three-party system": a third party pays to be a part of a free exchange market set in place between the first two.[84] This has been the arrangement in commercial radio and television for a long time.

Newspapers have struggled to find pricing models for their survival. The *New York Times* established a "paywall" for content in 2011, after see-sawing from free to pay to free and then pay again. The company allowed a free article quota of 20 articles per month, subsequently reduced to 10. The paywall is fairly easily avoidable through the use of multiple browsers or email accounts, but in all such pay arrangements a company

1, 2011. ► http://ideas.repec.org/p/wpa/wuwple/0401003.html.

78 Federal Trade Commission. "FTC Staff Comment to the Honorable Demetrius C. Newton Concerning the Alabama Fuels Marketing Act." January 29, 2004. Last accessed May 29, 2007. ► http://www.ftc.gov/be/v040005.shtm.

79 European Commission. "Antitrust: Commission welcomes judgment of the Court of Justice in French broadband case." April 2, 2009. Last accessed February 18, 2009. ► http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/147.

80 Congressional Budget Office. "Antidumping Action in the United States and Around the World: An Analysis of International Data." June 1, 1998. Last accessed May 30, 2007. ► https://www.cbo.gov/sites/default/files/105th-congress-1997-1998/reports/antidump.pdf.

81 World Trade Organization. *A Handbook on Anti-Dumping Regulations*. New York: Cambridge University Press. 2003.

82 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ► http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

83 The Economist. "Media's Two Tribes." July 1, 2010. Last accessed June 17, 2017. ► http://www.economist.com/node/16486717.

84 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ► http://www.wired.com/

should not let the perfect be the enemy of the merely good. The *New York Times* pricing for unlimited access to articles ranges from $15 to 35 per month, depending on the viewing platform (for smartphones $15 per month[85]). There are substantial discounts for students, teachers, and others.

In 2015, 79% of US newspapers with a circulation of over 50,000 used a digital subscription model; 62% used a "metered" system in which some articles are free before users have to pay; 12% used "freemium" models (most articles are generally free, some premium articles need to be paid for) and only 3% require a subscription for most or all of the content.[86]

Publications lose online readers when they adopt a paywall. Even the simple registration requirement reduces visitors by half.[87] But both free and pay models have their success stories. The Internet makes a variety of new approaches possible. Prices can be differentiated. Different content tiers can be created at different price levels. A basic tier is free and advertising-supported. For more information or a higher grade of performance, a subscription is necessary. This model—known as "freemium"—has become popular to the point of emerging as the main way to conduct business for Internet news content companies. A major challenge then is to decide how many features of a product should be free and how many should be paid for.

For many online services, free models have emerged, helped by rapidly falling costs. Examples are email, search, maps, storage, large file transfer, video sharing, music, photo/video/document editing, games (ad-supported casual), and many more. Models co-exist. Google is offering free directory assistance. At the same time, companies such as AT&T still charge for directory assistance.[88] Google is not being altruistic. It gains valuable information from these free phone calls. It might profit more from its free service than AT&T does from its pay service.

11.9.1.1 Case Discussion

Online Models

Did advertising-based pricing work for EB? EB had tried to support its online version through advertisements, but this reduced the cachet of the brand and did not work out in terms of user demand and hence advertising revenues. Let us look at EB's potential ad revenue. In 2002, when EB tried to go down the ad-supported route, the CPM (cost per thousand impressions) for educational/reference websites was $15.53, and the number of unique visitors to its website was about six million per year. As a back of the envelope analysis: EB could have charged about $93,000 per ad that was being served to each unique visitor once. Just to cover its fixed costs of about $10 million, the company would have needed to serve each unique visitor over 100 ads per year, while maintaining the price per ad despite the clutter, the glut of other advertising platforms, and the rivalry from advertising-free Wikipedia. Not surprisingly, the ad scheme failed.

11.9.2 Micro- and Nano-pricing

Micropayments are used for small payments where other forms of electronic payments, such as credit cards, are too expensive, or cumbersome,[89] typically transactions of less than $10–20. An example of a micropayment application is Apple's music store iTunes. Users can download songs with the prices set at $0.69–1.29 per song. Users can choose to pay with a credit card, debit card, or PayPal.[90]

techbiz/it/magazine/16-03/ff_free.

85 Filloux, Frederic. "NY Times 'Fair' Price." *Monday Note*. March 21, 2011. Last accessed June 17, 2017. ► https://mondaynote.com/nytimes-fair-prices-69114de00db5.

86 Williams, Alex T. "How digital subscriptions work at newspapers today." *American Press Institute*. February 29, 2016. Last accessed June 17, 2017. ► https://www.americanpressinstitute.org/publications/reports/digital-subscriptions-today/.

87 The Economist. "Media's Two Tribes." July 1, 2010. Last accessed June 17, 2017. ► http://www.economist.com/node/16486717.

88 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired*. February 25, 2008. Last accessed June 17, 2017. ► http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

89 Kniberg, Henrik. *What Makes a Micropayment Solution Succeed*. Master's Thesis KTH, Institution for Applied Information Technology, Stockholm, 2002.

The greater ease for micropayments, however, creates a backlash. Even if the payment is small, "free" and "almost free" are very different in the perception of uses.[91] Consumers often have negative feelings toward micropayments. To them, it is part of a takeover of the free sphere by economic transactions. It may be economically efficient but they want to tune out of having to make decisions with a meter ticking in their head.

Blendle is a pay-per-view platform backed by Dutch and German newspaper publishers. It lets users make micropayments for articles (0.19 to 0.39 cents). But few users seem willing to do so. Micropayments force consumers to determine the value of each story before agreeing to pay for it. The *Winnipeg Free Press* was the first newspaper to try the micropayment business model in North America. Users pay 21 cents per article or a flat monthly fee. However, rarely was the reader willing to pay. The market price for articles is quite low. Given consumer resistance, micropayment systems as a whole have failed in the past.

The next step would be "nano" transactions. Today, the environment in which information exists and operates is becoming increasingly complex and decentralized. Servers and websites interact with each other. Machine-to-machine transactions accelerate, such as with automobiles transacting directly with highways, or smart appliances dealing with e-commence and electric utilities. A "nano" payment system would charge each packet or group of packets for transmission, access, processing, and so on, and that packet would be able to pay the fee, based on an e-wallet it carries.

Some might think that all packets must be treated equally for technical reasons, but actually individual packets can be treated quite differently. With identification, information streams become much more like airline transport. The passengers can be individualized and a strong price differentiation can be maintained. Video entertainment packets could receive discounts over voice packets and streaming in real time may require a premium. There can also be differentiation according to technical quality and security.[92] Such automatized nano-payment systems are not yet operational today, but with added computing and transmission power they will emerge in the future.

11.10 How Firms Organize Their Pricing Function

11.10.1 Setting Pricing Policy

Tactical pricing is short-term oriented and based on the current market situation and customers. It must respond flexibly to competition and demand. Strategic pricing, on the other hand, is set within the perspective of overall profitability, marketing, and positioning. As Thomas Nagle points out, the problem that firms face is when tactical pricing takes over. Managers and sales people, partly motivated by sales quotas and targets, may become too flexible and offer price concessions that are customer specific. They engage in bargaining. But the result will often be, as mentioned, to transform good customers into "difficult customers."[93] Pricing strategy then dissolves into a series of ad hoc deals. Instead, companies should provide options with different prices. A price-sensitive buyer can then be offered a lower-priced option that comes with a lower quantity or quality. Rather than lowering the price, the seller should provide a menu of price-feature tradeoffs. These options should be set in advance, with a clear menu of choices and prices. "Instead of flexible pricing for a fixed product the firm should offer fixed prices for flexible offerings."[94] This also gives customers an incentive to be honest about their needs and issues rather than be strategic in their communications as part of a bargaining process. Discounts can be given to certain customer categories, but this should be set in advance, be transparent, and follow clear criteria. For example, educational institutions might get a discounted price.

What this means is that pricing should, in principle, not be done on the level of the sales force, but organized on a strategic and central level as an important management decision.

90 Apple Online Store. "iTunes Music" 2011. Last accessed on August 1, 2011 ► http://www.apple.com/itunes/whats-on/.

91 Anderson, Chris. "Why $0.00 is the Future of Business." *Wired.* February 25, 2008. Last accessed June 17, 2017. ► http://www.wired.com/techbiz/it/magazine/16-03/ff_free.

92 Noam, Eli. A General Packet-Based Payment and Transaction Method and System. US Patent 7,203,657. 2007.

93 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

Companies must therefore establish pricing groups or committees—including representatives from finance, marketing, sales, and strategy—to coordinate pricing, including on a global scale. When sales run lower than expected, the committee should review the pricing policies and alter them, if necessary, rather than provide price exceptions. More fundamentally, it might also decide to modify the product and its features or to launch a new advertising campaign.[95]

11.11 Conclusions

11.11.1 Case Discussion

Conclusions

It is, of course, difficult for a business to compete with a rival who sets its price at zero. Technology and community dynamics have enabled easy, cheap competition to EB's premium product. As a result, the only way for a pay service to survive in the future is by providing substantial value benefits over free alternatives. Consumers may be willing to pay for a premium quality product, or a better fit with the user's need. This might derive from the prestige of authors and from an investment in graphs, maps, and so on.

Has EB been able to compete with "free"? The answer is no. In 2012 it announced that after 244 years and seven million sets sold, it was no longer printing new editions of its flagship encyclopedias. Its focus would shift to developing more comprehensive digital content[96] (whatever that might mean). This followed a continuous decline of over two decades. In 1990, the company peaked with 120,000 sets of encyclopedias sold. By 1996, that number had dipped to 40,000 and by 2010 to 8500. The final 2010 edition (all 32 volumes) was sold on its website at a price of $1400 until the stock of 4000 volumes sold out.[97]

How could EB have handled its dilemma? There were a number of options to consider.

Premium Strategy Technology enabled cheap and easy competition to EB's main product. The response to "free" may be "better," "easy," and "prestige." Consumers may be willing to pay for the premium image, premium quality, and convenience. Thus, one way to survive would have been to provide substantial value benefits over free alternatives. But this is difficult, and EB did not persuade enough people that it was worth the money.

Differentiating the Product One differentiation might have been quality. Another might have been a better fit to high school student needs than Wikipedia's one-size-fits-all. There might have been signed selective articles by luminary authors to raise the intellectual prestige, and an extra editorial budget for graphs, maps, and photos. This would have been in line with its traditional premium brand strategy. One online blog observer, Andrew Hayword, wrote: "Britannica is, quite frankly, the gold standard and is universally acknowledged. In developing countries it is still the brand that people tend to go to first. Wikipedia is increasingly seen as a 'corrupt' source of information and is not totally reliable." In response, Jimmy Wales, Wikipedia's leader, scoffed that "when it comes to breadth of coverage, Britannica is a puddle to Wikipedia's sea and the web's ocean ." EB generated $11 million in revenue and featured one language. Wikipedia, on the other hand, generates $60 million in donations, has 284 different languages, 19 million articles, and 82,000 editors.[98] EB could have turned this weakness around as a strength and presented itself as selective and careful, a gourmet meal instead of a supermarket.[99]

Product Extension EB could have branded new products with the "Britannica" name. It could have expanded its product line by creating targeted editions and focusing on customization by creating supplementary materials

94 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

95 Nagle, Thomas T. and Reed K. Holden. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*, 3rd ed. London: Prentice Hall, 2002.

96 Encoh, Nick. "Your Tome is up…Encyclopedia Britannica Ends its Print Edition After 244 Years as it Fully Embraces Digital Age." *Mail Online*. March 13, 2012. Last accessed June 12, 2012. ► http://www.dailymail.co.uk/news/article-2114646/Encyclopedia-Britannica-cut-print-edition--244-YEARS.html.

97 Manjoo, Farhad. "Expensive, Useless, Exploitative." *Slate*. March 15, 2012. Last accessed June 17, 2017. ► http://www.slate.com/articles/technology/technology/2012/03/the_encyclopedia_britannica_was_expensive_useless_and_exploitative_i_m_glad_it_s_gone_.html.

98 del Castillo, Michael. "Britannica App Can't Get No Love." *UpStart.com Business Journal*. March 26, 2012. Last accessed June 12, 2012. ► http://upstart.bizjournals.com/companies/media/2012/03/26/encyclopaedia-britannica-wins-appy-gets-totally-overlooked.html.

for different age groups. To some extent, it tried to go down that route. It offered a *Britannica Student Encyclopedia* which primarily targeted students in grades three through six. Similarly, there were editions for high-schoolers and college students.

Bundling EB did this with its "Deluxe Edition," a comprehensive package that includes the entire 32 set of books together with other reference sources such as the *Year in Review*, *Merriam-Webster's Collegiate Dictionary*, a thesaurus, and a world atlas. However, for effective bundling, at least one element of the bundle must have generated a powerful and fairly inelastic demand.

Customization Customization of its encyclopedias and content was a possible way for EB, if it could have marketed supplementary materials for different age groups and interests. It tried to do so, but the price was too high when rival information was available for free online from multiple sources.

Copy Its Rival Another strategy could have been to emulate Wikipedia's model by allowing subscribers to contribute to and improve any article, but with quality control by editors who are identified by name. This would deal with the problems of Wikipedia by the free editing of its content.[100] For example, in 2011 the lawyers in a class action lawsuit were accused of editing pages on Wikipedia in order to reduce the credibility of the lawyers on the other side. To deal with ideological attacks,[101] Wikipedia had to lock or restrict the editing of articles on certain persons and subjects in order to prevent "editorial vandalism."[102]

Focus on niche markets EB could focus on its primary market of schools, libraries, and those users who depend on reliable information.[103] It could then target segments which would highly value a paid-for version of its content over a free alternative. Parents of second to twelfth graders are a good potential market. For their schoolwork and research projects, the EB's level of detail would have provided an extra benefit. These strategies would have allowed for highly differentiated schemes based on demands across grade levels. They would have also catered to a very large potential market, as there are about 45 million second to twelfth grade students in the USA alone, and hundreds of millions worldwide. EB would have created a differentiation value for these products relative to the free alternatives with age appropriate information, guaranteed authenticity, fast delivery, and perhaps inclusion of online research documents that would assist students with paper formatting, writing, and organization. These strategies therefore combine versioning and third degree price discrimination (the varying of price by customer segment). EB did follow such a strategy by offering a *Britannica Student Encyclopedia* aimed at ages 7–12 ($449), the *Compton Encyclopedia* (ages 10–17), as well as several lower-priced CD-ROM or online packages aimed at students.

Wait for Wikipedia's own decline Inevitably, Wikipedia's exponential growth slowed in time.[104] The number of articles added daily declined from 2200 in 2007 to 1300 in 2009 to about 800 pages in 2016.[105] Inside Wikipedia, "deletionists" and "inclusionists" competed for control and internal fights divided the organization with the deletionists predominating. It became increasingly difficult to make a successful edit. Normal users were often excluded. Wikipedia is often in the news because of inaccuracies. Its focus consequently shifted from growing its content to ensuring its accuracy.[106]

Adopt the advertising model In 2008, EB put its content online for free. According to Ian Grant, its UK general manager, "the site was free at one point … but perhaps we were too far ahead of our time then. We had no commercial model, our servers crashed with all the traffic to the site, and the changes didn't work at all. This model was introduced by the new owner at the time, who felt we had to adapt to the internet, and it took us years to recover from this. [I am] not convinced that the free, ad-supported model for the consumer website would work. Advertising can be hard to come by and undermines the value proposition."[107] In another example, the well-known German encyclopedia *Brockhaus* tried to survive with a free and advertising-based model for its encyclopedia. It, too, failed.

Merge Expansion by mergers with other traditional encyclopedias, both English language and

99 Bray, Hiawatha. "Enter Britannica." *The Boston Globe.* March 31, 2009. Last accessed June 17, 2017. ► http://archive.boston.com/business/technology/articles/2009/03/31/enter_britannica/.

100 Tobin, Ariana. "Founder Jimmy Wales Says Wikipedia Offers Insight into Cultural Dynamics." *St. Louis Beacon*. March 26, 2011. Last accessed April 4, 2011. ► http://www.stlbeacon.org/arts-life/neighborhoods/out-and-about/109144-jimmy-wales-visits-wustl.

101 Schonbrun, Lawrence W. "Wikipedia Wars." *Huffington Post*. March 30, 2011. Last accessed April 4, 2011. ► http://www.huffingtonpost.com/lawrence-w-schonbrun/wikipedia-wars_b_842819.html.

102 Bray, Hiawatha. "Enter Britannica." *The Boston Globe.* March 31, 2009. Last accessed June 17, 2017. ► http://archive.boston.com/business/technology/articles/2009/03/31/enter_britannica/.

103 Bray, Hiawatha. "Enter Britannica." *The Boston Globe.* March 31, 2009. Last accessed June 17, 2017. ► http://archive.boston.com/business/technology/articles/2009/03/31/enter_britannica/.

104 Johnson, Bobbie. "Wikipedia approaches its limits." *The Guardian.* August 12, 2009. Last accessed June 17, 2017. ► http://www.guardian.co.uk/technology/2009/aug/12/wikipedia-deletionist-inclusionist.

105 Wikimedia. "WMCharts." Last accessed June 17, 2017. ► https://tools.wmflabs.org/wmcharts/wmchart0002.php.

106 Johnson, Bobbie. "Wikipedia approaches its limits." *The Guardian.* August 12, 2009. Last accessed June 17, 2017. ► http://www.guardian.co.uk/technology/2009/aug/12/wikipedia-deletionist-inclusionist.

others, does not overcome the fundamental problems, but only enlarges them. Yet another possibility would be to merge with Wikipedia itself, probably becoming part of the latter, as its pay "Wikipedia Britannica Plus" brand. Yet this approach did not work either. Wikipedia's had grown by 2015 to over 36 million articles, of which more than 5 million were in English. Wikipedia's monthly visitor base was 500 million individual readers in 2014; Britannica Online had 112,000 articles and received only 2 million views.[108]

The End Five days after the closing of the print version was announced, EB's smartphone app, an effort to get on new platforms, won a prestigious Appz Award. However, would the 80,000 articles of the app, at $1–2/month, be enough to compete against the free Wikipedia with its millions of entries?[109] Estimates for 2016 app downloads were of less than 5000. Most of the company's revenue now comes through the institutional market such as schools and universities rather than the consumer market. Thus, an app is not likely to be very successful.[110]

Changing its business model was not new to EB. Its business model and pricing changed several times in its history. From 1768 to 1771, for example, it consisted of weekly pamphlets bought separately. But in the current age, Encyclopaedia Britannica's management did not exhibit the necessary foresight and determination to change course radically and to carry a venerated analog brand into the digital age.

11.11.2 Conclusions on Pricing

Pricing is one of the most important tasks for an information sector firm.

Media firms may send in their lawyers to protect their property rights from unauthorized usage. However, even if they could get rid of the pirates, competition will still drive down the price for most content that is not truly unique. Price deflation can occur due to high production and commoditization competition. Low marginal costs lead to pricing below break-even prices. Without a differentiation, a firm will not be able to sustain itself economically. Innovation in technology and content are the greatest differentiator. However, such technology or content originality are difficult to sustain for long periods. Rivals will catch up or leapfrog.

One alternative is to seek market power or organize price stability and higher prices through a cartel. This, too, is not likely to endure due to competitive and legal challenges.

Refinement of pricing offers a way out of this dilemma. There are numerous approaches to set prices, as we have seen. Some pricing policies are market-strategic—such as to gain market power. Other pricing policies deal with the problem of covering high fixed costs, such as through price differentiation and by maintaining prices above marginal cost.

What is the impact of technology? On the positive side, we now have new technical tools of Internet connectivity, local people meters, measurement software, cookies, and wireless connectivity. which provide powerful methods of near-instant feedback. Thus, measurement of sales and the impact of prices can be increasingly real time, global, disaggregated, and with larger samples.

Technology also creates tools to identify, segment, and customize users, usages, price elasticities, and prices. It enables inserting micropayment systems into websites and apps, and instituting algorithmic hedging techniques.

In that environment, what would be the optimal pricing strategy for sellers? It would be to price at each individual buyer's willingness to pay as long as it is above the long-term marginal cost. This requires knowledge of customers, as well as the market power to avoid competition, and control over arbitrage. Yet such ability is growing with the sophistication of data mining and e-commerce, and large media platforms.

The least desired pricing for the seller is to be in a commodity situation—a comeptitively set market price at a short-term marginal cost, and below average cost. With such commodity pric-

107 Charlton, Graham. "Q&A: Ian Grant of Encyclopedia Britannica UK." *Econsultancy*. February 10, 2009. Last accessed June 17, 2017. ▶ https://econsultancy.com/blog/3268-q-a-ian-grant-of-encyclopaedia-britannica-uk/.

108 Channick, Robert. "Encyclopedia Britannica Ends Print Run." *LA Times*. March 14, 2012. Last accessed June 12, 2012. ▶ http://articles.latimes.com/2012/mar/14/business/la-fi-britannica-ends-print-20120314.

109 Charlton, Graham. "Q&A: Ian Grant of Encyclopedia Britannica UK." *Econsultancy*. February 10, 2009. Last accessed June 17, 2017. ▶ https://econsultancy.com/blog/3268-q-a-ian-grant-of-encyclopaedia-britannica-uk/.

110 Sword, Alexander. "Encyclopaedia Britannica: How a Print Company Embraced Disruptive Innovation in Publishing." *Computer Business Review*. May 19, 2016. Last access June 17, 2017. ▶ http://www.cbronline.com/news/cloud/encyclopaedia-britannica-how-a-print-company-embraced-disruptive-innovation-in-publishing-4898586/.

ing, the likelihood of survival is poor. Major strategies to prevent this situation—where long-term superior cost efficiency is not available—would be consolidation and product differentiation by innovation.

Even with advanced tools of gauging consumers and markets it is harder to do pricing today, in a rapidly changing environment with fragmented buyer markets, and with much greater choice, more buyer information, and globalization of buyers and rival sellers. At the same time, the fundamental economics of information and digital products are shifting, with the trends of rising fixed costs and declining marginal costs, which make pricing more complicated and risky.

Pricing methodologies and their integration into operations, product design, and marketing are evolving and are subject to rapid innovation and flexibility. Whereas pricing used to be a fairly quiet activity, it is becoming a key competence for managers in the information economy, and one with enormous significance for firms as they translate products into profits.

11.12 Review Materials

Issues Covered

- How to organize the pricing function of a company;
- Whether to implement cost-plus pricing;
- How to strategically price a product;
- How to use marginal cost analysis in pricing;
- How to use auctions for market-based pricing;
- How to use yield management and dynamic pricing when product demand varies;
- How price deflation of information products affects the industry;
- How inflation indexed pricing works;
- How value-based pricing works;
- How to measure WTP;
- What factors affect price sensitivity;
- How to determine a product's value using the hedonic price approach;
- How to keep prices above cost when WTP decreases;
- How to create customer lock-in;
- How to determine optimal price discrimination;
- What the reasons for flat rate vs usage based pricing are;
- How regulation affects pricing;
- How governments regulate interconnection prices;
- How to use hedging to avoid price variations;
- Why predatory pricing exists;
- How firm-internal transfer pricing works;
- What ethical constraints to pricing mean;
- Why resale price maintenance often exists;
- How micro- and nano-pricing have changed the industry;
- Whether the industry is moving to a model of "freeconomics" in which the content or service is free.

Tools Covered

- Strategies to maintain price greater than marginal cost;
- Types of auctions, including second-price Vickrey auctions;
- Determining the price elasticity of demand;
- Bundling strategy;
- Monopoly pricing;
- Oligopoly pricing and Cournot solutions;
- Game theory;
- Ramsey pricing and optimal price discrimination;
- Versioning;
- Rate of return and price-cap methodologies;
- Cost plus pricing strategy
- How to define and measure cost?
- Understanding fixed and marginal cost;
- Inelastic vs elastic demand;
- Yield management and dynamic pricing;
- Value pricing;
- Measuring price sensitivity;
- Hedonic pricing;
- Penetration pricing;
- Flat rate vs usage based pricing;
- Hedging, Options, and their pricing;

- Regulation of Pricing;
- Transfer pricing;
- Organizing the pricing function in a firm;
- Inflation-indexed pricing;
- Auction designs.

11.12.1 Questions for Discussion

1. Explain the differences between cost-plus and value-pricing. Which is more appropriate for media products? Why?

2. Discuss some determinants of price elasticity. How might a firm enhance elasticity? Decrease elasticity? And why might it want to pursue either strategy? What has been the trend in demand elasticity for consumer media products?

3. How should fixed costs figure into a media firm's pricing/output decision? What about marginal costs?

4. Under what circumstances is price fixing among competitors legal?

5. Compare and contrast controlled and uncontrolled methodologies for demand estimates. What are the strengths and weaknesses of each?

6. Why may price cutting during the product decline phase not always be appropriate? What are some alternative strategies?

7. How should marginal costs and distribution costs affect a firm's decision to bundle or unbundle goods? Why?

8. From a producer's view, what are the advantages of priority pricing for an information distribution network like a phone company? Empirically, what do we observe in the pricing structures for these networks?

9. Explain how nano-pricing will allow for highly differentiated pricing through user profile histories.

10. Explain the importance of network effects for information products. How might a firm take advantage of network effects?

11.12.2 Quiz

1. CPM is a measure of:
   A. Cost for increasing bandwidth on a network to accommodate an extra 1000 users.
   B. A measure of the length of the product life cycle.
   C. A tool for calculating the switching cost a telecom provider should impose on users.
   D. Cost for an advertiser to make 1000 customer impressions on a website.

2. First Degree Price Discrimination is:
   A. Charging different prices for different quality levels of a product.
   B. Charging different prices for the same product to different users.
   C. Charging different prices for the same product depending on frequency of use.
   D. Charging different prices to different groups of consumers (e.g. college students).

3. Which is the most frequent form of price regulation for the telecom industry around the world today?
   A. Yardstick pricing.
   B. Rate-of-return pricing.
   C. Cost-plus pricing.
   D. Price cap regulation.

4. Which is not an option for wholesale pricing?
   A. Micro-pricing.
   B. Negotiated pricing.
   C. Peering.
   D. Efficient component pricing.

5. Which is not a characteristic of an information economy?
   A. Capacity constraints periodically bottleneck supply, which contributes to cyclical price increases.
   B. High fixed costs and very high marginal costs.
   C. Investment and overproduction leading to cyclical price collapses.
   D. Substantial economies of scale in the industry.
   E. There are no real capacity constraints for information economies.

6. Which factor makes exchange of price information among competitors illegal?
   A. Exchanging data on aggregated transactions.
   B. Exchanging data concerning past pricing decisions.
   C. When the data are publicly available.
   D. When the industry in question is concentrated.

7. Which of the following is a form of user aggregation?
   A. Goldilocks pricing.
   B. Versioning.
   C. Site licensing.
   D. Ramsey pricing.

8. A flat fee is more profitable for a monopolist than a metered rate.
   A. True.
   B. False.

9. The optimal number of versions for a product is usually:
   A. Two.
   B. Three.
   C. Four.

10. A competitive equilibrium typically favors the producers charging on a per use basis.
    A. True.
    B. False.

11. If differential pricing were not allowed, the low end of the market might not be served.
    A. True.
    B. False.

12. Problems associated with Ramsey pricing include:
    A. Arbitrage.
    B. High informational requirement to set different prices correctly.
    C. Customers not volunteering their WTP if it will increase prices.
    D. All of the above.

13. The C4 describes:
    A. The four principles of value pricing.
    B. Strategies for maintaining P > MC.
    C. The combined market share of the top four firms in an industry.
    D. The four phases of the product life cycle.

14. Flexible pricing allows companies to do all of the following except:
    A. Hike profit margins.
    B. Boost proficiency of managing sales transactions.
    C. Lower marginal costs.
    D. Lower inventory costs.

15. An example of an endogenous characteristic of consumer valuation is:
    A. Age.
    B. Zip code.
    C. Quality level purchased.

16. Which one of the following element attempts to capture the value when bringing a product to the market?
    A. Shaping the product.
    B. Its promotion.
    C. Its distribution.
    D. Its pricing.

17. In which type of auction does the highest bidder win, but the price paid is the second highest bid?
    A. English auction.
    B. Dutch auction.
    C. First-price, sealed-bid auction.
    D. Vickrey auction.
    E. Spectrum auction.

18. A "call option" gives the owner the right to sell an underlying asset at a set price within a set period of time.
    A. True.
    B. False.

19. Predatory pricing is:
    A. Selling below cost (marginal cost) to eliminate a competitor.
    B. The price is raised above the competitive level once the competition is eliminated.
    C. Fundamental elements include below marginal cost pricing and recoupment.
    D. Eliminating competition long enough for the company to recoup its losses by charging artificially high prices.

20. Skim pricing or penetration prices are usually set in what stage of the product life cycle?
    A. Introduction stage.
    B. Growth stage.
    C. Mature stage.
    D. Decline stage.

21. Which of the following is *not* an approach to set prices?
    A. Penetration.
    B. Cost-plus.
    C. Dumping.
    D. MC.
    E. Bundling.

Quiz Answers

1. D
2. B
3. B
4. A
5. B
6. A
7. C
8. B
9. B
10. B
11. A
12. C
13. C
14. C
15. A
16. D
17. D
18. B
19. A
20. B
21. C