**Pricing Electronic Journals**

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A fundamental problem facing publishers is how to recover costs. This is a problem for all publishers, but is of special significance to publishers of digital documents. This is because a basic characteristic of digital documents is that it is very costly to produce the first copy, but quite inexpensive to produce subsequent copies. Hence "recovering the first copy costs" takes on a special significance in digital media.

**The problem**

To fix ideas, consider the following simple example. There are two potential consumers of a digital document which has a first-copy cost of $7 to produce. The cost of producing additional copies of the document is zero. One consumer is willing to pay $5 for the document, the other is willing to pay $4. In this case, the pricing problem has a simple solution: set the price at $4. Two copies will be sold, yielding $8 in revenue which more than covers the production cost of $7.

Now consider a variant of this story. Everything is the same except for the willingness to pay of the low-value consumer is now $3 rather than $4. Pricing the document at $3 won't cover costs, nor will pricing it at $5. Nevertheless, it is worthwhile to produce the document since the total benefits, $5 + $3 = $8, exceed the total cost of $7.

One solution to this problem is to use differential pricing: charge one user $4.50, say, and the other user $2.50. This would raise enough revenue to cover the cost of production and still induce each user to purchase the document.

But if you sell the same document for each price, why wouldn't the consumers both buy the document with the lower price? In some cases, there is an observable characteristic of the consumers that is correlated with willingness-to-pay and prices can be based on this observable characteristic. A simple example is whether or not the consumer is at a university or a business, or whether the consumer is an individual or a library. It is common to see prices vary with this sort of characteristic.

In other cases, it may be necessary to vary the quality of the product in order to induce the consumers to pay the appropriate price. In economics jargon, this is called "inducing self selection." Airline pricing is a good example of this form of pricing strategy: airlines have two classes of customers, business travelers who are willing to pay a high price, and tourist travelers who are normally willing to pay much less. By requiring a Saturday night stayover, airlines can segment the market and charge each of these consumers a different price for "essentially" the same good. The business travelers are unwilling to stay over a Saturday night, while the tourist travelers are quite happy to do so. This difference in preferences is what induces the consumers to "reveal" their true willingness to pay and thereby "solves" the problem of inducing self selection.

In the publishing world, it is common to issue a book first in hardback then in paperback.
Impatient and wealthy consumers buy the hardcover edition; the rest of us wait for the paperback edition. By packaging the product in two different forms, the publisher has managed to get the consumers to self-select according to their willingness to pay.

The hardback/paperback distinction also allows publishers to segment the market in another way: people with low willingness-to-pay may borrow a hardcover copy from their local library, while impatient people (with high willingness to pay) may buy the hardcover copy from the bookstore.

The practice

This small bit of economic theory is important for understanding the issues facing academic societies who wish to deliver electronic versions of their journals. Normally there are two classes of readers of journals produced by professional societies: members of the society, who are usually specialists in the area, and everyone else. In most current pricing schemes, members either get the journals as part of their membership fee or pay special individual rates. Non-members are serviced by libraries who pay a different, and normally higher, rate.

Members are, of course, free to use the library copy of the journal. But the convenience of having their own copy for ready access is apparently more attractive than the inconvenience of accessing the library's copy. In journal publishing the inconvenience of walking to the library is the equivalent of the Saturday night stayover for the airlines.

But what happens if the library subscribes to an electronic version of the journal that it mounts on the campus network? It is then no longer as inconvenient to access the library copy, and some members will no doubt decide to cancel their memberships or subscriptions, thereby reducing the revenue for the publisher.

This financial risk is very apparent to many professional societies and academic publishers, and it makes them reluctant to offer electronic versions of their journals. The way to deal with it is to make the member's subscription sufficiently more attractive than accessing the library's subscription so that the member finds it worthwhile to continue to pay the membership fee or individual subscription charge.

There are a variety of ways to do this. The simplest is to require that the library provide access to the journal only on its physical premises. This makes the library's electronic version of the journal essentially as inconvenient to use as the paper version is now for the members, so there should be little impact on revenue from making the library version available in electronic form.

The second, and perhaps more attractive, solution is to enhance the value of the members' subscriptions. This can be done by adding extra services or features that would be valuable to the members but not as valuable to library users. The analog in airline pricing would be the difference between first class and coach travel. The first-class travelers have more legroom, better food, and better service, and they are willing to pay a premium for these amenities.

Examples for academic journals would be things like the following:

- hypertext links to cited articles in the collection to allow for convenient literature reviews;
- more powerful search engines with additional features of value to professionals;
• current awareness notification via email based on bibliographic categories and/or keywords;
• opportunity to view online articles prior to release of the site license versions (possibly by delaying release of articles to the library version by a few weeks or months);
• higher resolution images than are available via the site-license version; etc.

The key issue is to provide sufficient enhancements so that the members will be willing to continue to pay their subscription fee. The "utility gap" between the use of the library and the individual subscription should be large enough so that members are still willing to pay for their subscription. This can be accomplished by either reducing the utility of the site license version, or by increasing the utility of the member's subscription. The critical issue is to maintain the "utility gap" between the two classes of users.

Of course, both strategies can be combined. One can deliver the articles to the members prior to the library either by speeding up member access or by delaying library access; and adjusting both times may be useful. Furthermore, different combinations of these strategies may be appropriate for different subjects. Timeliness of delivery may be very important in bioengineering, but not so important in philosophy.

Conclusion

Different pricing strategies will be relevant for different disciplines and applications. From the point of view of those who are developing digital library services, it is important to be aware of the fact that not all services will necessarily be provided to all users. In general, publishers—even nonprofit publishers—will want to provide different services to different classes of users. In other words: when you add a cool new feature to your digital library software, make sure you have a way to turn it off!