

Perspectives for Managers

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Everyone Can Have His Price

If you wish to buy the latest edition of Microsoft's Windows XP it'll cost you \$199. But, I've good news if you own the previous version of Windows. For you the price is only \$99. Is Microsoft rewarding your loyalty? More likely it's trying to maximize profit through price discrimination – that is, offering different prices based on customers' willingness to pay. If you already own the last version of Windows, the newest version offers you fewer additional features than if you're using one from many years ago. Hence you're willing to pay less for it or perhaps you won't buy it at all. Microsoft knows this and prices accordingly.

Back to the Future

There's really nothing new about offering different prices to different customers. Until the Industrial Revolution in mid-1700s England, prices were determined through one-on-one haggling or auctions. This changed with mechanized transportation. Agricultural and mass-produced products were distributed far from their point of origin. Prices had to be determined centrally rather than at the point of sale. Fixed pricing replaced dynamic pricing for most consumer products, with unique items like art and real estate remaining among the few exceptions.

Technological advances have brought us full circle. The internet, data-mining and sheer computing power have given new life to the old proverb, "the worth of a thing is the price it will bring". Now, the worth of a thing doesn't have to be determined by the seller. It can evolve dynamically over time, and differently across customer groups. Also, as in the case of Microsoft, information-based products can be easily altered to offer different versions to different customers.

But, the price-setters of today have not inherited the business acumen of their ancestors, and this return to old ways, albeit in a turbo-charged format, has proved challenging to many. The opportunity to freely change prices from one moment to another, to price differently to different customers raises many questions: Will the impact on our profitability necessarily be positive? And, how will customers adjust to the phenomenon?

Economists have generally considered three approaches to price discrimination:

- **Individualizing** prices so each customer pays the maximum he is willing to pay.
- Developing a **menu** of different products or services, so there are different types of offerings available at different prices, and letting buyers self-select the product/price they'd like.
- **Categorizing** customers by observable characteristics and charging different prices to each based on what is known or assumed about their willingness to pay.

Individualizing

Long considered applicable to only the most-expensive and unique items, personalizing price to the maximum a customer is willing to pay is clearly difficult to execute on a large scale. But, recently technology has widened the possibilities here. Take auctions, for example. Until the advent of the internet, the cost of running an auction was very high and so it was suited to only a few expensive products. Auction websites like eBay changed that, by bringing remote buyers and sellers together in a cost-efficient manner. Clearly eBay has been a success in person-to-person sales, but auctions and the internet have wider applications.

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An interesting application of an auction was the 2004 IPO of Google. Eschewing the traditional IPO route of an offer price being predetermined by an investment bank, Google decided to run a bidding process akin to a Dutch auction, starting at a high price and lowering it until the market cleared. Potential investors bid a price for the number of shares they wanted to buy. Google's underwriters then used this information to determine the price that all buyers would pay – this would be the lowest price at which Google could sell all the shares it was putting on the market and all bidders would pay the same price. Thus, a successful bidder bought the shares either at or below the price he bid. Those who bid a price below the market-clearing price were not allocated shares.

Having determined a market-clearing price of \$85 at auction, the shares started trading on August 19th 2004 and immediately shot up to slightly over \$100, where they finished at the end of the trading day. The trading volume was 22 million shares, remarkably high given that the free float of the IPO was 19.6 million shares. While commentators viewed this sharp price rise as a failure of the auction process, perhaps it was predictable, if not a certainty. Given that people bought at a price at or below the value they had already put on the shares, it is not surprising that the price should increase once the shares could be traded.

This illustrates best the dangers of auctions. Whether the design is a Dutch auction of the type used by Google, or a more-traditional English auction, when volumes are small, one can identify the one or two sellers willing to pay the most, or at least they reveal themselves through the auction process. When one is selling large volumes, there will be dispersion in the willingness-to-pay of potential buyers, and the one market-clearing price will be the minimum. One can sequence auctions to try to extract more from those willing to pay more, essentially using auctions to price skim, but if purchasers expect many subsequent auctions, these efforts will have limited success.

An additional complication of auctions is that it is possible, and common, for individuals to hide their identity. Anonymity takes away the power of sellers to adjust price (in the case of auctions, the reserve price) to the buyer's

willingness to pay. So, the surplus in the trade that is, the difference between the price the seller will accept and the price the buyer is willing to pay) ends up going mostly to the buyer. Sellers can exploit customer information to increase their share of this surplus. Some companies have been using information on purchasers to great effect in individualizing prices and even the product/service itself.

Perhaps the most interesting and in-your-face application of database utilization in pricing occurs in supermarkets. Catalina Marketing Corporation logs 250 million transactions per week at 21,000 supermarkets. They track the purchases of 100 million households who are members of store loyalty programs and deliver 4.5 billion customized promotions per year. Shoppers receive targeted coupons based on very precise modeling of their behavior as they check out. So, at the checkout they receive coupons for perhaps competitive or complementary products to the one they have just bought. Or, alternatively, if they typically buy a brand of orange juice but have bought a different, perhaps less profitable, brand on their last few trips, they may receive a coupon incentive to repurchase their old brand. Catalina claims redemption rates of between 8% and 11%, which is approximately 10 times higher than traditional, untargeted coupons. The distribution of coupons in this way offers unique prices to each individual based on his or her behavior. In addition, since the discounts are not posted it's hard for one individual to become aware of a better deal offered to another. And, as the coupons are personalized, they can be made non-transferable.

Leveraging the Product Line

While this isn't a new problem for marketers, we are seeing the opportunity for some new and creative solutions. Products and services now exist such that the marginal cost of making an additional change is very low. The cost of customization has diminished and the ability to price discriminate has increased accordingly.

Information goods, with high fixed costs of creation but extremely low marginal costs of reproduction, offer almost endless possibilities for differential pricing. For

example, Intuit offers multiple versions of its tax preparation software, TurboTax. Paying \$59.95 instead of \$39.95 gets you TurboTax Premier instead of TurboTax Deluxe. However, TurboTax Basic, selling at \$29.95 is a relative bargain. The more expensive products provide information from which only people with more-complex financial situations, and therefore a greater ability to pay, would benefit. The marginal cost of creating the more advanced versions is not that great. In fact, it's probably more appropriate to think of the marginal cost of taking features away from the higher-end version than of adding them to the lower-end one.

Software, telecom, internet service providers all offer bundles as a way to capture more of an individual's willingness-to-pay a premium price. Indeed, an interesting feature of the modern economy is the size of the bundles on offer. Bundles are growing and becoming more complicated! Products and services are being combined. The number of options is increasing and pricing is becoming more difficult for managers and purchasers alike.

Take Sky TV, the UK-based satellite TV operator, for example. Sky provides access to in excess of 100 TV channels. Some, like Disney or proprietary sports channels, offer very desirable content. Others are simply those available for free, such as BBC1. The pricing challenge for Sky is many-fold. The marketplace variance in willingness to pay for these channels is huge. One channel, think again of Disney, could have huge value in some households, whereas in others, where visiting children are an unwelcome occasional occurrence, it may even provide negative value. One possibility for Sky would be to price each channel separately. An alternative would be to create a limited number of bundles from which households could choose. Sky, and pretty much all other satellite and cable television operators, follow the latter approach. Why? Some light has been shed on this recently. Researchers at Stanford University have found that the law of large numbers averages out the high and low values individuals may attribute to specific channels. So, in general terms, the value two people put on a bundle could be approximately the same, even though they may value each of the components very differently. Hence, it's easier to predict the value that the market will put on a bundle of

channels, and the resulting marketplace demand is more tolerant of price increases for the bundle. This impact is particularly noticeable, but not restricted to, situations where demand for goods in the bundle have limited or even negative correlation.

The internet has proved an effective delivery vehicle for information goods, and with it, pricing has morphed two concepts we've discussed – updates and subscriptions. While in the past there was marginal cost involved in the sales and distribution of information goods, nowadays with internet delivery, marginal cost of sales is truly zero. So, we see more licensing of software products, where annual subscriptions are paid and updates come continuously. Take anti-virus software, for example. McAfee, one of the leaders in the field, offers an annual subscription for \$34.99. Without the internet as a vehicle to deliver updates, this business model might well be unprofitable.

Categorizing

Sellers often use characteristics of the buyer to set price. Age, location, occupation etc. all reveal a little about the buyer's willingness to pay, and the seller adjusts price accordingly. However, even with well-established practices like pricing based on purchaser characteristics, technology has helped the seller extract a little more profit. Victoria's Secret, the US-based retailer of women's lingerie, sends catalogs with different prices based on postal code. Customers in neighborhoods categorized as being free-spending by Victoria's Secret's database receive higher prices. More cheekily, Staples, the office supplies company, penalizes those customers who limit their information search (or rewards those who don't...) as they send multiple catalogs with different prices to the same customers. Those who buy randomly from the catalogs risk paying the higher price. Those who give the purchase careful consideration are rewarded.

The internet has not always been a friend of differential pricing. In fact, it has made traditional pricing structures obsolete and brought in new forms. Take the hotel business, for example. The establishment of travel intermediaries, such as Expedia, has caused a problem for hotel operators. Channels like Expedia are great outlets for

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disposing of “distressed” stock, where otherwise vacant rooms can be sold at a low price. Remember, in this business, marginal cost is extremely low, so any revenue is essentially additional profit. However, it’s in Expedia’s interest to post and advertise the lowest prices, to encourage visitors to come to its site. With very visible low prices, hotel operators found it difficult to keep prices high with high margin customers. As a result, hotel operators are distancing themselves from intermediaries like Expedia¹. However, in a twist on the discussion we had on auctions, hotel operators still happily sell through Priceline.com. Ironically, Priceline.com guarantees the seller anonymity until after the sale is made, hence limiting the information the buyer has about the seller and the buyer’s ability to price compare.

Proceed with Caution

Price discrimination can be shown to be positive for an economy. Without it, some economic activity wouldn’t happen, some trades wouldn’t be made. However, this is lost on a populace conditioned to believe that different people paying different prices is “unfair.” The EU Commission recently asked 18 airlines to explain why they charge different prices depending on the country in which a flight is booked. It is worthwhile keeping in mind that laws are set by elected representatives and it is best not to upset their electorate. And, the electorate generally doesn’t like prices determined on demographics. This can have far-reaching consequences. For example, Catalina Marketing has been asked by its clients, mostly retailers, to keep a low profile and not say too much about its couponing activities: “This is something we’d love to talk about, but we can’t...It bothers them...we just need to lay low.”²

When Amazon.com experimented with offering different prices to different customers, its response to the public outcry is interesting³: “In retrospect, this random testing was a mistake and we regret it because

it created uncertainty and complexity for our customers. We’ve never tested and we never will test prices based on customer demographics. What we did was a random price test...” The stress that they didn’t use customer demographics, but randomness, is important. People are most distressed when prices are set based on their characteristics, where they have no choice. That is, they react better to menu-based differential pricing rather than category-based pricing.

When Sony’s Playstation 2 was first released and there was a shortage in the US before Christmas, some customers lucky enough to buy a console were immediately re-selling them on eBay for a 100% profit. When asked if Sony would do something similar to capture some of the money it was leaving on the table, CEO Nobuyuki Idei said Sony was not that type of company⁴. While it is still important to worry about consumer backlash against what they perceive as the unfairness of differential pricing, over time consumers will become accustomed to the dynamic pricing technology now enables. We’re on a one-way trip back to the bazaar, albeit a high-tech one.

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¹ “Hotel giant set to sever links with Expedia,” Matthew Garrahan, Financial Times, 16 August 2004.

² “Behind the instant coupons, a data-crunching powerhouse,” Robert O’Harrow Jr. Washington Post, 31 December 1998.

³ “Amazon Price Test,” www.pricingsociety.com.

⁴ Private conversation