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Interactive Home Shopping: Consumer, Retailer, and Manufacturer Incentives to Participate in Electronic Marketplaces

The authors examine the implications of electronic shopping for consumers, retailers, and manufacturers. They assume that near-term technological developments will offer consumers unparalleled opportunities to locate and compare product offerings. They examine these advantages as a function of typical consumer goals and the types of products and services being sought and offer conclusions regarding consumer incentives and disincentives to purchase through interactive home shopping vis-à-vis traditional retail formats. The authors discuss implications for industry structure as they pertain to competition among retailers, competition among manufacturers, and retailer-manufacturer relationships.

A confluence of technological, economic, and cultural forces has made possible a new and revolutionary distribution channel known generically as interactive home shopping (IHS). Although only in its infancy, IHS has the potential to change fundamentally the manner in which people shop as well as the structure of the consumer goods and retail industries. Projections about the diffusion of IHS are sometimes breathtaking: Forecasts of IHS sales range from \$5 billion to \$300 billion by the year 2000 (Reda 1995; Wilensky 1995). In contrast to such projections, current sales are barely perceptible. Internet sales in 1996 were estimated at \$500 million—less than 1% of all nonstore shopping (Schiesel 1997). Combining Internet, other online services, television home shopping, CD-ROM catalogs, and conventional catalogs, all nonstore retailing combined accounts for only 5% to 10% of all retail sales, with little growth in recent years. Therefore, IHS will need to offer benefits superior to current nonstore channels in order to realize the more ambitious sales forecasts that have been set for it.

Our goal is to examine the effects of consumer, retailer, and manufacturer behavior on the diffusion of IHS and the

impact this new retail format could have on the retail industry. In the first half we analyze the demand-side issues, examining what IHS offers consumers that could motivate them to alter their present shopping behavior. In the second half we examine the impact of this new channel on industry structure and the competitive positioning of individual firms.

Interactive Home Shopping Defined

In defining IHS, we conceptualize *interactivity* as a continuous construct capturing the quality of two-way communication between two parties. (For an elaborated treatment of interactivity in the context of electronic media, see Hoffman and Novak 1996.) In the case of IHS, the parties are the buyer and seller. The two dimensions of interactivity are response time and response contingency. Because IHS involves electronic communication, the response can be immediate—similar to the response time in face-to-face communications. Response contingency is the degree to which the response by one party is a function of the response made by the other party. We use the term *home* merely to indicate that the customer can engage in this interaction in a location other than a store. Figure 1 illustrates a somewhat futuristic form of IHS.

The scenario portrayed in Figure 1 is highly interactive. Judy, the consumer, using an electronic shopper, BOB, can specify the type of merchandise sought and then screen the located alternatives to develop a smaller set of options that she can view in detail. The interaction requires the parties to query each other's databases. In contrast, this level of interactivity and selection is not available from current Internet retail sites, which function as an unwieldy collection of elec-

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FIGURE 1
Illustration of IHS

Judy Jamison sits in front of her home electronic center reviewing her engagement calendar displayed on her television screen. She sees that she has accepted an invitation to a formal cocktail party on Friday night and she decides to buy a new dress for the occasion. She switches to her personal electronic shopper, BOB, and initiates the following exchange:

BOB: Do you wish to browse, go to a specific store, or buy a specific item?
 Judy: Specific item
 BOB: Type of item?
 Judy: Black dress
 BOB: Occasion? (menu appears on screen)
 Judy: Formal cocktail party
 BOB: Price range? (menu appears)
 Judy: \$300-\$500
 BOB: 497 items have been identified. How many do you want to review?
 Judy: Just 5
 [Five pictures of Judy in each dress appear on the screen with the price, brand name, and the IHS retailer selling it listed beneath each one. Judy clicks on one of the dresses and it is enlarged on the screen. Another click and Judy views the dress from different angles. Another click and specifications such as fabric and laundering instructions appear. Judy repeats this routine with each dress. She selects the one she finds most appealing. BOB knows her measurements and picks the size that fits her best.]
 BOB: How would you like to pay for this? (menu appears)
 Judy: American Express
 BOB: Nieman Marcus [the firm selling the dress Judy selected] suggests a Xie scarf and Koslow belt to complement this dress.
 [Judy clicks on the items and they appear on the screen. Judy inspects these items as she inspected the dresses. She decides to purchase both accessories. BOB then asks Judy about delivery. Judy selects two-day delivery at a cost of \$5.00.]
 BOB: Just a reminder. You have not purchased hosiery in 30 days. Do you wish to reorder at this time?
 Judy: Yes
 BOB: Same shades?
 Judy: Yes

tronic catalogs (Rigdon 1996). Consumers cannot search quickly and easily for specific items of merchandise, nor can they screen and compare merchandise on the basis of their idiosyncratic desires. Individual retailers provide road maps to facilitate search within their sites but avoid formats that would satisfy consumers' comprehensive needs. However, capabilities such as those described in Figure 1—along with the design and production of customized clothing—soon could become available to consumers (Cortese 1996; Hill 1995; Maes 1995; Negroponete 1995).

The scenario illustrates the following critical attributes affecting the adoption of IHS:

- faithful reproduction of descriptive and experiential product information,
- a greatly expanded universe of offerings relative to what can be accessed now through local or catalog shopping,

- an efficient means of screening the offerings to find the most appealing options for more detailed consideration,
- unimpeded search across stores and brands, and
- memory for past selections, which simplifies information search and purchase decisions.

Our scenario implies that the consumer owns the intelligent search agent BOB, which might be a software package bought by Judy and parameterized to fit her needs on the basis of data she provides. However, other search engines also might be owned and controlled by the retailer (e.g., <http://www.landsend.com>) or an independent third party, as in Continuum Software's "Fido the Shopping Doggie" (<http://www.shopfido.com>) or Anderson Consulting's Bargain-Finder (<http://bf.cstar.ac.com/bf>). The consumer might enter a site to be interrogated by the retailer's search engine. Finally, the search engine might be operated by a third-party expert in a product category, as in *BusinessWeek's* Maven agent for finding personal computers (<http://www.maven.businessweek.com>). The consumer might pay a service charge to use the site, or retailers might pay to have their information available at the site.

We assume that all of these types of search agents will exist but will have different mixes of information desired by the other parties. However, consumers must have access to vendors' databases if the scenario portrayed in Figure 1 is to become reality. In the current transitional period, product search often is dictated by the vendor. Moreover, global search across vendors can be thwarted by actions taken by individual vendors. In the end, technological and market forces will determine the extent to which consumers can gain access to the information they desire. In the latter half of this article we consider vendors' incentives to inhibit information exchange and their likelihood of success. First, however, we consider the critical attributes affecting consumers' incentives to adopt IHS.

The Demand Side: Consumers and IHS

Consumer Trade-offs

Similar to any innovation, IHS will need to match or exceed the utility provided by traditional formats to succeed. In Table 1 we compare six retail formats in terms of benefits and costs to the consumer. The three in-store formats are a prototypical convenience-goods store (supermarket), a specialty-goods store (department store), and a shopping-goods store (category specialist) (cf. Copeland 1923); the nonstore formats are the traditional catalog, the present Internet offering, and the IHS format described in Figure 1. Although the scenario in Figure 1 is intriguing, department and specialty stores afford buyers the opportunity to touch and feel merchandise and obtain information from sales associates. "Category killers" such as Best Buy and Office Depot offer comparisons across a wide array of alternatives in a specific merchandise category. Also, all in-store formats allow immediate delivery.

It is important to clarify our orientation and assumptions before discussing the relative merits of these retail formats in detail. First, our analysis assumes that technology has

TABLE 1
Dimensions Affecting Relative Attractiveness to Consumers of Alternative Retail Formats

Dimension	Supermarket	Department Store	Category Specialist	Catalog	Current Internet Retailer	IHS Format
Providing Alternatives for Consideration						
Number of Categories	Medium	Medium	Low	Low	Low	Low or High
Alternatives per Category	Medium	Low	Medium	Medium	Low	High
Screening Alternatives to Form Consideration Set						
Selecting Consideration Set	Medium	High	Medium	Low	Low	High
Providing Information for Selecting from Consideration Set						
Quantity	Medium	Medium	Medium	Medium	Medium	High
Quality	High	High	High	Medium	Low	Low or High
Comparing Alternatives	Medium	Medium	High	Low	Low	Depends on Supplier
Ordering and Fulfillment: Transaction Costs						
Delivery Time	Immediate	Immediate	Immediate	Days	Days	Days
Supplier Delivery Cost	Low	Low	Low	High	High	High
Customer Transaction Cost	High	High	High	Low	High	Low
Supplier Facility Costs	High	High	High	Low	Low	Low
Locations for Placing Orders	Few	Few	Few	Everywhere	Many	Many
Other Benefits						
Entertainment	Low	High	Medium	Low	Low	Medium
Social Interaction	Medium	High	Medium	Low	Low	Low
Personal Security	Low	Low	Low	High	High	High

developed to the point in which a highly evolved IHS system is readily available to a significant number of households. Therefore, as characterized in Table 1, IHS enables consumers to access merchandise unavailable in their local markets, gather veridical information about merchandise at a low cost, efficiently screen the offerings of a broad cross-section of suppliers by avoiding unwanted alternatives and unimportant features, and easily locate the lowest prices at which a specific item is offered. As we discuss in the following sections, IHS retailers currently enjoy considerable latitude in designing their offerings to exploit or subvert such activities.

Second, the values used to describe a format are illustrative. It is not our intention to argue the specifics, which can vary across retailers within a given format (e.g., across those selling products that can rather than cannot be digitized, those emphasizing depth rather than breadth of selection). Our assessment of performance of the six retail formats is based on the well-developed retail industry structure in the urban and suburban United States. In less developed retail environments, nonstore formats could be much more attractive (Quelch and Klein 1996).

Table 1 illustrates three main points:

- For a given product category, a comparison of traditional retail formats (e.g., department stores, category specialists, catalogs selling clothing or consumer electronics) makes apparent the basis for competition. The benefits provided by different formats influence the types of merchandise that can be sold successfully; product, situation, and consumer characteristics affect the relative weights of these benefits when consumers select a format (Day, Shocker, and Srivastava 1979;

Dickson 1982). For example, most apparel is sold in department and specialty stores because these outlets offer the service and accessories sought by customers buying clothing. In contrast, apparel sales make up a smaller percentage of total sales at discounters. Catalog apparel sales skew toward unfitted clothing items. Catalogs are especially attractive for occasions where the purchaser cannot achieve a superior fit by visiting a store (as when buying a gift for a relative in a distant city).

- Catalogs dominate current Internet retailers. It is therefore unsurprising that there are so few examples to date of businesses making significant revenues by selling merchandise on the Internet.
- The IHS format differs from current Internet retailers primarily by providing more alternatives for consideration, the ability to screen alternatives to form consideration sets, and information to facilitate selection from the consideration set.

We expect changes in the benefits relating to consumer information acquisition to drive any change from the current, nearly nonexistent penetration of Internet retailing to the more optimistic sales projections for IHS. Consequently, we focus our analysis on the dimensions in the first three sections of Table 1, which bear on the cost of information search, rather than on those in the bottom half of the table.

Retailers and retail formats compete in the types of information they convey effectively to customers. Just as in Erlich and Fisher's (1982) analysis of "derived demand for advertising," we analyze "derived demand for retailer information about products." Erlich and Fisher note that information reduces the wedge between the market price received by the seller and the "full price" paid by the buyer.

The wedge between market price and full price includes the costs of obtaining information about products and of dissatisfaction from disappointing purchases. Consumers demand information that reduces this wedge. Such information alternatively can be derived from their own prior knowledge, advertising, or "other selling efforts"—notably information from retailers.

Although we focus on retail competition through information, we recognize that retail formats differ on many factors, such as entertainment and personal safety, that contribute to the utility consumers obtain from the "total shopping experience" (cf. Tauber 1972) and that transaction costs related to ordering and fulfillment are an important basis for competitive advantage. For example, Verity and Hof (1994) suggest that it could be 25% less costly to engage in direct marketing with electronic channels. Although consultants and the popular press widely draw similar conclusions, we regard this as an open question. On the one hand, the IHS retailer is not burdened with the cost of locally convenient stores. On the other hand, the IHS retailer faces the cost of delivering merchandise in small quantities to individual consumers. It is premature to assess the relative efficiencies. Using catalogs and electronic grocery shopping (e.g., Peapod [Donegan 1996]) as guides, however, it is not clear that consumers will enjoy large monetary cost savings by using IHS.

However, here, we focus on the informational effects of electronic commerce as they pertain to retailer–consumer interaction. Excellent discussions of enhanced consumer-to-consumer interaction and the implications for marketing are available elsewhere (Armstrong and Hagel 1996; Hoffman and Novak 1996).

Providing Alternatives for Consideration

A significant benefit of IHS compared with other retail formats is the vast number of alternatives that become available to consumers. Through IHS, a person living in Florida can shop at Harrod's in London in less time than it takes to visit the local Burdines department store.

Economic search theory implies that if there are N alternative brands or sellers available in a market, and the consumer considers only a subset $n < N$, the utility of the chosen (best) alternative from the subset increases with n (Hauser and Wernerfelt 1990; Ratchford 1980; Stigler 1961). However, in terms of the benefits of search, there are strong diminishing returns. As additional alternatives are examined, the potential increase in benefits offered by the next alternative is small. Inasmuch as the cost of searching for and evaluating new alternatives continues to increase, a point is reached at which the expected cost of considering additional alternatives is greater than the potential increase in benefits. At this point, the consumer terminates search for additional alternatives. Research also indicates that consumers reach this point quickly: Consumers rarely visit more than one or two outlets when they are buying expensive consumer durables (e.g., Newman and Staelin 1972; Wilkie and Dickson 1985).

Because IHS search costs are low and decline with experience using the interface, simply providing consumers an

opportunity to consider a thousand alternatives versus ten alternatives could be enough to switch some of them from in-store shopping to IHS. However, other consumers could find it too tedious and stressful to look through information on hundreds of products identified for consideration, unless there is reason to expect that the added alternatives are systematically different from the first ones considered, with a different distribution of utilities. Consequently, the mere capability of IHS to increase the universe of potential options is not a major reason for its adoption.

Screening Alternatives to Form Consideration Sets

The attractiveness of the opportunity to inspect an expanded number of alternatives is dependent in part on the consumer's ability to sort efficiently through a potentially daunting amount of information. A particular advantage of IHS over alternative formats is that consumers can screen information so that they can focus on alternatives that match their preferences.

In most product categories, consumers have prior beliefs and preferences about alternatives (Hauser and Wernerfelt 1990; Ratchford 1982; Roberts and Lattin 1991; Simonson, Huber, and Payne 1988). Consumers use this information to make purchase decisions more efficiently by forming a small consideration set and then evaluating alternatives within this subset in more detail. The savings in search costs involved in using this two-step process often overwhelms the potential opportunity cost of overlooking the "best" alternative that would have been uncovered by carefully inspecting the entire universe of alternatives.

Interactive home shopping enables the formation of consideration sets that include only those few alternatives best suited to a consumer's personal tastes. This screening can be done almost instantaneously using electronic agents that use information about an individual consumer's specific preferences and the alternatives available (Maes 1994). In Figure 1, for example, BOB located 497 "suitable" black dresses from a potentially much larger universe and rank-ordered these dresses on the basis of criteria (black/formal/\$300–\$500) supplied by Judy. An additional screening phase that is based on criteria derived from prior interactions and stored in the agent's memory (such as the style she prefers and her trade-offs between price and quality) might reduce the set dramatically. The remaining alternatives then could be searched in more detail to choose the "best" of this reduced set. If the screening criteria are highly correlated with Judy's full utility function, Judy can be reasonably confident that the alternative chosen after screening has utility close to that associated with the choice she would have made if she had inspected all 497 alternatives exhaustively (Feinberg and Huber 1996).

Others have noted that consumers often rely on memory for the generation of alternatives for consideration (Alba and Chattopadhyay 1985; Hutchinson, Raman, and Mantrala 1994; Kardes et al. 1993; Nedungadi 1990). In such cases, memory plays a screening function that is often only imperfectly correlated with the consumer's utilities. An efficient and dispassionate search agent should produce appropriate brands that otherwise would not have been considered,

implicitly replacing memory with explicit product criteria for screening the universe of available options to a manageable consideration set.

Note that both BOB and retail store buyers have access to the same universe of merchandise and screen that universe to offer a subset intended to appeal to end consumers. However, the assortments offered by store-based retailers are developed for market segments with significant within-segment heterogeneity. Store customers are required to expend resources to form smaller consideration sets tailored to their needs. Consumers could find that the set provided by the retailer is insufficient and opt to visit another store.

Interactive home shopping has the potential to tailor consideration sets from a much broader set of alternatives for specific individual consumers. The usefulness of these customized approaches will depend on the consumer effort necessary to calibrate the screening mechanism and the accuracy with which the mechanism correlates with the consumer's full utility function for meaningful alternatives. The lower bound on effort to calibrate screening criteria comes from the use of past purchase history—as in the Peapod grocery shopping service, which keeps lists of regularly purchased items for automatic rebuy. At the other extreme, the screening criteria in many current Internet retailing sites are cumbersome in requiring the consumer to enter many responses to calibrate the function (e.g., *Money Magazine's* Best Places to Live site on Pathfinder.com, Firefly at <http://www.agents-inc.com> for music and films).

Some search agents require less data input from the consumer but at a cost of including only a few criteria that collectively explain a relatively small percentage of variance in a consumer's overall preferences. A good example is the use of a standard Internet search engine like Alta Vista to shop for Advanced Photo System cameras. Others strike a better balance in asking for a compact set of preferences highly related to a person's tastes but only allow search of a limited set of alternatives (e.g., Dell's computer site <http://dell.com> for computers, RakesDirect women's clothing site at <http://www.rakes.com/rakes.html>, Fido the Shopping Doggie service for shopping in a broad cross-section of categories). Therefore, screening criteria can be established in different ways. In the BOB example, Judy explicitly stated her criteria when initiating the search. In the Internet sites mentioned previously, screening criteria are limited to a small set specified by the retailer.

Providing Information to Evaluate Alternatives in the Consideration Set

One of the primary benefits offered by traditional retailers is information that enables consumers to predict how satisfied they would be if they purchased various offerings. The degree to which this information is useful to consumers depends on the nature of the information provided and its reliability. Consumers should seek out formats that enable them to make selections that maximize consumption utility net of price and search costs (Ehrlich and Fisher 1982), even if competing retail formats offer identical merchandise (Hauser, Urban, and Weinberg 1993).

Quantity of information. Retail formats differ in the sheer amount of information provided about the merchandise they offer. For example, Lands' End not only provides faithful visual information but often gives great detail about the construction process, stitching, and materials. Other catalogs provide only a few specifications per item, such as price, weight, and brand or model. More information could increase ability to predict consumption utility but add to processing costs.

Store-based retailers also differ in the information they make available to consumers. Specialty and department stores often provide trained and knowledgeable sales associates, whereas discounters do not. Consequently, the effective "database" of attributes available to consumers is much greater at specialty and department stores than it is at discounters and catalogers. Store-based retailers have an additional characteristic that radically increases the usefulness of the information available to consumers, that is, interactivity. Interaction between a customer and sales associate enables store-based retailers to provide information about the attributes that matter to the customer. Such selectivity gives consumers all the advantages of a large database without the large information processing costs. Perhaps for this reason, post-purchase reports from buyers of major durables indicate that the salesperson was the most useful information source consulted, outstripping *Consumer Reports*, advertising, and friends (Wilkie and Dickson 1985).

Conversely, catalogers, discounters, and present Internet retailers are forced to make decisions about which attributes to promote on the basis of what is most desired by the market as a whole or by relatively crude segments of the market. However, consumers differ in their needs and therefore in the information that will be of interest to them. Consequently, the information provided by catalogers and discounters will be less valuable because it is not tailored to idiosyncratic desires.

Interactive home shopping should prove superior even to specialty and department store retailers in terms of the sheer quantity of attribute information it can provide about each stock-keeping unit. As a result of the interactivity of IHS, retailers need not fear that the provision of information about an attribute that matters only to a few will impose search costs on the majority. In this respect, IHS resembles department and specialty stores. However, because attribute information is available consistently from a central database, IHS effectively becomes a "super sales associate" (i.e., one that never gets sick, is not moody, learns quickly, and never forgets). In contrast, store-based retailers have a difficult time retaining knowledgeable sales associates, and in many cases it is not cost-effective for them to do so. It should cost far less to add information to an IHS database than to attempt to disseminate the same information to sales associates through conventional training.

Quality of attribute information. Information economists often distinguish among search, experience, and credence goods (Darby and Karni 1973), typically in terms of consumers' ability to know quality before and after buying. In economic parlance, search goods are those whose quality

and value to the consumer can be assessed easily prior to purchase. The quality of experience goods is difficult to assess prior to purchase and usage; however, because quality can be assessed accurately after one use, the consumer knows quality when an opportunity arises to repurchase the same brand. For credence goods, quality cannot be known even after repeated purchase and use.

A tempting conclusion that is based on this trichotomy is that merchandise now selected in store environments primarily on the basis of search and credence attributes is most amenable to electronic retailing (because direct experience is not required), whereas merchandise purchased on the basis of experience attributes will be purchased in stores. By similar reasoning, IHS and catalogs should be more successful with merchandise dominated by visual attributes and should fare less well when touch, taste, and smell are important for evaluating quality. The latter senses require direct experience consuming or sampling the product (Anderson 1995).

However, these conclusions fail to consider the key issue regarding the quality of information. The quality or usefulness of information is determined by the degree to which consumers (or their agents) can use the information obtained prior to purchase to predict their satisfaction from subsequent consumption, which in turn depends intimately on consumers' inference rules (Alba and Hutchinson 1987; Broniarczyk and Alba 1994) and consumers' confidence in the reliability of these rules (Wright and Lynch 1995). In the analysis that follows, we adopt Wright and Lynch's (1995) reinterpretation of the search/experience/credence distinction in terms of consumer inferences. Specifically, for experience and credence (but not search) goods, there is at first a low subjective correlation between product attributes observable prior to purchase and benefits at the time of consumption. For experience goods, brand names enable highly reliable inferences about consumption benefits after one purchase and use. This is not true for credence goods, presumably because feedback from the first use takes a long time to materialize and is not predictive of consumption utility if the same brand were to be repurchased.

In addition, though information economists initially spoke of search, experience, and credence "goods," it is now clear that all goods have some combination of search, experience, and credence attributes. A search good is simply one for which the consumption benefits most important to consumers are predicted reliably by attribute information available to them before buying. This reasoning implies that the same product can be a search, experience, or credence good, depending on the benefits that are important to consumers and the inferences consumers make about how well those benefits are predicted by information available prior to purchase.

These observations have important implications in the present context because retail formats differ greatly in their capability to provide information about attributes linked to consumption benefits. Consequently, attributes that are search attributes in one format might be experience attributes in another—and this dictates patterns of competition among retailers over time. For example, if the key attributes of ice cream relate to experienced flavor, Ben & Jerry's

Cherry Garcia might be a search good at a Ben & Jerry's store, which allows a consumer to taste the ice cream prior to purchase. It would be an experience good at first if a person were buying at a supermarket that sells ice cream only in cartons and does not allow tasting prior to purchase. Consequently, the Ben & Jerry's store initially would have an informational advantage over the supermarket. However, when the consumer learns that Cherry Garcia on the carton label reliably predicts experienced flavor, the supermarket no longer would be at a disadvantage. Similar dynamics explain why mail order computer giants Dell and Gateway have a customer mix dominated by experienced users (Templin 1996).

Similar principles govern the relative advantage or disadvantage of store-based retailers relative to nonstore retailers that sell through catalogs or IHS. For example, critical information in the purchase of apparel might include search attributes such as color and style—which ostensibly can be assessed accurately in a department store or catalog—as well as experiential attributes such as fit, which can be searched readily before purchase only in the department store. However, when buying the item through nonstore outlets, the ability to assess color depends on consumers' inferences about the faithfulness of photographic reproduction and piece-to-piece variation in dyeing. Also, fit might seem unpredictable unless the nonstore retailer has consistent sizing and the consumer has learned over time to infer what fit is implied by a particular brand and size.

These examples illustrate three important points: First, consumers make inferences about product attractiveness on the basis of information provided by retailers, and retail formats compete on the information they provide as cues for these inferences; second, different consumers possess different rules, and this affects the extent to which the information provided by any particular format leads to competitive advantage; and third, the cues that are deemed to provide a reliable basis for inference are likely to change with experience with the brand. The following issues further emphasize the need to consider predictability of satisfaction rather than a simple classification of suitability of "goods" to IHS that is based on the traditional search/experience/credence distinction:

1. *The (in)adequacy of searchable experiential information.* In certain purchase situations, information for some products with important experiential attributes cannot be gathered prior to consumption. In such cases, in-store shopping offers little advantage over IHS. For example, flowers and wine are consummate sensory products. However, consumers who send flower arrangements via FTD must base their decisions on pictures in the florist's shop, and purchasers of wine frequently must rely on labels or advice from a retail sales associate. Therefore, some products possessing important experience attributes could be no less amenable to IHS than to traditional shopping. In yet other cases, experiential attribute information could be conveyed *more* effectively electronically than in-store. For example, the electronic bookseller Amazon (<http://www.amazon.com>) has space for customers to post their own reviews of books, with positive word of mouth clearly influencing sales.
2. *Consistency and predictability.* The ability to predict satisfaction from observable attributes is not inherent in the spe-

cific consumption benefits driving satisfaction, nor is it inherent in the retail format. Actions by retailers and manufacturers can increase consumers' ability to predict post-purchase satisfaction from attributes observable before purchase. Consider the case of running shoes purchased by a consumer who cares about comfort and protection from injury. We might expect that these features could be assessed better when buying from a store, such as Athletic Attic, than from a cataloger. Road Runner Sports, however, provides information for each shoe in its catalog, making it easy to assess suitability for underpronators and overpronators, and customers can submit their old shoes for a custom analysis and suggestions for suitable replacements.

Manufacturers' actions also influence the customer's ability to predict consumption satisfaction from pre-purchase information. If manufacturers become more consistent in the characteristics they build into differing models in their product lines, consumers' ability to predict satisfaction will rise accordingly. Comfort and sizing are important attributes of running shoes that require direct experience with the product. However, when a particular brand is consistent in the height of its arch support and the roominess of its toe box, the predictability of comfort and size is enhanced. In essence, brand name converts experience attributes to search attributes that can be effectively communicated verbally or visually (see Agins 1994).

3. *Other determinants of satisfaction.* Satisfaction is determined by more than the consumption experience with the product; it also is affected by the belief that one has exhaustively searched the set of acceptable alternatives such that there is no regret regarding a missed opportunity (Gilovich and Medvec 1995). Interactive home shopping provides the potential for a more extensive search than that which consumers could accomplish in a store.

These considerations imply that consumer adoption depends on more than the (retail format-independent) importance of search, experience, and credence attributes to the consumer.

Comparison of alternatives. Retail formats differ in the extent to which they facilitate the comparison of alternatives in the consideration set. For example, most in-store retailers stock alternative colors, styles, and brands in each product category. An appealing characteristic of category specialists such as Circuit City and Office Depot is the breadth of selection and customers' ability to make side-by-side comparisons of brands. Similarly, consumers shopping for apparel can compare the fit of different alternatives. Current Internet retailers do not offer this opportunity. In addition, current IHS retailers are selective in the information presented, whereas in-store retailers allow the consumer to control the basis for comparison of alternatives.

Research shows that consumers acquire and process information in ways made easiest by the constraints of the information format (Bettman and Kakkar 1977). However, consumers prefer formats that promote maximum flexibility to engage in either attribute- or alternative-based processing (Bettman and Zins 1979). This preference for flexibility to engage in attribute-based processing should be stronger for novices in a product class than for experts (Bettman and Park 1980); experts know what levels of an attribute are attractive without having to rely on relative information to make that assessment (Mitchell and Dacin 1996).

It is argued that effort looms large when decision makers consider the effort-accuracy trade-off required in any

given decision task—so much so that decision makers could focus more on effort reduction than on accuracy maximization (for a discussion, see Todd and Benbasat 1994). In this context, the advantages of IHS are apparent. The initial (and effortful) decision phase involving attribute-based, side-by-side comparisons will be compressed if an efficient screening mechanism is available. This should inspire consumers to learn and use more information in the course of decision making (cf. Kardes and Kalyanaraman 1992; Russo 1977). In addition, the transformation of the decision from a memory-based to a stimulus-based choice should enhance the precision of the decision process and therefore the optimality of the ultimate decision (see Alba, Marmorstein, and Chattapadhyay 1992; Biehal and Chakravarti 1983; Lynch, Marmorstein, and Weigold 1988).

The combination of IHS search, screen, and comparison features also should prompt consumers to make their decisions more rapidly (cf. Greenleaf and Lehmann 1995). Research shows that the addition of attractive alternatives to a choice set could prompt consumers to delay their choice (Tversky and Shafir 1992), perhaps because of the perceived possibility that even more attractive options have yet to be inspected (Karni and Schwarz 1977). Insofar as search and comparison minimize the possibility of regret over choosing a suboptimal product, both decision speed and satisfaction with the decision process should increase.

A caveat is appropriate at this point. Most aspects of an efficient search engine point to improved decision quality. However, it has been noted recently that though some decision aids could improve decision making, abuse is possible (Todd and Benbasat 1994). In particular, Widing and Talarzyk (1993) show that the decision aid most likely to be a part of an electronic search agent (i.e., a cutoff rule that enables formation of a consideration set containing only those alternatives that pass consumer-specified attribute cutoffs) can lead to suboptimal decisions in efficient choice sets. In addition, a separate stream of research shows that a second likely characteristic of IHS—visually rich presentation—can distort the decision process by diverting attention to peripheral cues and away from information that is most important for the task at hand (Jarvenpaa 1989, 1990; cf. Edell and Staelin 1983).

Summary of Key Consumer Factors Affecting Use of the IHS Format

Many factors will influence a consumer's decision to shop electronically versus in-store. We focus on the benefits pertaining to the consumer's information acquisition and processing that enable consumers to locate and select merchandise that satisfies their needs, because the fundamental benefit of IHS is to lower the cost of information search (Bakos 1991). In summary, then, the growth of IHS is dependent on the following factors:

- *Vast selection:* If the format does not allow for quick and comprehensive inspection of an expanded set of options, electronic commerce will mimic the shopping experience now available through catalogs and achieve a relatively low level of penetration.

- Screening:** If consumers cannot screen the large number of options made available, the advantages of vast selection will be outweighed by the costs of search.
- Reliability:** If consumption benefits are predicted more reliably from experiential information searchable in stores than from surrogate information searchable through IHS and consumers are unwilling to bear the risk, in-store shopping will continue to prosper.
- Product comparisons:** To be successful, IHS must allow the consumers to tailor the basis for comparison of alternatives in order to make the system compatible with the process by which consumers prefer to make decisions. Interactive home shopping has the potential to provide superior information presentation formats for making these comparisons.

Without these benefits, IHS will not develop beyond the relatively unattractive collection of electronic catalogs representing the present Internet offering. In the next section we review the incentives and disincentives for retailers and manufacturers to stimulate the development of the IHS channel and provide the appropriate information to attract consumers.

The Supply Side: Retailers, Manufacturers, and IHS

For many retailers the most significant threat posed by IHS is that profits will be eroded drastically by intensified price competition that will ensue as consumers' search costs are lowered. Consequently, many retailers are making limited, experimental investments in electronic commerce that, ironically, have none of the characteristics we describe previously as necessary for IHS to be preferred to existing formats. Many firms participate through stand-alone sites (such as World Wide Web home pages) that increase the costs of conducting cross-store comparisons. When third-party electronic search agents such as Bargain Finder (<http://bf.cstar.ac.com/bf/>) are created to compare prices charged by different vendors for the same compact disc, some retailers deny access. When participating in interactive malls, some firms require exclusivity agreements that protect them from the kinds of cross-store comparisons that would make IHS truly useful to the consumer.

It is reasonable to assume that firms that have made substantial commitments to an existing business format or technology will adopt defensive responses to radical change (Leonard-Barton 1995). In the case of IHS and other radical changes, we argue that these defensive approaches are likely to fail in the long run, because the ultimate nature of the IHS channel and its appeal to consumers is beyond the control of individual firms. Firms might attempt to build walls around their offerings that make comparison across retailers and manufacturers difficult. However, consumers will prefer retailers that freely provide such information and make cross shopping easy; therefore, isolationist vendors could be bypassed in the search process. Eventually, intelligent agents will allow consumers to search across vendors to find offerings that possess the set of attributes desired. Attempts to limit information will be met with new formats that disseminate information (Bakos 1991). Therefore, an electronic version of *Consumer Reports* could emerge that

makes recommendations and informs consumers of where to find the best deal.

In the remaining portion of this article, we discuss that nature of competition in an IHS environment, approaches that firms can take to build competitive advantage in this environment, and some important issues confronting IHS retailers and manufacturers.

The Role of Price and Quality

To complete a sale, a vendor must be considered by a consumer and the consumer must fail to consider a superior alternative (Nedungadi 1990). Retailers believe that an IHS presence can increase the probability of being considered, but conditional on the achievement of that goal, IHS can have only a negative effect on profits by intensifying price competition with other IHS alternatives. Inasmuch as established retailers have less to gain in terms of increasing consideration probability, it is perhaps unsurprising that few of the most aggressive entrants into IHS have a large store-based presence. But the conclusion that IHS must lower profits through higher price competition does not necessarily follow. Generally speaking, information that is easy to obtain or that can discriminate unambiguously among options tends to receive higher weight in the consumer's decision process. Price information possesses both properties, which suggests that the concerns of retail firms are well founded. However, just as in the debate on economic effects of advertising (Mitra and Lynch 1996; Rosen 1978), IHS also can reduce the cost and increase the discriminating power of information regarding merchandise quality.

A strong parallel can be drawn between the introduction of IHS into the present retail environment and the development of discount stores 40 years ago (Sheffet and Scammon 1985). Discount stores offered consumers an opportunity to forgo personalized service in return for lower prices. The result was an increase in price competition followed by attempts to avoid such competition through fair trade laws. Proponents of fair trade laws argued that, without some protection for department and specialty stores, discounters would drive them out of business; this, it was argued, would leave a shopping environment in which price could be discerned easily but nuances of quality could not. Consequently, consumers would become more price sensitive, sellers would adjust over time to compete more on price and less on quality, and consumers would suffer through the lack of interest in providing superior merchandise and service quality. Although the advent of discount stores did increase price competition in some merchandise categories, many consumers shop at retailers, such as Nordstrom, that provide superior information and services even though they charge a higher price. Such inherent consumer heterogeneity suggests that no one retail format can dominate all segments.

The potential impact of IHS on the nature of competition in the retail industry should be considered in this context. Although consumers shopping through an IHS channel will be able to collect price information with little effort, they also will be able to review at a low cost quality-related information about most search attributes and some experience attributes. For example, an electronic merchant of custom

oriental rugs can convey clearly real differences in patterns and materials used for construction. An electronic grocery service such as Peapod can enable customers to sort cereals by nutritional content, thus making it easier to use that attribute in decision making. Insofar as (1) quality-related information is important to consumers and (2) brands within a category are differentiated, IHS can lead to less price sensitivity at the brand level and more sensitivity to search attributes associated with quality than does traditional shopping (cf. Mitra and Lynch 1995).

This is a critical point for manufacturers that offer differentiated merchandise with superior performance attributes. Similarly, retailers that carry unique merchandise and/or provide superior information about merchandise could face less rather than more price competition. Perhaps this is why vendors cooperating with multiple-category search agents such as Fido the Shopping Doggie (<http://www.shopfido.com/Vendors.html>) are predominantly manufacturers and retailers selling highly unique merchandise such as arts and crafts, alternative music, hot sauces and spices, and gourmet foods and wines. Conversely, manufacturers of "me-too" brands competing on cost can expect more intense price competition with the diffusion of IHS, and retailers carrying nationally branded merchandise with limited service also will face increased price competition.

Therefore, the introduction of the IHS channel will intensify the competitive environment, but this need not shift the emphasis from quality to price. By providing more information to consumers with minimal search cost, manufacturers and retailers with differentiated offerings will have a greater opportunity to educate consumers about the unique benefits they offer, and consumers will find it easier to access and compare the offerings of firms competing on price.

Developing Competitive Advantage in IHS

"Location, location, location" is the classic response to the question about the three most important factors in retailing. The development of IHS certainly reduces the importance of location. The successful IHS retailer will need to adopt a strategy that seeks competitive advantage in one or more of the following areas: (1) distribution efficiency, (2) assortments of complementary merchandise, (3) collection and utilization of customer information, (4) presentation of information through electronic formats, and (5) unique merchandise.

Distribution efficiency. Consumers perform a major portion of the distribution function when purchasing from stores. They transport merchandise from stores to their homes and bring unsatisfactory merchandise back to the store. In an IHS system, these substantial costs of home delivery and returns will be fully borne by the seller and must be factored into the price. Because these costs are substantial, IHS players that can select and package multiple items for delivery to individual households will have a competitive advantage over IHS competitors that lack such skills. The importance of this advantage naturally is greater when the preparation for shipping constitutes a large fraction of the overall price of the product.

Assortments of complementary merchandise. The opportunity to make multiple-item sales is important for two reasons. First, by making multiple-item purchases from an IHS supplier, customers reduce the shipping costs, which thereby reduces the net price. Second, the IHS retailer is in an ideal position to tailor a secondary offering to a customer on the basis of the customer's primary purchase objective. We might suggest that electronic agents will put together complementary bundles of products from multiple suppliers. However, to accomplish this task, the agents would need to possess an extremely broad knowledge base, such as information on what ties and shirts go together and what ingredients are needed to make a good Brunswick stew. Even without the presence of electronic agents, IHS offers retailers an opportunity to merchandise their wares in ways not previously possible. Traditional merchandising is limited by physical constraints. Floor space and shelf space limit the number of complements that can be placed in close proximity to any given product. However, even the Internet allows nearly unlimited cross-referencing through hypertext. Interactive home shopping faces no such problems, and the efficient IHS merchandiser should realize superior gains in customer retention and cross-selling—goals that are increasingly important regardless of distribution channel (e.g., Reicheld 1993). The opportunity to cross-sell extends well beyond shirts and ties. Diversified vendors that own subunits that are only modestly related to each other in terms of the consumer goal they serve could realize synergies not possible with conventional channels (cf. Benjamin and Wigand 1995 on "virtual value chains").

Collection and utilization of customer information. Database marketing is an important capability for IHS retailing (cf. Blattberg and Deighton 1991; Peppers and Rodgers 1993). Interactive home shopping will increase the importance and accelerate the development of database marketing because more comprehensive customer-specific data can be captured. All consumers who shop electronically can be identified at the individual level. Moreover, unlike other formats, consumer browsing can be tracked. That is, records can be constructed not only of what consumers bought, but also what they inspected and for how long.

Interactive home shopping retailers can use these data to provide information-based value to the customer by (1) using technology to identify and display consideration sets most suited to individual consumer tastes and (2) providing information about those options that enables consumers to predict their satisfaction after purchase. Consumers, in turn, are likely to become loyal to an IHS retailer offering this service. This loyalty advantage could be sustainable for two reasons: First, consumers who experience high satisfaction may not defect to competing IHS retailers; and second, as consumers patronize a particular IHS retailer more frequently, more information can be collected. Thus, a cycle is created wherein consumer satisfaction provides the opportunity to learn how to provide greater satisfaction. Consumers would incur switching costs and an initial decrease in customer service if they took their business to a competing IHS retailer. Insofar as information about the consumer is proprietary, sustainability ensues.

Presentation of information. Traditionally, some stores have sought differentiation on the basis of atmospherics and service. Both still could play a role in IHS, and each will require a new technical skill set, as evidenced by the recent acquisition of software company Davidson and Associates and interactive entertainment company Sierra On-Line by CUC International, a leading direct marketer and interactive retailer.

Unique merchandise. From the retailer's perspective, the most straightforward method for increasing differentiation and reducing price competition is to sell merchandise that cannot be offered elsewhere. Uniqueness traditionally has been achieved in several ways:

- Private labels:* IHS retailers can develop their own private-label merchandise that they offer exclusively.
- Branded variants:* Alternatively, retailers can work with manufacturers to provide "branded variants" sold exclusively through that retailer (Bergen, Dutta, and Shugan 1996). The intent is to provide incentives for retailers to provide better service when inter-store (but not inter-brand) competition is reduced. (As noted subsequently, however, this method of achieving uniqueness could lose some effectiveness in the context of IHS.)
- Offering assortments of complements tailored to customer needs:* One way for retailers to make their merchandise "unique" is by creating bundles of complements that are available only separately elsewhere. For example, with each bottle of wine offered by Virtual Vineyards (<http://www.virtualvin.com>), customers can get complementary recipes from noted Bay-area chefs. Although some of the wines are available elsewhere, Virtual Vineyards allows its customers to anticipate satisfaction when serving the wine with a particular meal. In essence, the wine-recipe bundle rather than the bottle of wine becomes the unit of analysis. Interactive home shopping retailers can use customer information skills noted previously to suggest bundles that lead to multiple sales and increased customer satisfaction—with the side benefit of reducing shipping costs.

Implications for Firms in the Retail Industry

The success of consumer product manufacturers and retailers in the IHS environment will be determined by the degree to which their strengths and weaknesses match the capabilities required to build competitive advantage (Aaker 1989). In Table 2 we provide such a comparison. In this table, we assess each type of firm in terms of the skills previously identified as bases for competitive advantage in the IHS channel. We consider the likely impact of IHS on their businesses and how their businesses are likely to adapt. Afterward, we examine the impact of IHS on manufacturers.

Entry Into IHS by Retailers

Table 2 leads to some interesting insights when contrasted with Table 1. Table 1 suggests that catalog retailers are more vulnerable to IHS than are other retail formats. Interactive home shopping retailers and catalogers share the same limitations in terms of delivery timing and providing information about experience attributes; interactive home shopping dominates catalogs in terms of the information provided. However, Table 2 indicates that catalog retailers are best prepared to exploit IHS, inasmuch as they possess order fulfillment systems and database management skills that match the requirements of IHS. As an example, Lands' End (<http://www.landsend.com>) has a "Specialty Shopper Service" that coordinates outfits for a whole wardrobe, helps the customer find his or her correct size, and keeps a file on sizes, tastes, past purchases, and address and credit card numbers. Also, the skills necessary for effective visual presentation of information in IHS follow closely the visual merchandising skills necessary for catalogs. Catalogers can reap efficiencies by listing their products electronically rather than in a more expensive print format when penetration of IHS justifies the production of electronic assets by savings of significant paper and postage costs.

However, the ability of currently successful catalogers to adapt to IHS can be expected to vary sharply, depending on the strategy the catalog retailer has used to establish competitive advantage. For example, Spiegel sells primarily branded merchandise, which is susceptible to price comparisons. Catalog retailers that emphasize branded merchandise will be particularly vulnerable compared with a retailer such as Lands' End, which has developed high-quality, private-brand merchandise.

Interactive home shopping is ideal for retailers, such as Nieman-Marcus, Harrod's, Gumps, and Saks, that enjoy strong national reputations for high-quality, unique merchandise, but that have only spotty or regional penetration. Such retailers are well positioned to take advantage of the market-expanding feature of IHS by attaining an international presence without making significant investments in store locations, visual merchandising, and leases (Rennie 1993). Most of these stores currently possess an effective mail-order catalog operation. Interactive home shopping also is ideal for niche retailers that appeal to a far-flung customer base (cf. Quelch and Klein 1996; Wernerfelt 1994). For example, Hot Hot Hot (<http://www.hothothot.com>) is a specialty store that carries more than 450 brands of hot sauce. The Internet gives this firm international exposure

TABLE 2
IHS Success Capabilities Possessed by Firms

Skills for Developing Advantage	Catalog Retailers	Traditional Stores	Category Specialists	Merchandise Manufacturers
Distribution Efficiency to Homes	High	Medium to High	Medium	Low
Provision of Complementary Assortments	High	High	Low	Medium
Collection and Use of Customer Information	High	Medium to High	Low	Low
Presentation of Merchandise Information	High	Medium to High	Low	Medium
Ability to Offer Unique Merchandise	Medium	Medium	Low	High

without significant advertising and only 300 square feet of store space (Carlton 1996).

Conversely, national chains such as Sears have far less incentive to participate. These chains possess high levels of penetration through their ubiquitous stores. Even among national department store chains, there are clear differences in incentives to enter IHS. Both Sears and JCPenney have saturated the domestic market with stores, but JCPenney is also the largest catalog retailer in the United States. This catalog operation provides the infrastructure for fulfillment and visual merchandising that is well suited to IHS. Sears exited the "Big Book" catalog business largely because its catalog fulfillment operations and technology were antiquated and because the cost of rebuilding these systems was prohibitive. This absence of efficient fulfillment systems for individual orders creates a further disincentive for Sears to engage in IHS.

Adaptation of In-Store Retailers to IHS

The DEFENDER model (Hauser and Shugan 1983) suggests that in-store retailers should react to emerging IHS retailers by emphasizing attributes of their offering for which they have a comparative advantage. Therefore, store-based retailers should (1) focus on merchandise that has important experiential attributes that are search attributes in a store but experience attributes in IHS, (2) capitalize on their relative advantage in providing information tailored to the needs of specific customers, (3) emphasize the noninformational benefits of shopping, (4) complement IHS with their in-store business, and (5) place more emphasis on unique merchandise.

Because it is more difficult to provide some experience information through IHS, in-store retailers must focus on merchandise that possesses characteristics consumers can assess veridically only through contact with the merchandise. For example, bedding and linens come in standard sizes and are amenable to IHS; consequently, department stores might need to decrease space allocated to this merchandise and increase floor space devoted to tailored clothing. They also might need to increase resources devoted to personalized service associated with those items (e.g., alterations). Similarly, department stores should shift their merchandise mix to emphasize items for which immediate, low-cost access to the merchandise is important.

To offset the ability of IHS retailers to provide personalized information at home, in-store retailers should improve the personalized information they offer using their sales associates or in-store kiosks. For example, Best Buy uses kiosks extensively to alleviate physical store constraints and provide detailed product information. Media Play uses in-store listening stations to enable acoustic sampling of compact discs prior to purchase. Used-car superstore CarMax provides kiosks that allow flexible screening criteria, side-by-side viewing of screened options, and the printing of car lot location maps for candidate cars—all of which greatly reduce search costs inherent in navigating a huge and heterogeneous on-site inventory.

Because IHS retailers can provide greater informational benefits, in-store retailers must emphasize ancillary benefits such as entertainment and opportunities to socialize. For

many consumers, shopping is an experience that transcends product purchase. One method of differentiating a retail outlet is to provide benefits that enhance the experience. Traditionally, this has involved improvements in ambiance. Increasingly, the entertainment value of shopping is being emphasized. Incredible Universe, Niketown, and the Mall of America are possible harbingers of the future. (For a discussion of how IHS retailers might respond to these efforts by in-store retailers and improve the social experience benefits for IHS customers, see Armstrong and Hagel 1996.)

In-store retailers with an IHS presence can use IHS as a source of advertising to presell merchandise and to check its availability in local stores. This would enable the customer to pick it up or have it delivered from the local store.

In-store retailers and IHS retailers will need to reduce their reliance on nationally branded merchandise to lure people into their sites and will need to redouble their efforts to develop private label brands. Therefore, the trend seen in store-based retailers such as JCPenney—which increasingly promotes private-label brands such as Arizona jeans—could accelerate.

Impact on Category Specialists and Discounters

In light of the consumer analysis in Table 1, category specialists appear particularly vulnerable to IHS retailing. Aside from the immediacy of delivery, this shopping format offers few informational and noninformational benefits. In addition, these formats emphasize branded merchandise for which price competition will increase with the advent of IHS. However, the nature of these outlets varies greatly in terms of their operation, merchandise, and relationships with suppliers.

Toys 'R' Us enjoys national (and increasingly international) penetration. If Toys 'R' Us were to sell electronically, it might experience significant cannibalization of its in-store sales, making IHS less attractive to it than to an entrepreneur entering the toy business through IHS or even to an F.A.O. Schwartz, which is smaller and more specialized.

Circuit City appears to be as vulnerable as Toys 'R' Us is to competition from IHS retailers. However, the structure of the consumer electronics industry is considerably different from the toy industry. The consumer electronics industry is dominated by a few suppliers that make most of their profits from sophisticated, high-technology products. The benefits of these products can be credibly demonstrated only in a store environment. To motivate electronics retailers to provide this information to consumers, manufacturers employ several mechanisms designed to protect specialty retailers from price competition from mass merchandisers that sell only the low-end and mid-range models that dominate the market. (For example, co-op advertising offers to mass merchandisers can be made contingent on pricing cooperation.) Moreover, distribution of high-end products to IHS retailers would encourage free riding and reduce in-store retailers' incentive to provide product-differentiating information.

Home Depot is similar to Toys 'R' Us in terms of distribution intensity but is less vulnerable because many of its goods demand immediacy, highly tailored advice from expert associates, or direct (non-video) inspection of size,

specifications, or colors. Home Depot also offers a level of hand-holding from expert sales associates that cannot be duplicated electronically. Moreover, bulky do-it-yourself merchandise can be expensive to ship directly to homes.

Implications for Manufacturers and Retailers

Disintermediation. The most important structural change that could be brought about by IHS is disintermediation, wherein manufacturers bypass the retailer and sell directly to consumers. Although the IHS channel does offer manufacturers an opportunity to deal directly with consumers (cf. Benjamin and Wigand 1995; Pine, Peppers, and Rogers 1995), Table 2 illustrates the limited capabilities of most manufacturers to succeed as IHS retailers—which suggests that the degree of disintermediation will not be significant.

Manufacturers cannot easily and efficiently duplicate a variety of services that retailers perform for both manufacturers and consumers (see Sarkar, Butler, and Steinfield 1996). The classic functions undertaken by retailers and other firms in a distribution channel include breaking bulk (converting caseload shipments into individual items); providing assortments that permit one-stop shopping; holding inventory to make merchandise available when customers want it; and providing a variety of transaction features and services that include credit, alteration and assembly of merchandise, attractive display, dressing rooms, personal assistance in selecting merchandise, repair services, return services, and warranties (Levy and Weitz 1995). Although these functions *can* be provided by manufacturers selling directly through IHS, present retailers might be more efficient at performing these functions. Manufacturers are not highly skilled at selling directly to customers. They lack the efficient systems to fulfill orders at a household level and have limited capability to offer the complementary products that increase customer satisfaction and reduce shipping costs. Similarly, manufacturers may not be able to deal with high return rates encountered in nonstore retailing formats.

We noted previously that JCPenney's catalog operation is the largest in the United States. It is undergirded by an extremely efficient and capital-intensive system for accepting orders, packaging them together, and shipping them to customers to be picked up at local stores and catalog distribution centers. The difficulty and expense of duplicating such a system drove Sears from the catalog business; the scale economies are high. It seems unlikely that many manufacturers would find it worthwhile to build such a fulfillment operation from scratch or to replace retailers in the supply chain with outsourcers to handle the functions now performed for them by retailers.

These fulfillment-based disincentives to disintermediate will be lower among products for which fulfillment costs contribute only a small fraction of the sales price to consumers. Products such as computer software, branded jewelry, and high-end perfumes fit this description.

Finally, although manufacturers might be tempted to generate incremental sales by adding a direct IHS channel to their store-based channels, entry into IHS could alienate the stores that now carry their lines. Unless the manufacturer

believes it would be more profitable to sell directly than through stores, it will hesitate to disintermediate for fear of alienating those stores that currently carry its lines.

These considerations implicitly identify those manufacturers that might have an incentive to disintermediate. Manufacturers possessing extremely strong brand names and the ability to produce complementary merchandise might consider disintermediation. Consider Levi Strauss. Its brand names are among the strongest in the apparel industry. Network externalities are weak for the markets it faces, either because it produces complements demanded by consumers (e.g., Dockers slacks and shirts) or because, for core products such as Levi's 501 Blue Jeans, consumers can be assured of a match without buying the complementary items from the same seller. In contrast, a maker of dress slacks such as Savane would have less incentive to consider disintermediation because its brand name has less pull and because demand for Savane slacks benefits from significant network externalities when sold in department and specialty stores carrying other manufacturers' lines.

The foregoing discussion applies to manufacturers of nationally branded merchandise that distribute through store-based retailers. Small manufacturers and entrepreneurs, conversely, are more prone to disintermediate because their alternatives to IHS are less attractive. Small or new firms—even those with superior new products—find it difficult to obtain shelf space or awareness. For these producers, IHS could reduce barriers to entry by making it possible for consumers to locate them. In this sense, IHS functions just like advertising in helping heterogeneous consumer segments find products that match their tastes (Rosen 1978).

Brands and branding. A brand is a search attribute that assures consumers of a consistent level of product quality. It might be the only attribute available to assess some credence goods. Because a brand offered by different outlets can be easily compared by IHS shoppers, manufacturers of branded merchandise are particularly vulnerable to price competition at the retail level; consequently, IHS retailers will find it unattractive to sell their merchandise. It is ironic that strong brands increase the attractiveness of IHS to consumers by providing sufficient information to predict satisfaction without experiencing the merchandise, but that this same mechanism makes these brands less attractive for retailers to carry in the face of IHS.

In the present retail environment, branded-goods manufacturers employ restricted distribution in a territory, relying on location to reduce price competition among retailers and ensure retailer cooperation. This mechanism is not feasible in the low search cost environment of IHS retailing. Therefore, manufacturers of branded merchandise must focus on other methods for insulating IHS retailers from price competition. One method is the production of private-label brands for each retailer. Alternatively, the manufacturer can produce "branded variants" of nationally branded products. These branded variants might be retailer-specific manufacturer model numbers (e.g., Sony Model MA 3150, which is sold only by Service Merchandise).

Neither of these alternatives will be relished by manufacturers that have developed strong national and international brands. It is obvious why such manufacturers would

be loathe to find themselves mainly as suppliers of private-label merchandise. The prospect of employing an expanded branded-variant strategy also is perilous, albeit in more subtle ways. Increasing the number of branded variants could have the effect of lowering the average attractiveness of the manufacturer's offerings. The easy search-and-compare aspects of IHS could render transparent the existence of trivial differences between models, forcing manufacturers to create larger differences in their variants to satisfy retailer demands of noncomparability across retailers. However, if a significant amount of purchasing still occurs in store, the manufacturer risks losing sales because the variant carried by the store is not the variant desired by the consumer. It seems that manufacturers will be driven to produce variants that are exclusive to each retailer with which they do business (e.g., "Liz Claiborne for Macy's").

The preferred solution for manufacturers is to create a level of brand power that ensures cooperation from retailers in terms of resale price maintenance and other tactical mandates. Manufacturers that hold such power could threaten defectors subtly (Barrett 1991). Few brands hold such sway, however, and it is likely that even fewer will be able to maintain such power with distribution through IHS. Nonetheless, "brand building" is another option for manufacturers that fear the leveling effects of IHS. On the surface this could seem counter-intuitive: The threat of IHS to vendors is that its information features will speed commoditization and expose parity where it exists; parity should decrease the value of the brand.

Nonetheless, in product classes in which technology cannot provide advantage and for firms that cannot win technological battles, image building becomes an option. For example, in the case of fashion goods, brands can attain cachet through a carefully crafted marketing strategy. Plainly, brands will have least influence in nonimage, parity product classes. However, parity is not a limiting factor when credence attributes are important—and nearly all products possess credence attributes (Levitt 1981). For example, when quality is difficult to assess, brand name serves as a surrogate (see our previous discussion). And, as marketers long have known, brands can signal quality or other dimensions of differentiation falsely through long-term positioning tactics or explicit attempts to frame consumer decisions (cf. Gardner 1983; Hoch and Deighton 1989). Therefore, another irony of IHS could be that the technology that enables consumers to make more intelligent comparisons in some cases can induce manufacturers to take actions intended to produce an opposite outcome in other cases. As with other determinants of IHS success, the importance of the brand and the viability of a brand-building strategy will vary as a function of the product class and firms' individual competencies.

Research Opportunities

The advent of IHS raises significant questions pertaining to consumer behavior and industry structure. Previous research focuses on heuristics used by consumers to make choices when search and comparison are relatively difficult and costly. Such a focus has been appropriate because the environment, often aided by the retailer, tends to discourage con-

sumer search (see Hoch and Deighton 1989). In contrast, the potential IHS search environment is highly interactive, information intensive, and low in cost. In this alternative environment, research questions in need of attention include the following:

- What fundamental changes occur in information processing as a function of the availability of electronic search agents? With few exceptions (e.g., Widing and Talarzyk 1993), consumer research fails to examine the heuristics and resulting decision quality that are enabled by the search and screening operations that constitute the most attractive features of IHS. A related question involves the influence of search agents on consumer learning. Traditional shopping affords consumers the opportunity to learn the distribution of attribute values across alternatives; search agents merely produce a set of alternatives that satisfy particular criteria. Thus, on some dimensions of product knowledge, search agents can produce undesirable outcomes.
- How does the balance of memory-based versus stimulus-based processing shift as the search environment changes? Some researchers criticize research on consumer choice for focusing on stimulus-based paradigms and ignoring important memory-based aspects present in nearly all consumer decisions (Alba, Hutchinson, and Lynch 1991). Our assumptions regarding an effective IHS system, conversely, argue in favor of greater attention to stimulus-based processing inasmuch as electronic search agents will reduce memory constraints significantly. An especially large effect should be observed when the optimal choice set includes items from different product categories (Ratneshwar and Shocker 1991). Although human memory might be bounded by temporarily salient options, electronic agents can retrieve all alternatives tagged with the consumer's goal or desired benefit (e.g., "gift").
- Important questions also exist regarding short-term memory and perceptual issues. Just as the cognitive implications of hypertext are virtually unexplored (Rouet et al. 1996), consumer researchers must understand how memory constraints affect decision making as consumers move from brand listings to brand attributes to third-party evaluations to complementary product information, and so on. From a vendor's perspective, there is an information vacuum regarding optimal display format. Insofar as search agents efficiently retrieve requested alternatives, impulse purchasing will occur less frequently (cf. Park, Iyer, and Smith 1989). Vendors must understand the cognitive and perceptual rules that can prompt consumers to make electronic detours in their search for goods and services.
- How do the content and presentation of product information affect consumers' willingness to make choices without directly experiencing the product? Are there ways to create "consumption vocabularies" (West, Brown, and Hoch 1996) that increase consumers' willingness to infer experiential benefits from descriptive, electronically provided information?
- How are consumer confidence and satisfaction affected by search processes that enable efficient screening? The ability to screen products by attribute creates a much more manageable information environment but simultaneously allows some attractive options to go unnoticed. Do consumers experience a greater but illusory sense of confidence in choices made from effortfully but incompletely constructed consideration sets?
- How will consumers react to the collection of detailed information about their needs and purchase behavior by IHS retailers? The utilization of this information to tailor merchandise presentations provides a benefit to consumers, but will consumers be willing to make this personal data available? What can IHS retailers do to assure consumers that personal information will not be misused?

- What are the true dynamics of price sensitivity in this environment? Although greater amounts of information should increase sensitivity among comparable goods and reduce sensitivity for differentiated goods, empirical research is required to understand how this general conclusion is moderated by type of good, branding, and the manner in which vendors present information.
- How will the nature of the relationships among manufacturers, retailers, and consumers evolve as a function of technology-based reductions in search costs (cf. Zettelmeyer 1996)?
- To what extent will vendors be able to control the search environment? In part, technological developments can determine the ability of vendors to inhibit search and comparison. At present, Internet vendors can prevent entry by search agents. However, irrespective of technology, to what extent will market forces determine not only control of entry but also search procedures allowed by vendors?
- We argue that disintermediation will not blossom in the present environment because of the critical functions now per-

formed by retailers. Looking to the future, how will IHS interact with developments in distribution and flexible manufacturing to enable manufacturers to mass customize their offerings and deliver them efficiently to customers?

- Many traditional retailers will find themselves in multiple channels—maintaining their bricks-and-mortar operations while also creating an electronic presence. What are the economics of such dual systems and how sustainable are existing stores if electronic sales grow to significant levels? In other words, if total sales do not increase, at what point does cannibalization reduce the viability of stores?

These questions are a mere sample of a much larger set both within and beyond the scope of our analysis. Clearly, predictions about the ultimate fate and form of IHS are risky. However, it is equally clear that this emerging channel provides marketing researchers and practitioners with much opportunity to test their theories and apply their tools.

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