

Playing the E-Commerce Game

Varun Grover and Pradipkumar Ramanlal

You might get some wonderful deals on the Internet, but the old maxim still applies: "Let the buyer beware."

The business environment is changing dramatically with the advent of e-commerce. Even traditionally complex products like automobiles, computers, and medical services are being effectively sold on the Internet. Most would presume that consumers would benefit from the ability to search products, compare features, negotiate prices, and conduct transactions. However, it is important to note that the technology that provides consumers with shopping advantages also allows businesses to follow strategies that build monopolistic positions rather than promote free and fair competition. Gaming is an integral part of the business' survival strategy. To effectively counteract these gaming strategies, we argue that consumers must be vigilant.

Digital Economics and Gaming

A key attribute of the new economy is the ability to separate the infor-

Dr. Varun Grover is Professor of Management Science/Information Systems in The Darla Moore School of Business at The University of South Carolina. **Dr. Pradipkumar Ramanlal** is Associate Professor of Finance in the College of Business Administration at the University of Central Florida in Orlando.

mation and physical components of a product or service. The Internet provides an efficient infrastructure to facilitate the delivery of the informational component. This is transforming the way consumers search and compare products, conduct transactions, and acquire and maintain products. The economics of the informational component, which we refer to as digital economics, is fundamentally different from the (traditional) economics of the physical components. This difference can be summarized as follows:

- *Fixed costs* that are dramatically higher due to human costs of developing intellectual capital (rather than plant and equipment)
- *Marginal costs* that are approaching zero, going down successively over successive generations of technological development
- *Coordination costs* that are extremely low, which not only allows ease of searching and product comparison, but also the ability to combine digital products to create new value.

Furthermore, while fixed costs in the form of plant and equipment are to some extent recoverable for

physical products, investments in intellectual capital in a fast-changing technological environment are often large and seldom recoverable if the business is unsuccessful. For instance, Microsoft's Office Suite requires significant developmental costs but can be replicated at virtually no cost. Windows NT with its 17 million lines of code can be replicated and distributed for under one dollar. Also, many "dot-coms" exhibit similar properties.

In a competitive environment, the combination of higher fixed costs and decreasing (close to zero) marginal costs makes it increasingly difficult to survive. Furthermore, in the digital environment, technology cycles are getting shorter, and the average time to recoup investments is getting longer. As marginal costs approach zero, it becomes impossible to sustain profits and recover investments in a competitive environment.

Accordingly, businesses are forced to adopt strategic practices that move them away from price competition. One way to achieve this is to adopt subtle gaming strategies that are often unapparent to the casual consumer. These "information age strategies" are new ways

that businesses must learn to create competitive advantage given the impossible economics of digital costs. Watchful consumers can take the edge off these strategies.

The E-Commerce Game

To see what strategies businesses can employ to sustain competitive advantage, it is helpful to understand the extremes, i.e., the market structures that businesses find least and most favorable. We then analyze how businesses, through strategic actions, may migrate from one extreme to the other.

The worst-case scenario for businesses is one in which there exist considerable comparable options for the buyer, and the costs of searching and switching from one business to another are small.

In such situations, buyers can easily determine the business that offers the best price for the same product and purchase from that business.

To compete, businesses are forced to lower prices. Competitive equilibrium is obtained when the price is lowered all the way down to the product's marginal cost, which is the minimum price the business is willing to accept. In the case of digitized information products, this marginal cost is close to zero.

In contrast, the best-case scenario for businesses is one in which products are not comparable, that business is the sole provider of the product, and/or switching costs for the buyer are prohibitively high. In this situation, the business can exert monopolistic power and price discriminate between consumers by charging the maximum price the buyer would be willing to pay.

In a competitive market, buyers benefit from getting *consumer surplus*, defined to be equal to the difference between the maximum price that a buyer is willing to pay (i.e., the personal value a buyer assigns to the product) and the competitive market

price summed across all buyers. However, in the monopolistic market with perfect price discrimination, the entire *surplus* accrues to the business. In other words, the business is able to charge each consumer a price equal to the maximum amount that buyer is willing to pay.

It is apparent, given the digital cost structure described earlier, that businesses will be distinctively disadvantaged and will find it difficult to survive in a competitive environment that would force them to compete at marginal cost or close to a zero price for a digital product. It is our thesis that they must conceive of ways to create monopolistic power in order to capture consumer surplus. The following are some strategies they might employ.

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1. Versioning Strategies

A unique characteristic of digital products is the ability to sell it again and again without diminishing its value. It is also easy to create different forms of the same information. *Versioning* is a strategy that involves the creation of multiple versions of the same product¹ that allows businesses to target different customers according to their willingness to pay. Economists refer to this as *price discrimination*. By doing this, competition is inherently reduced in smaller and smaller segments of the market. If buyers are targeted with a highly customized version of the product, they cannot easily compare the product across multiple suppliers or market segments. This allows the supplier (business) to price monopolistically and/or price discriminate rather than behave competitively.

Versioning is a strategy that is becoming increasingly feasible with digital products for one important reason: beginning with the original product with the maximal set of fea-

tures, innumerable versions can be created by simply digitally “switching” features on or off at minimal cost. By capturing customer profiles on the Web, or inferring a customer’s preferences through their self-selection of products and buying behavior, businesses can modify and customize digital products aimed at the targeted audience at minimal or no additional cost.

2. Confounding Strategies

Another characteristic of information technology is its ability to easily manipulate digital product information. Using IT to present information in a manner that inhibits product comparison is what we refer to as *confounding*. Confounding is a strategy that involves information

processing used in a way that is rarely discussed — to confuse and distort. The intent is not to purposefully provide incorrect information to

deceive, but rather to provide and withhold relevant information in a manner that makes it difficult for buyers to assess alternate products. The reason is straightforward. If businesses provide all available information to facilitate buyer comparison of competing products, the competitive equilibrium prevails where price is determined by cost considerations. However, if buyers cannot compare products or gain distorted or biased perceptions of price/performance tradeoffs (*vis-à-vis* competitors), they are forced to value products not based on cost but by the satisfaction they derive from their usage.

It is this change that is the basis of comparison that businesses hope to achieve by confounding. Recall, if price is based on cost considerations, consumer surplus accrues to buyers. In contrast, if price is based on the usage value that consumers derive, then the consumer surplus accrues to business. Thus, confounding permits monopolistic pricing and/or price discrimination to

occur, since it is difficult to establish competitive prices when product comparison is difficult. For instance, Reuters bundles commodity-style news items with different kinds of data services in ways that make it difficult to compare competitive products. Netflix bundles movie rentals into a monthly membership package including a number of services. This makes it very difficult for consumers to extract and compare the typical single movie rental price with those of competitors.

3. Network Effect Strategies

Network effects refers to the creation of value through the existence of a large network of consumers where each consumer derives value owing to the fact that other consumers are part of the network. Positive network effects occur when adoption by one consumer creates an incentive for others to also adopt. For instance, the value of a telephone grows exponentially with the number of users that have telephones. Similarly, digital products (e.g., software) often become more valuable for buyers, the larger the customer base. Of course, the more consumers value the network, the more they are willing to pay to be part of it. For this reason, building networks of consumers (and suppliers) is a major thrust of many e-commerce businesses. Couple this with the fact the firm is the sole winner with a propriety standard, and we have the potential for windfall profits.

Once the network is established, buyers may be forced to pay a non-competitive price for the information product depending on the value they derive from the network effects. The business can raise prices without fear of losing customers so long as there is no competing product that offers similar network effects. Again, the business has broken the linkage between the price of the product and its marginal cost. Instead, price is determined by the value that consumers derive from usage of the product. Adobe built network effects by distributing its Acrobat reader

software "free." This software allows consumers to exchange documents without being concerned about the software on which the documents are originally created. Once the free reader became popular and had positive network effects, it allowed Adobe to sell the writer software at a premium price. Microsoft, which recently lost its antitrust case (the decision is being appealed), prices products higher than it might if network effects were not present. Pricing can reflect the value that consumers derive not just from the use of Microsoft products but also from all the other products that run on the Microsoft platform. This pricing mechanism again delinks what customers pay for the product from its marginal cost, which is essentially zero.

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4. Pricing Strategies

In a classic competitive market, one business decreases price in order to draw additional customers. In response, another business may further reduce prices to achieve the same outcome. This process continues until prices are set at the minimum that businesses are willing to accept (i.e., the competitive price, where price is equal to marginal cost). This form of classic competition assumes that while one business reduces prices, all other businesses hold their prices fixed. This assumption is reasonable if information about product pricing and competitors' strategies is not readily available, so that preemptive measures based on expectation are infeasible. In that case, each business has to simply wait and observe a competitor's action before responding.

In an e-commerce environment,

particularly for digital products aided by IT to uncover a competitor's strategy, this assumption is overly restrictive. Pricing strategies could involve both dynamic as well as preemptive responses to changes in a competitor's prices. An astute business can stay one step ahead of its competitors by (a) being aware of the way consumers make choices on price, and (b) keeping abreast of competitive pricing moves. Using IT to implement pricing strategies can allow businesses to avoid free price competition. Some businesses wish to preempt others by learning of their pricing actions ahead of time while making every effort not to disclose their own pricing strategies. This can result in gaming between businesses using IT to selectively disclose and impede the flow of pricing information.

For example, a common strategy among stock market dealers in U.S. securities markets like the New York Stock Exchange and NASDAQ is the practice of matching prices. In other words, no dealer lowers price, but all dealers agree to match the lowest price in the market. This is in effect a preemptive pricing strategy where if one dealer lowers price, then all dealers lower price simultaneously and instantaneously. The result of this preemptive behavior is subtle and onerous. It discourages any dealer from lowering price because the intended effect of drawing additional customers can never be achieved. Thus, the true price competition is avoided.

The Digital Paradox

The four strategies described must be enacted by businesses in order to avoid the problems of digital costs. Interestingly, if we view these strategies from a buyer's standpoint, it gives rise to a number of seemingly contradictory observations. For example, actions that buyers take that appear to be in their self-interest end up hurting them. And actions that sellers take professing to work in the interest of buyers turn out otherwise. These "paradoxes" reflect the

idiosyncrasies of the e-commerce environment, where consumers often perceive they are better off, when in actuality they are not. Indeed, if consumers are not vigilant, they may unwittingly aid businesses in charging higher prices.

It is commonplace now for businesses to accumulate large amounts of diverse information on consumer habits, preferences, and buying patterns. Doing so allows them to enact versioning strategies by using the low cost of manipulating digital information to create alternative versions for customer segments. What is less obvious is that highly versioned products cannot be easily compared. For instance, if Expedia (an online travel service) mines its customer data and targets a consumer with a cruise that exactly matches his or her needs (in terms of duration, type of vessel, location, and quality), it will be almost impossible for the target buyer to shop for a better price, since the market segment is one. This allows the travel service to charge more. Books.com adopted a price discrimination strategy whereby different Internet shoppers paid different prices for the same good depending on their shopping behavior. It uses its Web design to separate price-sensitive shoppers from others, by allowing the sensitive segment to compare prices from other businesses like Amazon, Borders, and Barnes & Noble. Meanwhile, it extracts higher margins from the nonprice-sensitive segment. Similarly, Yahoo offers personalized search engines for individual customers. These engines search and filter results based on the profile of customers captured by Yahoo (sometimes through the search process and words themselves). While the service might be valuable to the consumer, it allows Yahoo to target specific customer segments with customized products at higher prices. Similarly, by offering "free" services like personalized chat rooms for customers, Yahoo can continue to build its network effects on both the buyer and supplier side.

By doing so, it can position itself to draw revenues from both suppliers and buyers.

We often see "free" information and products on the Web. However, these free products could be reflective of subtle confounding strategies. For instance, a "free" search engine might be from the deeper pockets (i.e., suppliers) that sell and promote their products on the Web site. Consumers that search for "Product X" and "low price" might first screen access to the limited number of suppliers with which the search engine has contractual arrangements. This makes it a biased market since the "free" service is really directing traffic to preordained suppliers. Also, network effects that are generated by free giveaways, particularly through software products once a sufficiently large network of users has been

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formed, can be exploited by premium pricing on upgrades, support services, and complementary products. As the network grows, it has implications for pricing strategies since charges are not for the product per se, but for the value that consumers derive from the network.

Other pricing strategies involve withholding of information. For instance, a simple example of this is the message "call for latest price" in place of a numerical price, for highly competitive products. The potential buyer, when repeatedly encountering such messages, will either call for the price (i.e., incur costs) or make a valuation judgment of the product based on the utility it offers the individual as opposed to the cost to produce the item. This shifts the pricing mechanism to one based on judgment rather than competition. Even in cases where businesses offer low

price guarantees on the Web, there is no guarantee that the business offering the guarantee will get the added revenue from a sale since the next business is only one click away. In the physical world, a Wal-Mart gets the revenue from a price match since consumers incur a cost to go to the other store. In e-commerce environments it is possible for businesses to implicitly collude and adopt a pricing strategy that results in significantly higher prices than those that might be attained with free price competition.

Confounding also takes place through bundling of information products — which can often be accomplished at minimal cost. Businesses prepare bundles of information products, which usually include a target product (one the consumer really wants) and some less popular or newer product (that the business wants to promote). Bundling makes it more difficult for consumers to assess the value of each product independently. Thus, if the target product is of significant value to the consumer, he/she is not likely to complain about paying a premium for the bundle, accepting the newer attached product as a free good. From the businesses' perspective, the premium received is the value extracted from the consumer for the attached product that the consumer might not have otherwise purchased. An interesting example is the airline industry. What appears to be fierce competition among large numbers of online travel agents essentially boils down to competition among a few large airlines. Even there, despite the online reservation systems, the pricing is often so convoluted (with restrictions and caveats on travel) that it is often very difficult for consumers to compare products.

We would hasten to add that many of these strategies are not new, but rather become increasingly feasible in an e-commerce environment given the structure of costs in a digital economy. Furthermore, by engaging in versioning, confounding, network effects, and pricing

strategies, businesses are not necessarily doing anything illegal, but attempting to survive and thrive in an environment where the conventional competition is unpalatable. Regulatory and antitrust issues might come into play when business actions (a) are predatory and involve proactive leveraging of market power in order to drive competitors out of business, and (b) impinge on personal privacy as advocated by consumer-oriented groups.

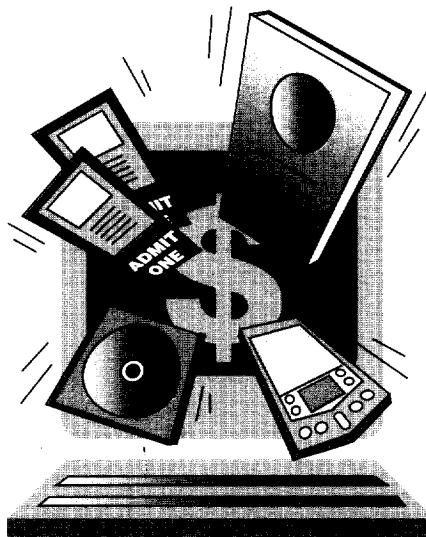
So what is a consumer to do? The paradoxes laid out above are like pitfalls that consumers should be wary of, and the four strategies that businesses employ are the means by which they lay these "traps." It is this combination of pitfalls and strategies that consumers should be aware of in all their dealings on networked environments.

Best Strategy: Customer Awareness

The set of prudent strategies that consumers must adopt to prevail in an information-intensive e-commerce environment, where businesses seek to avoid the competitive outcome, can be expressed in a single term: *customer awareness*. The imperative for awareness is higher in information markets and e-commerce environments due to the economics of digital costs and newer, powerful data-mining technologies available to businesses. Search engines such as Yahoo sell advertisements linked to search terms for a premium price. If you're a biking enthusiast searching for mountain bike trails, an advertisement might pop up for related biking gear. Customers will benefit in this equation simply because of the lower cost structures and personalization offered by information technologies. However, it is our contention that contrary to the popular press' pervasive writing on customer power, these benefits are neither imminent nor inevitable in every case. The cost structure benefits will only be derived if competitive forces are in play. To ensure this, customers need

to offset the technology capitalization advantage of businesses by being aware, active, and vigilant. An informed consumer (with the time and inclination to be informed) is a powerful catalyst for market forces in any environment, but particularly in networked environments that are characterized by ease of digital manipulation. Consumers need to continually

- question the premium charged for customization,
- be reluctant to impart personal information,
- attempt to segregate product bundles and compare individual components,
- be wary of "free" products,
- have a propensity to shop around,
- try to be alert to getting over-committed to a product, and
- evaluate carefully their cost/benefit tradeoffs in purchasing decisions (e.g., marginal costs vs. marginal benefits of each additional feature on successive versions).



Aware consumers can identify and avail themselves of opportunities that facilitate competition, such as using information technology to leverage collective bargaining power and taking advantage of buyer-oriented agents (referred to as "infomediaries"). The point is that consumers wield significant power over business strategies by actively pro-

tecting their privacy. Versioning and pricing strategies will only be possible if consumers are prepared to "sell" their information. Further, several technologies will soon permit consumers to challenge marketers for control of personal information. Tightening this control can make it much more difficult for businesses to engage in monopolistic strategies. For instance, "Cookie" technology helps companies track buyers' Web navigation patterns, while "Anonymization" software allows people to shield their identities as they surf the Web. Similarly, "Cookie" suppressors stop companies from planting information in the computers of people who access their sites, thus preventing them from identifying and tracking the behavior of those people. E-mail filters permit users to protect their computers from "spam." Anonymous payment mechanisms help people buy products and services online without revealing the purchaser's identity. Intelligent shopping agents can facilitate price comparison. We believe that in the long run there will be opportunities for customer-oriented infomediaries who will become the custodians, the agents, and the brokers of information about consumers, marketing it to businesses and giving them access to it while protecting the consumers' privacy. These new entities will draw their revenues from the buyer side and forge brand franchises and strong relationships with customers. They will spur consumers to begin demanding value in exchange for personal data. And they will help consumers reduce the interaction cost of searching for goods at favorable prices in an environment of proliferating and increasingly complex products. The beginnings of these trends can be observed through companies like PriceLine that provide a matching between customer-specified prices and available travel deals. These companies have reduced margins of traditional travel agents by 10-20 percent. Other companies like Bizrate use informa-

tion from consumers to track and rate merchants, while Verisign is emerging as the certificate authority to protect consumers from illegitimate sites.

Conclusion

We are in the midst of an e-commerce battleground, with three major sets of players: buyers, businesses, and regulators. All players are facing an environment of greater efficiency in the ability to process, store, and communicate information leading to higher information intensity and lower coordination costs. Businesses in the business-consumer e-commerce environment have greater IT capitalization, but face new econom-

ics of digital costs. This makes it impossible for them to compete at marginal costs approaching zero in a highly competitive environment that demands higher infusion of fixed costs. Therefore, businesses must engage in ways to reduce the competition despite an increasing buyer ability to shop and compare products. Versioning, confounding, network effects, and pricing strategies are the four ways they can leverage their IT capitalization to do this. Buyers on the other hand will be subject to these business strategies unless they are aware. This implies working to be aware, practicing active privacy, embracing new infomediaries that work in their favor, and using

powerful technologies to offset business advantage. In summary, a knowledgeable and involved customer will be more successful in obtaining better trading terms in the information environment than one who is unaware and uninvolved. Regulators can intervene if business practices are predatory or they impinge on personal privacy.

Hang on, the battle has just begun... □

¹C. Shapiro and H. R. Varian, *Information Rules* (Boston: Harvard Business School Press) 1999.

²See J. Hagel and J. Singer, *Net Worth* (Boston: Harvard Business School Press) 1999.