INTER-CHANNEL COMPETITION AND
NEW PRODUCT DIFFUSION: MARKET MAKING,
MARKET TAKING, AND COMPETITIVE EFFECTS IN
SEVERAL EUROPEAN COUNTRIES

by

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INTER-CHANNEL COMPETITION AND NEW PRODUCT DIFFUSION: Market Making, Market Taking, and Competitive Effects in Several European Countries

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Abstract

The literature on the diffusion of new consumer durables tends to overlook the influence of the retailer. A new consumer durable cannot diffuse if prospective adopters cannot find a store/channel in which to purchase it. Yet, most diffusion models appear to assume that retail availability simply happens, and does so in a manner that has little impact on the pattern of diffusion. We propose several roles that different types of retailers may play, and focus on the effects of inter-type rivalry among retailers on the diffusion of the innovation among consumers and the coverage of the innovation offered by retailers. We propose a model that allows for a simultaneous relationship between a retailer's decision to carry an innovation (coverage) and a consumer's decision to adopt the innovation (diffusion). We estimate this model for a relatively recent innovation, the 32-bit video game console category, with data from five different retail environments in Europe. We find evidence that different types of retailers vary in their influence upon consumers. We also find evidence that unfolding diffusion dynamics can influence the pattern of retail coverage. Notably, the results show that different retail environments give rise to different diffusion patterns, suggesting that a standardized distribution policy over countries is inappropriate.

KEYWORDS: diffusion of new products, channels of distribution, inter-type rivalry, retailing, global standardization
INTER-CHANNEL COMPETITION AND NEW PRODUCT DIFFUSION

Introduction

The abundant literature on the diffusion of innovations, especially marketing diffusion models, recognize that the diffusion process is not completely predetermined; the strategic choices of the organization marketing the innovation (e.g., pricing, advertising, or product features) are also important factors that influence the rate and pattern of the adoption of the innovation.

The role of retail distribution has received some attention, but to a much lesser extent than that of other marketing mix instruments. Pioneering research by Jones and Ritz (1991) and Jones and Mason (1990), and more recent research by Neelamegham and Chintagunta (1999), Bronenberg, Mahajan, and Vanhonacker (1999), and Lehman and Weinberg (2000) consider that the adoption of an innovation by consumers is conditional on the innovation being available in channels of distribution. Therefore, the study of the penetration of the new product or service in channels of distribution is critical to understand the patterns and rates of diffusion in the population of users. Unfortunately, little empirical evidence exists to help understand the evolution of the number and type of stores (outlets) carrying a new product or service, and how the pattern of coverage alters the innovation's diffusion.

Here, we focus on the role of, and competition among, different types of retail channels, and how their decisions whether or not to carry a brand of an innovation influences the pattern of diffusion at the brand level. How distribution influences the adoption of new consumer durables (as opposed to movies or fast moving consumer goods--FMCG) has not been studied empirically in diffusion models. Durables are of particular interest because their purchase entails some risk: Typically, they are not inexpensive and are not purchased often. Hence, consumers hesitate to adopt a new durable. The innovation diffuses as marketers succeed in overcoming that hesitation. It has been suggested that retailers carry a new
durable (or more generally, any product) if there is indication that the product has sales potential (Jones and Mason 1990, Farley and Leavitt 1968). If so, later distribution may be conditional upon consumer response to earlier distribution, or perhaps expected response to current distribution. Further, it is possible that not all distribution is created equal. Certain types of retailers may influence (positively or negatively) other retailers to carry the new durable and may have varied effects on the rate of diffusion among users. However, there is little theory or evidence to guide research in this area.

A growing body of literature in international marketing suggests that diffusion processes depend on the national, cultural, and economic environment (e.g. Putsis et al. 1997, Gatignon, Eliashberg, and Robertson 1989). This bears on the literature concerning whether market activities should be standardized globally or whether they should be adapted to fit local markets (Johansson 2001, Devinney, Midgley, and Venaik 2000). Noting how empirical results can vary by country, Helsen, Jedidi, and DeSarbo (1993) call for research incorporating marketing mix elements into the diffusion process, but add pessimistically that this is virtually impossible in international marketing studies. Our study does precisely this.

Three issues merit investigation: (1) the possibility that carrying decisions by distributors and diffusion dynamics among users are differentially affected by the activities of different types of distributors, e.g., full-line discounters versus product category specialists, (2) the possibility of simultaneous decision making between distribution and consumption (i.e., consumers only adopt once distributors carry the new durable, but distributors carry the product only if consumer response is sufficient), and (3) the possibility that the relationship between diffusion and distribution varies according to the retail environment.

We propose a set of roles that correspond to different types of retailers. We propose and test a simultaneous model of diffusion of a new consumer durable, where adoption of the product within a population of consumers is related to coverage (the decision to carry a
product) within a population of retailers (outlets). This model not only allows for simultaneity in the two patterns (adoption and coverage) but allows effects to vary by type of distribution channel, both in the consumer model and in the retailer model. Below, we review the relevant literature on diffusion, distribution, and inter-type rivalry. From this review, we specify a simultaneous retailer coverage/consumer diffusion model. We then test the model using data covering the diffusion of 32-bit video game consoles in five retail environments in Europe (Germany, the United Kingdom, France, Spain, and the Netherlands). Following discussion of results, we offer managerial implications, conclusions, and suggestions for further research. Our review of the literature is presented in light of 1) our conceptual framework for analyzing the effect of distribution on the diffusion of a durable, and 2) our conceptualization of what explains distribution coverage (the extent to which distribution carries a new product).

**A CONCEPTUAL MODEL OF HOW DISTRIBUTION INFLUENCES DIFFUSION**

An enormous literature on the diffusion of new products and services among target populations has grown over the past three decades, reviewed by Gatignon and Robertson (1985), Mahajan, Muller, and Bass (1993), and Parker (1994). In particular, a substantial literature has developed around the Bass diffusion model, in which adoption of a new product category is seen as spreading over time through a target population up to a ceiling level of adoption potential, $M$, which may represent only a small fraction of the target population. A new product’s market potential, $M$, is framed as being approached over time in a regular fashion, where the fraction of the target population which adopts the new product at a given point in time, $x(t)$, may be represented as:

$$x(t) = [p+qn(t-1)][1-n(t-1)].$$

Here, $n(t-1)$ is the cumulative proportion of market potential which has already been reached up to period $(t-1)$. Hence, $[1-n(t-1)]$ represents undepleted potential, expressed as a fraction
of market potential. Undepleted potential is drawn down at a rate of $p+qn(t-1)$. The
unsaturated pool is drawn down at a faster rate as there are more adopters. $Q$ is known as the
“coefficient of internal influence,” as it represents the impact of adopters in the social system
on non-adopters. As $p$’s influence is independent of the prior adopters, it has been called the
“coefficient of external influence.”

A number of constraints upon the shape of the diffusion curve can be removed (see
Mahajan, Muller, and Bass 1993 for a discussion). Yet, the basic Bass model has proven to
be strikingly robust in its ability to reproduce known diffusion patterns across a variety of
commercial innovations and markets (Bass, Krishnan, and Jain 1994). This robustness has
made the model one of the most popular in the diffusion literature. A substantial literature
has grown up around issues of model specification, estimation, selection, and validation.
Further, efforts have been made to incorporate explicitly causal factors that might influence
the shape of the diffusion curve.

In this vein, marketing mix variables, such as advertising levels, price, promotion,
personal selling, and product attributes, have been incorporated into enhanced versions of the
Bass model. Such efforts are not frequent (Sultan, Farley, and Lehman 1990) because the
data requirements are substantial and because the resulting models are difficult to estimate.
Typically, some or all of the Bass model parameters ($p$, $q$, and $M$) are modeled as functions
of marketing variables. Mahajan, Muller, and Bass (1993) review these efforts and conclude
that, “although analytically very elegant, most of these modeling efforts lack empirical
validation” (p. 367). In particular, though less parsimonious, the more complex model
structure does not, in general, improve forecasting accuracy substantially. Further, Farley,
Lehmann, and Sawyer (1995), using meta analysis, conclude that marketing mix effects are
seldom statistically significant in diffusion models.
These conclusions are counterintuitive, for they imply that managers’ marketing choices don’t make much difference. Bass, Krishnan, and Jain (1994) dispute this interpretation and suggest another: Marketing mix variables do matter, but frequently their effects are sufficiently simple and regular that they can be proxied by the mere passage of time. Thus, marketing mix effects will be embedded, net, in the p and q coefficients, or in M, but will not add explanatory value to a Bass model. If so, what is the use of diffusion models incorporating marketing mix effects? Krishnan, Bass, and Jain (1999) note that policy recommendations based on models that do not represent empirical reality are likely to be misleading. Mahajan, Muller, and Bass (1993) argue for their intrinsic value in allowing for the testing of hypotheses about the nature of diffusion processes. They conclude: “Given the importance of including marketing-mix variables in understanding diffusion dynamics, we do anticipate to see more empirical work including...other marketing-mix variables, such as distribution” (p. 388).

Gatignon and Robertson (1991) propose analyzing the role of marketing mix variables in terms of three constructs of the adoption process: 1) innovation awareness, 2) willingness to pay the market price and 3) availability of the innovation. Price and communication activities mainly influence the first two components of this adoption process and have received a significant amount of attention in the diffusion modeling literature in the past. Recent contributions have been mostly to assess empirically the changes in the importance of price and advertising as the new product diffuses and achieves high levels of penetration in the population (Parker and Neelamegham 1997, Parker and Gatignon 1996, Parker 1992, Parsons 1975).

The implicit assumption in most of the diffusion literature is that the new product is available when (if) the consumer is ready to buy. Perhaps this traditional assumption is due to the epidemiological analogy upon which marketing diffusion models are based (Sarkar
1998). In epidemiology, the virus can be considered as always "available" (that is, ready to infect new bodies). If this availability assumption is violated due to substantial and prolonged shortfalls in production, creating multi-year waiting lists of customers, the effects on diffusion dynamics can be substantial (e.g., Simon and Sebastian 1987). But there is another way in which supply may not happen: Too few retailers may decide to stock and sell it, creating obstacles for the potential consumer. Hence, the role of distribution should be difficult to ignore in the diffusion of a new product.¹

Following the arguments above, two aspects of distribution need to be taken into account. First, we discuss the direct influence played by distribution as market makers. Second, we analyze the differences between a channel or retailer type and the impact these differences have on the diffusion of the new product.

Retailers as Market Makers

Jones and Ritz (1991) and Jones and Mason (1990) note that in consumer markets, the support of retail outlets (stores, mail order catalogues, and the like) aids the diffusion process by making it physically possible to complete the transaction required to become an adopter. Further, retail display and sales efforts are a form of external influence that makes the new product salient and promotes it to the store’s shopper traffic. *Within a channel type, retail availability may speed diffusion, while retail unavailability may retard it.* If so, then retailers make markets by offering coverage, thereby spurring sales.

Jones and Ritz (1991) examine this argument by modeling attendance at movies (adoption, ignoring multiple viewings) as a function of how widely the movie is exhibited (number of screens showing the movie, i.e. outlets). They find that the relationship between screen availability and movie receipts is complex and difficult to fit. The best-fitting results are obtained by modeling M (a given movie’s potential number of first-time viewers) as a function of retail availability, although this does not greatly improve on the fit of a standard
Bass model. In contrast, Neelamegham and Chintagunta (1999) test the market maker argument in a Bayesian model of sales of movies, with encouraging results. They find that, of a variety of factors, distribution (that is, accessibility via multiple screens) is the single greatest driver of movie viewing. Interestingly, they also find substantial differences in market drivers across countries. Also in the movie category, Lehman and Weinberg (2000) show that the pattern of sequential release of movies to different types of distribution channels has a large impact on diffusion. They note, however, that the idea of a movie is not new. Hence, a film should diffuse faster and more easily than a new durable. The idea that greater retail availability builds diffusion of a risky purchase, such as a durable, remains untested.

It is noteworthy that the channels literature contests the idea that more coverage is always better from a sales perspective. For search or experience goods (as opposed to convenience goods), the support of the channel is thought to be critical to overcome consumer hesitation. Manufacturers often sell more if they build channel motivation and loyalty by offering channel members some degree of protection from horizontal competition, i.e. selective distribution (Frazier and Lassar 1996, Fein and Anderson 1997). This may be particularly the case for an innovative durable. Hence, the proposition that more coverage spurs diffusion of innovation is not without controversy, and there could be a curvilinear relationship when the coverage by all distributors in all channels is considered. Indeed, the argument for selective distribution does not apply to the degree of coverage by the “selected” distributors; for example, the coverage within the exclusive chain of a distributor would have a monotonic positive effect, and it is only when other chains are added that the effect could turn negative.

The Impact of Store Type on the Rate of Diffusion in a Channel
Taxonomies of retailers focus on the consistency of the store’s assortment, i.e. how closely related the end products are in their usage. Generalist stores carry many inconsistent lines, meeting independent market needs, while specialists do the reverse. Miller, Reardon, and McCorkle (1999) find that specialists and generalists coexist in a symbiotic fashion, as do large and small stores. They reason that small stores adapt to accommodate the presence of large stores.

Another important distinction among retailers refers to their pricing positioning. Discounters (retailers which consistently price under prevailing market prices) can be found in many forms and have significant effects on their markets. Lewison (1994) singles out full-line discount stores as an important category, describing them as offering a wide variety of branded merchandise (including store brands), both hard and soft goods, at discount prices. Their profit-making formula is to attract high traffic (due to the price/variety appeal and heavy advertising in the store’s trading area) in order to generate high turnover (which compensates for low margins), and to offer little service (in order to cut fixed costs). The full-line discounter’s aggressive advertising and pricing can create primary demand effects in a product category.

In the same vein, Levy and Weitz (1968) offer a taxonomy of stores based on a combination of the roles they play, their positioning, and their product assortment. A "general merchandise retailer" sells goods that are not perishable. A "supermarket" is a large store selling food and fast-moving consumer goods (FMCG), which makes it, for many consumers, their "habitual store" (visited on a fixed basis, e.g. once a week). "Combination stores" combine a supermarket with at least 25% of sales coming from nonfood merchandise, such as flowers and kitchen utensils. They may or may not discount. "Destination stores" offer some unique feature (e.g. selection, pricing, merchandising) that acts as a magnet for consumers, drawing them to make a trip specifically to visit the store.
Based on a combination of these features, a type of retailer exists in many (but not all) European retailing environments, although it is less well known in North America: The "all-under-one-roof value store" is based on a full-sized supermarket, hence is the habitual store for many consumers. It pursues a value-for-your-money positioning strategy, like a discounter, and is perceived as offering lower prices on the average (though some consumer groups charge that this is inaccurate and that consumers are misled by advertising and frequent promotions). What distinguishes this category is that under the same roof as the supermarket is a full line of other merchandise, and not merely smaller, lower-priced items, such as kitchen utensils. This category of retailer is truly a general merchandiser, selling high-priced, complex items such as garden equipment, furniture, computers, consumer electronics, and appliances. Hence, the stores are large and drain a substantial trading area. Typically, they are located outside of urban areas, making them a destination store. Their magnet is their breadth of assortment (one-stop shopping) and perceived value pricing. A critical feature of these stores is that they are both destination stores and habitual stores (due to the supermarket).

The all-under-one-roof value store goes by different names, even within Europe. In the United Kingdom, they are called "mass merchandisers" and focus heavily on food, with some space given to durables (e.g. some of the larger stores of the Sainsbury chain). In France, they are called "hypermarkets," cavernous stores in a warehouse-like building, selling such a large range of merchandise that families march in pushing multiple shopping carts. Multiple hypermarket chains have made the concept so ubiquitous that *les hypers* are a fixture in the French retailing environment (Le Bourdonnec and Noyer 1996, Chain 1993). The breadth of assortment of hypermarkets in France is extreme, but hypermarkets on a smaller scale, with a more limited assortment, are also common in Germany. French-style hypermarkets have been implanted successfully in Spain. The concept is taking root in some
developing countries, such as China, Argentina, and Vietnam. The all-under-one-roof value store has been tried seldom and the experiments have fared poorly in the U.S., although Wal-Mart is investing in the concept under the name of "supercenters" (Levy and Weitz 1998, Lewison 1994). And it does not exist in some countries (such as the Netherlands).

All-under-one-roof value stores may alter the dynamics of diffusion for a new durable product category. Inman and Winer (1998) show that when visiting grocery stores or general merchandisers, consumers make a large number of unplanned purchases, and do so more the more aisles they shop. Impulse buying is particularly common when making a major trip to a preferred store. A priori, this suggests that an innovation should diffuse more quickly when carried by all-under-one-roof value stores: Consumers make the trip, do so regularly, and have many aisles to shop. Hence, they are more likely to come across the innovation, which may prompt an unplanned purchase (adoption).

The counter to this argument is that, when purchasing an innovative durable, consumers sense risk. Thus, they may hesitate to adopt the innovation in the same store where they purchase toilet paper, butter, and pet food. For example, selling small motorcycles in French hypermarkets has proven problematic for reasons of legitimacy and image: Consumers prefer to pay a substantial premium to have the service, selection, advice, and continuity of personnel they expect from a dealer (Bendaoud and Marbot 2000). Similarly, market research suggests that German consumers, when buying kitchen appliances, sense risk and want trustworthy advice: They go to specialist stores to get it. Only when they are more confident, for example, when making a replacement purchase or buying a small appliance, will they consider a hypermarket (Euromonitor 1997). While a substantial fraction do free ride by getting the advice from specialists, then purchasing at a lower price in hypermarkets, at least half of the people who visit specialist stores buy where they see their selection and get their advice (Retail Intelligence 1998).
This suggests that all-under-one-roof value stores, like any other channel, will help the innovative durable diffuse by making some sales. But will they impact diffusion in other types of channels? One line of argument suggests these stores will have a positive effect on diffusion in other channels. The argument is that buyers infer that the durable is not really so new and risky after all when they see it embedded in a line of more mundane product categories in conventional retail outlets (Lele 1986, Moore 1991). This could lower barriers to purchasing the innovation—but not so low that people are willing to buy it on the spot. Some consumers may prefer to visit stores that are more focused on durables to make their selection.

Another line of argument suggests a negative effect on diffusion in other channels. All-under-one-roof value stores could cannibalize sales from other channels, and could do so over and above the impact of their lower prices. As a new durable diffuses within the one-roof channel type, that channel gradually builds an image as being a legitimate place to buy the product. This is, of course, true for any channel type. But a critical feature of one-roof value stores is that they are habitual stores, which gives them the opportunity to pre-empt what would otherwise have been a planned purchase in another channel. Ordinarily, as consumers become more interested in adopting a new durable, they gather information by shopping around for it in multiple channels. Consumers browsing a one-roof value store may be diverted to the display of the innovation and may purchase it in an unplanned fashion before investigating elsewhere. Alternatively, they may have investigated elsewhere and visit the one-roof value store for other categories while in the deliberation stage. The availability of the product where the consumer shops habitually may end the deliberation stage on the spot.

Of course, because of the price positioning of some distribution types, testing propositions about distribution requires controlling for price effects. Price evolution over
time and channel types is critical, since it is reasonable to expect that, all else constant, lower prices spur diffusion (Tellis 1988, Parker 1992, Golder and Tellis 1997). This is particularly important when a new durable represents a "next generation" of an existing durable. Next generation products (such as color television following black and white television) can offer superior utility but do not render the earlier generation useless. Bayus (1991) shows that adopters of the earlier generation hesitate to replace by purchasing the next generation, and those who do replace early constitute a segment that is less price sensitive and more concerned with style and image. Therefore, generally, *price should be negatively related to the propensity to buy a new consumer durable*.

**A CONCEPTUAL MODEL OF THE DEGREE OF MARKET COVERAGE**

Thus far, we have sketched a model of how distribution may affect an innovation’s diffusion. We now turn to the issue of when retailers choose to carry an innovation and propose a model of the degree of market coverage a channel will give to an innovation. We first consider the possibility that retailers may respond to consumer demand as “market takers.” Then we discuss the inter-relationships between types of retailers concerning how the coverage by some types of stores impacts the coverage by other types of stores.

*Channels as Market Takers*

We have argued that coverage speeds diffusion (availability spurs demand). This implies that distribution channels make markets. An intriguing (and possibly complementary) possibility is that demand builds coverage. This is based on the observation that distribution outlets put into place sensing mechanisms to monitor the development of demand (Coughlan et al. 2001). Using the information thus obtained, distribution channels attempt to forecast latent demand and then meet it by providing the requisite supply. If retail distribution outlets have good sensing mechanisms and move quickly, we may expect that *the greater the sales of a new consumer durable within a channel type, the greater the degree of*
coverage the product will command in that channel type. This means that channels are market takers.

Market taking and market making may both occur, and so quickly as to imply a simultaneous relationship between coverage and diffusion. This suggests that coverage and diffusion build on each other rapidly (Jones and Mason 1990). Little research exists to examine the plausibility of such a relationship for an innovation. Below, we turn to a stream of research that concerns new products in general, to develop further perspectives on the interplay of retailer-consumer behavior. The focus of this research is on fast moving consumer goods (frequently purchased items, such as diapers and bread). While such products are the polar opposite of new durables, insights can be gained from studying the relationship between their distribution and their sales.

Farley and Leavitt (1968), in a pioneering article, model the distribution of personal products as a simultaneous function of retail availability (fraction of stores carrying the item) and consumer response (sales). Their results do not support the presence of simultaneity, but this may be due to a small data set. Later treatments of the subject (Olver and Farris 1989, Farris, Olver, and De Kluyver 1989, Reibstein and Farris 1995) also view the acceptance of a consumer good by retailers and by consumers as being simultaneously determined. These articles focus on determinants of market share for frequently purchased consumer nondurables and present evidence of a concave relationship: High share products (brands) have more market share points per point of distribution coverage, i.e., their mere presence in stores translates into a disproportionately higher share of total consumer purchases.

Reibstein and Farris (1995) offer several complementary explanations for this apparent empirical regularity. In the U.S. (and in many developed economies), distribution of these products is dominated by a few large stores, while consumer preferences are influenced by advertisers’ communications. By combining pull efforts (e.g. heavy
advertising) with push efforts aimed at large stores, a brand can gain a high share of shelf space in stores that disproportionately influence market share. The category will also be distributed by a large number of smaller stores (which collectively move considerable volume). An initial high share earned in a few large stores can be parlayed into a commanding share due to the stocking decisions of small stores (such as convenience stores and small-town monopolists), which have limited shelf space and wish to carry as few brands as possible in a product category. Such stores may carry a brand simply because it has a fairly high share already, in order to minimize consumer dissatisfaction with the small store’s (limited) assortment.

Hence, at some point, consumer preference aside, a brand will gain a substantial increase in market share for a given increase in the number of outlets carrying it simply because it is the only brand available on many an outlet’s shelf. This explanation applies to a product category that is sufficiently low involvement that a consumer will buy what is there without searching further or foregoing the purchase. While this is hardly representative of behavior when adopting a new durable, it does represent the idea that stores observe how well a product is doing and use this information to help decide what to carry. Hence, distribution not only makes markets (creates market share) but can also be made by markets (share influences stocking). Retailers may be “market takers” as well as “market makers.”

This idea is examined empirically by Bronnenberg, Mahajan, and Vanhonacker (1999) in the context of new FMCG categories, such as ready-to-drink tea. This research finds evidence that distribution influences market share at all times (retailers are market makers). Further, market share also influences distribution (retailers are market takers), but only for a limited time, early in the life cycle of the category. Hence, there is simultaneity between coverage and consumer reaction to a FMCG category, but the effect is temporary.

*The Role of Scouts and Troops in Building Coverage*
How do retail channels decide whether to take the risk of carrying an innovative durable? We suggest that some stores are first movers, observed and imitated by other stores. Jones and Mason (1990) create a conceptual model in which certain stores play a first-mover role, both among retailers and among consumers. These stores, labeled “scouts,” are less risk averse and are more willing to experiment in a given product category. Hence, scouts play the role of innovators: they will stock a new product first. Other retailers (“troops”) play a follower or imitator role. They observe the scouts and wait to enter the category until it appears to them to be more “safe.” The interplay between scouts and troops creates a retailer adoption function, where the decision is whether to devote shelf space to a new product category.

We follow the Jones and Mason (1990) concept, but apply it to a channel type, rather than an individual channel member. We propose that the scout role is played by specialist retailers that 1) are large enough to be observable to other channel members, and 2) pursue a conventional specialist strategy of competing on advice and selection. These two conditions are necessary for imitation to occur in order for other retailer types to be able to "correct the data" to extrapolate to their own situations, using their experience, to forecast roughly how an innovation would do in their stores.

Why should specialists be the scouts? Compared to generalists, specialist retailers cannot meet as many consumer needs, hence cannot generate as much store traffic. To compensate, specialists can offer greater selection within each product type (hence, more comparisons), which may appeal to those consumers in the market for a type of item. Superior ability to compare in turn creates store traffic, which the specialist may convert into sales by offering expert advice from a focused sales staff. All else constant, specialist retailing personnel (such as store managers) may be able to amass greater expertise in the categories they sell: they may be able to derive a deeper understanding of consumer behavior,
product offerings, and supplier behavior. Put differently, a store manager or buyer who can concentrate on, say, exclusively consumer electronics should learn more about consumer electronics than a manager who must also cope with such diverse items as food, personal care, tires, gardening supplies and equipment, and home decorations. This in turn suggests that specialist retailers are more likely than are generalists to fit the Jones and Mason (1990) profile of a retailer that is willing to pioneer a new product category based on its own assessment that the category has potential and based on the store’s desire to differentiate itself. This possibly optimistic assessment of potential hinges on the retailer’s deep knowledge in a product category, while its willingness to take risks in a product category is based on having fewer alternatives in which to invest.

The Impact on Coverage of All-Under-One-Roof Value Stores

How do one-roof value stores influence the coverage decisions of other types of retailers? Adoption by one-roof value stores could spur imitation by signaling to other retailers that the product is salable (even with low service and shallow assortment) and/or by creating “must carry” effects for other stores (i.e., if a one-roof value store carries it, the product is not so “exotic” that consumers would not expect others to carry it).

All-under-one-roof value stores, however, offer intense competition for other retailers in the same trading area. They may discourage wider distribution by making it unprofitable for other stores to carry the new durable, either because of their widely-advertised low prices or because of possible free-riding effects. A common scenario is for buyers to investigate the product category by visiting full-service stores to make their selection, leaving these stores pronouncing themselves undecided, and then purchasing the item from a low-service, low-price outlet (Cespedes, Corey, and Rangan 1988). In addition, full-line discount stores are often part of high-volume chains that have tremendous purchasing power (Coughlan et al. 2001). Thus, they may be supplied more fully and more quickly than other retailers, which
becomes more important as delivery dates become later due to temporary shortages. In short, while it is likely that one-roof value stores have an influence on coverage by other retailers, it is an open question whether the impact is positive or negative.

**EMPIRICAL ANALYSIS**

*Product Category and Data Source*

Data requirements to explore the effects described are quite high, which would explain why no published effort exists linking distribution to diffusion for a durable. It is no small matter to find compatible data (including covariates) covering the entire consumer market and all relevant retailers carrying a new durable, going back to its introduction in a market and going on for an uninterrupted time series until at least the advanced growth stage and sufficient to test for possible effects of simultaneity and inter-type rivalry.

Such data are available, and in five European countries, to analyze the sales and distribution of a consumer entertainment durable good (32 bit video game consoles), available in two brands (Sega and Sony) and introduced in various European countries at different times, beginning as early as February 1994. Bi-monthly or monthly data on consumer sales and retail outlets for each brand in five countries have been provided by GfK Marketing Services. A multinational company emphasizing consumer products (particularly durables) and the tracking of retail operations, GfK covers 49 countries in four continents and is the world’s eighth largest market research firm based on revenue (Marketing News, 2001). Depending on the market, up to 24 bi-monthly periods or 49 monthly observations per brand per channel were available from introduction until the establishment of the category (up to as late as September 1999, depending on the country). The product category had not achieved saturation at that time; however, distribution coverage had. Therefore, all the information needed to analyze the relationship between sales diffusion and distribution evolution is contained in these five country data sets. The product is sold through multiple channels of distribution, which enables us to test the hypotheses about inter-channel rivalry that might
exist, especially during this period of new product growth. Such data enables us to test ideas that have been advanced in the past but have not been empirically tested due to the difficulty of obtaining such rich data for any category other than movies and FMCG. After accounting for entries into different channels by each brand at different times, up to 119 observations are available, depending on the country.

Thirty-two bit video consoles are next generation durables. Earlier generations, 8-bit and 16-bit machines, were well diffused already. In the judgment of GfK, the effect was to slow the initial diffusion of 32-bit machines, in particular, because 32-bit machines were much more expensive than the earlier generation. However, 32-bit machines offered a sharp and visible improvement in performance, and "gamers" are very sensitive to these differences. Software for the new machines was available from launch and was visibly superior. Contrary to the usual case of next-generation durables, this software was not backward compatible (could not be played on earlier generation machines). Hence, the later generation should have won over many adopters of the early technology, particularly as the initial prices declined. This suggests that the substitution effect (Norton and Bass 1987) is in part captured by the price effect in this application.

The product category is dominated by two brands that together obtained between 80% and 100% of the share in the product category over the period and were introduced at the same time. These products were initially expensive in all countries. For example, they were priced as high as 3000 francs ($600 at that time), which was half of the French monthly minimum gross salary. Prices declined over this period to a low of about 1000 francs, still a substantial sum that discourages purchase.

Channels and Countries

GfK tracks all distribution channels in which video consoles achieved any significant level of sales in a country, thus providing complete coverage of non-trivial channels. Table 1
shows the channels that emerged in each country. Both brands are sold through up to four types of distribution channels in each country. Distribution coverage and sales evolved at different rates with different patterns across these channels. It is therefore important to model how these evolutions differ and the inter-relationships between them. The channel descriptions below correspond to GfK groupings and labels, while their description is based on information from various market research reports (e.g. Retail Intelligence 2001, Euromonitor 1997).

*Large electronic goods specialists* carry only a defined family of products (consumer electronics and electrics) and operate large stores (often carrying a chain’s name), usually on the outskirts of population centers. Such stores tend to compensate for their relatively narrow product variety by offering a deep assortment of brands and models within a product type and by focusing on sales assistance and service. These specialists can play the scout role where they exist (in France).

*Electro retailers* are similar but are more heterogeneous in size. They also specialize in electrical and electronic products, but with greater emphasis on the former. They vary considerably in size, for which most of them compensate by organizing into buying groups or chains, usually small to mid-size. They, too, can play the scout role where they exist (Germany, the Netherlands, and Spain, where they are called "associated" electrical retailers because they join buying groups).

Both large electronic specialists and electrical retailers fit the criteria to play the scout role: specialization in the relevant category (consumer electronics), large enough to be observable, and following a conventional strategy of selling advice, service, and assortment without focusing on a price appeal. In contrast, two other groups of specialists fail one of these criteria. In Spain and the United Kingdom, *independent stores* are very small electric specialists, too small to be observable (as they do not participate in buying groups). Also in
the U.K., *electric multi specialists* are buying groups and large electrical chains. This group practices very aggressive across-the-board discounting. This makes it difficult for other retailers to extrapolate these stores' outcomes to forecast for their own stores.

*Department stores* carry a variety of unrelated non-food merchandise arranged in boutique fashion within a large building. Typically, these stores feature selection and image but do not offer a low price. *Toy specialists* carried the product in Germany, though not elsewhere. *Photo-retail stores* (essentially camera stores) carried the product in the Netherlands but not elsewhere. *Mail order* is a small but not inconsequential outlet for video game consoles. This channel type warranted separate coverage in France and the U.K., but was combined with department stores (often the parent firm) in the Netherlands and Germany, either because they were minor or because breaking them out would violate data confidentiality requirements.

The all-under-one-roof value store exists in two forms. *Hypermarkets* are well established in France and Spain on a large scale. In Germany, they tend to be smaller, with less coverage of durables and minimal merchandising support, and to be harder for the consumer to find. France, the birthplace of hypermarkets, is also where they have achieved their greatest success worldwide, leading some observers to claim that the weight of hypermarkets makes France one of the world’s most difficult retail markets in which to compete (Eveno and Mattei 1993). French chains are established in Spain, although their market penetration, hence ease of access for consumers, is much lower than in France (due to restrictive zoning). Hypermarkets do not exist in the Netherlands. In the U.K., *mass merchandisers* (e.g. some stores in the Tesco chain) fill the role of one-roof value store, although they tend to be more focused on perishables than are the hypermarkets.

A review of European consumers concludes that the five retail environments differ considerably, even though they are converging (in particular, in terms of increasing price
sensitivity in general) (Leeflang and Raaij 1995). Market research reports concur, pointing to
differences in consumer habit and preference, as well as differences in the retail choice set
itself. Whether these differences influence diffusion patterns is an empirical question: Hence,
we model each country separately. Two-brand competition exists in three markets (U.K,
France, Spain), while only Sony gained any following in the Netherlands and Germany.

The Model

In order to test the hypotheses of simultaneity and inter-type rivalry, an econometric
model of sales and distribution coverage is developed with a simultaneous relationship
between sales in a channel type j (j = 1,...,4) for a brand i (i = 1,2) and the brand's coverage of
the stores of type j. The sales of brand i in channel type j at time t are expressed as a
diffusion model where the market potential of the product category M becomes smaller as the
penetration of the product through either of the brands increases. This corresponds to the
saturation effect, that is, until the point when all potential adopters have already acquired
the product. The market potential is specified for the product category, as few consumers
possess multiple brands in that product category. Consequently, these brands are substitutes,
whereby adoption of one brand decreases the total market potential available. This is
consistent with substitution models (e.g., Norton and Bass1987).

The diffusion model, shown in Equation (1) below, is followed by its terminology
(first all the variables, then all the parameters to be estimated) and its rationale.

\[
X_{ij}(t) = \left( p_0 + p_1 D_{um1} + p_2 D_{um2} \times v_{ij}(t) \right) X_{ij}(t) + q o n_j(t-1) + \pi_j \Delta_j + q \times n_j(t-1) [1 - n(t-1)] M \\
\]

where:

- \( X_{ij}(t) \) = sales of brand i through channel type j at time t, i.e. adoption
- \( D_{um1} \) = 1 if t = October-November bi-month, and 0 otherwise,
- \( D_{um2} \) = 1 if t = December-January bi-month, and 0 otherwise,
- \( v_{ij}(t) \) = price of brand i in channel type j at time t relative to the average price
  across brand and over the period of analysis,
\( d_{ij}(t) \) = distribution coverage of brand i in channel type j (weighted for volume of sales in product category),
\( \Delta_j \) = 0 if \( j = h \) (hypermarkets or mass merchandisers) 1 otherwise,
\( n_{ij}(t-1) \) = penetration (cumulative sales) of brand i in channel type j up to time \( t-1 \),
\( n_{i'}(t-1) \) = penetration (cumulative sales) of the competitive brand \( i' \) up to time \( t-1 \),
\( n(t-1) \) = penetration (cumulative sales) of both brands up to time \( t-1 \),
\( M \) = market potential for product category,
\( p_0 \) = basic propensity to buy at a given period without influence from prior buyers,
\( p_1, p_2 \) = seasonality effect on propensity to buy,
\( \beta \) = impact of price,
\( \delta \) = impact of distribution coverage,
\( q_0 \) = propensity to buy through the influence of prior purchases of the brand in the channel type,
\( \pi_h \) = propensity or resistance to buy a brand in a channel type other than hypermarkets/mass merchandisers through the influence of prior purchases in hypermarkets/mass merchandisers,
\( q_c \) = propensity or resistance to buy a brand through the influence of prior purchases of the competing brand.

The propensity to buy brand i in period t from a member of channel type j, for those who have not bought any brand in the product category, follows a diffusion process with the dual effects of 1) buying under the influence of prior buyers of the product category and 2) buying without being influenced by prior buyers.

The philosophy underlying this model is that marketing mix effects (in this case, distribution and price) are best represented as components of \( p \), the coefficient of external influence. This is because marketing efforts give consumers motive and ability to purchase. This operates whether or not prospects have been exposed to earlier purchasers. However, in the diffusion literature, the marketing mix is sometimes incorporated not through a coefficient of influence but indirectly through the determination of market potential, M. The rationale is that marketing efforts enlarge the market. Without disputing this point, we argue that it is more descriptively accurate to incorporate marketing efforts as an ongoing incentive to adopt (apart from the existing pool of adopters). Summarizing mix effects outside the process coefficients may lose information. Of course, it is conceptually reasonable to incorporate mix effects in both
M and p, but this yields an intractable model. (As will be detailed in the next section, incorporating mix variables into a model of M had little impact on the estimated potential in any case.)

Buying without receiving the influence of prior buyers depends on the season, because the product category is seasonal around the end-of-the-year holiday season. This is represented in Equation (1) by two dummy variables, one (Dum_1) for the bi-month October-November and the second (Dum_2) for the period December-January. In addition, some dummy variables for channel types were added to the coefficient of external influence to account for possible channel-specific effects on diffusion other than the effects proposed in the conceptual model.

The marketing mix variables should also be predictors of the propensity to buy a brand in a channel type even without the influence of prior purchasers. Two key variables for this product category are the price of the brand in the channel and the availability of the brand in the distribution outlets relevant for the product category. These marketing variables are represented by d_{ij}(t) the weighted distribution coverage of the brand in the channel at time t and by ν_{ij}(t), the price of the brand. This is expressed relative to the average price across brands, channel type, and periods for normalization purposes. This maintains differences in prices across brands and time, as prices have a tendency to decrease after introduction (Golder and Tellis 1997). A third variable is advertising, which is substantial in this product category. Unfortunately, brand advertising expenditures are not available. However, the pattern of expenditures followed the pattern of seasonality. Hence, the seasonality dummy variables would capture advertising effects, so that the omission of this variable does not bias the other results.

The propensity to imitate is modeled by decomposing the imitation effects within brand and channel, the imitation effects due to the penetration of the brand from buyers of that brand in the all-under-one-roof value store (hypermarkets or mass merchandisers), and the imitation of
the competitive brand’s success. These are represented respectively by the parameters $q_0$, $\pi_h$ and
$q_c$ in Equation (1). 

In a simultaneous fashion with sales (which are hypothesized to depend on the degree to
which the brand is available in the distribution channels), distributors may decide to carry the
brand based on the current period sales level. Consequently, the extent of the distribution
coverage of brand $i$ in channel type $j$ at time $t$ can be modeled as a function of the same period’s
sales in a simultaneous system of two equations. This second equation is shown as Equation (2).

$$d_{ij}(t) = 1 - \exp\left\{ -\left[ a_0 + a_1 X_{ij}(t) + b d_{ij}(t-1) + \phi_s \Delta_j^s d_{is}(t-1) + \phi_h \Delta_j^h d_{ih}(t-1) \right]\right\}$$  \hspace{1cm} (2)

where:

$X_{ij}(t)$  = sales of brand $i$ at time $t$ in channel type $j$,

$d_{ij}(t-1)$  = distribution coverage of brand $i$ in channel type $j$ one period ago,

$\Delta_j^s$  = 0 if $j$ = scouts (large specialists), 1 otherwise,

$\Delta_j^h$  = 0 if $j$ = hypermarkets, 1 otherwise,

$d_{is}(t-1)$  = scout distribution coverage of brand $i$ one period ago,

$d_{ih}(t-1)$  = hypermarket distribution coverage of brand $i$ one period ago,

$a_0$  = intercept,

$a_1$  = simultaneous reaction of channel type $j$ to sales of brand $i$ at time $t$,

$b$  = inertia, or effect of prior distribution coverage of brand $i$ in channel $j$,

$\phi_s$  = propensity to imitate/avoid actions of scouts,

$\phi_h$  = propensity to imitate/avoid actions of hypermarkets.

Distribution is expressed as a percentage of distribution outlets carrying the brand in the
channel at period $t$. Therefore, the model's functional form should reflect the saturation level.

Jones and Mason (1990) point out a complication: Consumers may or may not adopt a new
durable, but they cannot reverse the decision once taken (although they could discontinue
using the product). Distribution outlets, however, may discontinue the product (dis-adopt).
This makes it conceptually dubious to model distribution as a diffusion process akin to the
consumer diffusion process.

Observations indicate that the maximum penetration level for distribution of video
game consoles approaches one, although with some declines (store discontinuation of the
brand) in some channels during the observation period. This prevents the use of a typical
diffusion model for the distribution coverage equation. Consequently, Equation (2) shows decreasing returns to scale of the effects of the variables which affect the distribution coverage of a brand in a channel at a given time period. No strong seasonality pattern was detected by inspection of graphs in any of the channels.

Distribution coverage in one channel type is shown to be a function of sales for the brand in the channel type in order to test the hypothesis of simultaneity. A lagged distribution coverage term is introduced to indicate whether there is inertia in the process. Finally, possible inter-channel imitation effects are modeled by introducing lagged distribution coverage in scouts (large specialists) and in all-under-one-roof value stores, as possibly impacting distribution coverage in the other channel types.

The model expressed in equations (1) and (2) assumes that the differences in diffusion across brands and channels are explained by the marketing mix variables and the specified "imitation" effects. This enables us to pool all the data across brands and channels, without assuming homogeneity of the diffusion parameters. Although in principle, it is possible to estimate the models separately for each channel and/or each brand, the results are unstable due to the small number of degrees of freedom. Furthermore, several of our hypotheses involving effects across brands and/or channels could not be tested. Consequently, the model is estimated using all the data available.

RESULTS

Step One: Estimating Market Potential

It is standard practice in diffusion modeling to proceed in two steps, wherein the first step is to estimate market potential independently in order to avoid the instability of parameter estimates (Tigert and Farivar 1981). The market potential M was first estimated by several methods, which yielded a range of estimates of unit sales. Three different approaches were used to obtain these estimates. The first method involved estimating a Bass
diffusion model aggregated across channels and without explanatory variables (except for the two seasonality dummy variables). This estimation was performed separately for each brand, as well as for the total market.

A second method consisted of estimating the market potential separately for each brand in each channel, i.e., without modeling explicitly the inter-channel and inter-brand competition. This does not necessarily mean that each brand diffuses independently of the other: The empirical estimates of the diffusion parameters reflect the empirical data of the diffusion of a brand, and this may be partially the result of the other brand’s diffusion. While these individual models may be appropriate for the estimation of the market potential, this does not enable us to test our hypotheses. However, by taking the sum of the market potential by brand by channel, one may get a reasonable estimate of the total market potential. Again, this estimation did not take into account the marketing mix variables. The results obtained were similar to but slightly higher than those obtained using the aggregate models across channels of distribution. These slightly higher numbers appear to reflect the lack of control for competitive effects.

Finally, a third method involved using the marketing mix variables such as in the final model described in Equation (1) at a level aggregated across channels. Whether estimated separately for each brand or aggregated across brands, the results provided similar estimates, but significantly lower than when the marketing mix variables are not included.

For the rest of the estimations, the value of M was fixed in order to avoid the instability that has been demonstrated when estimating the diffusion model parameters, especially with multiple parameters introduced due to the incorporation of marketing mix variables. However, given the range of market potential estimates obtained, sensitivity analyses were performed re-estimating the model for different values of M within the ranges shown in Table 2, performing a grid search for various values of M in the range. While the
values of the parameters and their significance levels vary and the model fit decreases for very low values of M, the results are extremely stable at higher values. For example, in France the R-squared of the sales equation varies only by 0.2% between values of M in the interval [2500000, 6000000]. The R-squared decreases sharply with values of M below 2.0 million units.

Step Two: Estimating Coverage and Diffusion Models

Equations (1) and (2) were estimated simultaneously with two- and three-stage non-linear least squares. The results are almost identical, with no significant gain in efficiency when correlations between the contemporaneous error terms of the two equations are taken into consideration. The results from the two-stage-least-squares estimation are reported in Table 3. Examining the table by rows leads to the conclusion that the effects vary substantially by country. Further, every hypothesized effect does occur in at least one country. These results are presented in a different format in Table 4.

Let us begin with the points of commonality in the diffusion model. As is proper in a Bass model, all the estimated values of the coefficient of external influence, $p_0$, are positive and statistically significant, either through direct estimation (Spain) or through the sum of the channel-specific dummy terms. The propensity to buy one of the brands in any channel increases around the end-of-the-year holiday season, as shown by at least one positive, statistically significant seasonal dummy variable in all five countries. This corresponds to the nature of the product, which is popular as a gift.

The price of the brand in the period, compared to its level over channels and over time, also affects the propensity to purchase the product. All five markets are clearly price sensitive: All the $\beta$ coefficients are negative and statistically significant (-.848, -2.453, -5.830, -1.674, and -.853). The lower the price, the higher the adoption rate and the faster the diffusion of the brand.
In addition, in the three markets in which there was two-brand competition, the diffusion of one brand retarded the diffusion of the other, as shown by negative and statistically significant estimated values for \( q_c \) (-.593, -.269, and -.016). These results occur over and above the fact that market potential is depleted faster: They also occur as an imitation process. The same result is observed when modeling the market potential of the brands separately.

Channel coverage also shows varied results. In two markets, lack of distribution coverage prevents sales from occurring and slows down the diffusion of the brand in the market. Channels make markets (increase diffusion) when they offer more coverage in France (.123, t statistic 1.61, p < .06) and the Netherlands (7.989), but not in Spain, the U.K., or Germany. It is important to note that lower distribution can be the result of decisions by channel members not to carry the product or a brand, or may be the result of a stock out. In turn, a stock out can be the result of the amount of minimum inventory carried by the channel members, or may be the result of a strategy used by manufacturers of supplying some channels or channel members with different priority levels. Whatever the reasons, the results indicate that widespread availability of the product can be, but is not always, a condition for the sales to occur. These results are also important because the coverage term controls for distribution availability (and therefore stock outs) in the estimation of the inter-channel rivalry effects (to be discussed).

The product is subject to a significant imitation phenomenon in several markets: The propensity to buy the brand through a distribution channel increases with the number of prior buyers of that brand in the same channel. The coefficient of internal influence, \( q_0 \), is positive and statistically significant in France (.089), Spain (.785), and the U.K. (.061), although it is not statistically significant in Germany and the Netherlands. This imitation effect can, however, be decomposed. In addition to a component that concerns the imitation process
within the channel itself ($q_0$), there is an effect due to all-under-one-roof value stores. The success of such stores selling the brand results in a decreased propensity to buy from other channels in France (-.746). This “spoiler effect” effect is asymmetric, as attempts to incorporate other inter-channel imitation effects were not significant. As noted earlier, we control for the availability of the brand through the distribution coverage variable: A stockout is reported in the data as zero coverage. Thus, the alternative explanation that channels other than hypermarkets merely increase their immediate sales when hypermarkets stock out does not explain this phenomenon. The hypermarket's negative effect on sales in other channels occurs with a delay associated with the nature of imitation effects.

Strikingly, the effect of the one-roof value stores can also be positive: A brand’s success in German hypermarkets is associated with an increased propensity to buy from other channels in Germany (1.406). In Spain and the U.K., however, sales in one-roof value stores have no statistically significant impact on brand sales by other channels.

Concerning the distribution coverage equation, inertia within a channel is significant. In four of five countries, once a distribution channel carries a brand, it tends not to drop it (1.828, .651, 2.081, and 2.651 for France, Spain, Germany, and the U.K., with no effect in the Netherlands). It is worth noting that, except for the U.K., the initial penetration of a brand in a channel is always substantial (.436, .486, .854, and 1.642). This may be explained by several factors. Many channels are made of a few chains, which suggests that adoption by one chain means a jump in coverage. This can also be due to the competitive nature of the distribution channel members, who are always looking for new products to bring to the market. Finally, it can be explained by the power of the manufacturers, at least in this product category.

Why does the U.K., where all these conditions hold, show a negative intercept
Rather than taking on the product straightaway, U.K. retailers instead react strongly to emerging consumer demand: They are market takers ($a_1 = .002$). And once they add the product, they are loathe to discontinue it ($b = 2.651$), perhaps reflecting the fierce retail rivalry that characterizes the British market for consumer electronics. In particular, British channels are more likely to carry the product if the mass merchandisers do ($f_h = .602$), an example of the “must carry” effect of coverage by an all-under-one-roof value store.

The opposite of the “must carry” effect occurs in Germany: Channels tend to shun the product the more it is carried by one-roof value stores ($-2.499$). This “avoidance effect” may reflect other channels’ fear of free riding by hypermarkets. However, this explanation is belied by the positive effect, mentioned previously, that sales in German hypermarkets have on sales in other channels. German hypermarkets appear to increase consumer interest by offering coverage, but it is the other channels that actually reap the sale. A possible explanation lies in the nature of German hypermarkets: Compared to their French counterparts, they are very inconveniently located and relatively small, focus more on small items and perishables, have limited opening hours, and offer weak merchandising. This may explain why they have such difficulty leveraging their habitual store status to gain sales of the innovation. The hypermarkets’ nature may also explain why other stores appear to punish manufacturers for selling through hypermarkets: They may wish not to be associated with a brand that will enfranchise a competitor that does not uphold brand image well.

All-under-one-roof value stores have no impact on coverage decisions by other channels in France and Spain. Hence, the effect of such stores on coverage decisions by other stores shows considerable variation over the four countries where such retailers exist.

Most of these results indicate a lack of evidence of simultaneity between diffusion and coverage. In France, channels are market makers but not market takers. The reverse condition holds for Germany and the U.K.: Channels take markets but do not make them.
Spain, neither market making nor market taking occurs. But in the Netherlands, there is evidence of simultaneity. Dutch channels react to contemporaneous sales ($a_1 = .001$), and Dutch sales are boosted by contemporaneous channel coverage ($d = 7.989$). This sensitivity accords with the lack of inertia, mentioned earlier, in Dutch coverage.

The scouts and troops effect appears in three of the four markets where a possible scout retailer type exists. The hypothesized behavior of troops imitating scouts occurs in Spain ($1.374$), Germany ($1.917$), and the Netherlands ($1.321$), although it does not occur in France.

**DISCUSSION AND CONCLUSION**

These results suggest that rivalry among different types of channels has a very powerful impact on the diffusion of a brand of a new durable among a consumer population, as well as on a channel's decision whether to carry the product at all (coverage leading to availability). Different theoretically plausible distribution effects, as discussed earlier, for both the adoption and the coverage models, are demonstrated. Considering that the product category is held constant, these results show that differences in retail environments are substantial. This implies that a manufacturer is ill advised to follow a policy of global, or even regional standardization of distribution policies.

Distribution availability appears to operate in two ways. As indicated by the channel-specific dummy terms, the presence of the new durable in retail stores/outlets speeds the adoption process of the innovators, those who purchase under the influence of external factors (such as ratings services, advertisements, and their own inspection of goods in the store). In two markets, France and the Netherlands, distribution coverage also fuels the internal influence effect, that is, the imitation by later adopters of earlier purchases in the population. These findings underscore the importance of having significant distribution availability.
However, these results indicate there is more to the explanation than mere availability. Where the innovation is presented can have an impact. The all-under-one-roof value store can alter the pattern of diffusion, and can do so in a manner that either benefits or hinders other channels. In France, such stores negatively impact sales in other channels. The better French hypermarkets have been doing with the product, the worse the other channels will do with the same product in France. This finding lends credence to trade press reports that hypermarkets have a crushing impact on other forms of commerce in France (Le Bourdonnec and Noyer 1996). It is noteworthy that the hypermarket “spoiler” effect for other channels in France appears to exist for reasons independent of price and current stock outs. Price effects (which are large) are already controlled for. And it is the past sales of the brand of the new consumer durable in hypermarkets that depress current sales of the brand of durable in other channels. It has been argued that occasional production shortages oblige manufacturers to allocate their stock temporarily, and that this occurrence hurts other channels because hypermarkets use their purchasing power to force manufacturers to serve them first. However, shortages are only occasional and temporary, whereas the spoiler effect of the hypermarkets is stable.

Why do the French hypermarkets’ success with the new consumer durable depress sales in other channels? One possible explanation is that many consumers visit hypermarkets very regularly, treating them as their habitual grocery store and going there routinely for non-grocery shopping as well. Indeed, outside of Paris (where zoning has always restricted their development), hypermarkets are so ubiquitous that the French government has recently changed zoning laws to make new ones difficult to build, citing retail saturation and negative effects on urban commerce. That consumers visit hypermarkets regularly gives these stores a valuable sort of first-mover advantage: Consumers may see the hypermarkets’ displays of the product before they ever go shopping for it, or after they have been shopping but before they
have decided to act. Consumers may know more and more prior adopters who bought their brand in a hypermarket, legitimizing the idea of purchasing there. The result may be that later adopters never do make a shopping trip in order to make a purchase of the new durable. Instead, they one day bring home a video game console along with household supplies, garden products, and this week’s groceries from the hypermarket. In this vein, Costil, Dougin, and Schamberger (1998) track the history of a number of product categories (such as flowers and insurance) that were once unavailable in hypermarkets. Once hypermarkets began carrying them, the product categories’ sales became concentrated in the hypermarket channel, at the expense of other channels in France.

In short, hypermarkets occupy a privileged position with French consumers. This translates into compelling advantage, and apparently not merely for fast moving consumer goods but even for innovative consumer durables. It is noteworthy that French hypermarkets, now blocked from opening new stores in most trading areas, have responded by re-examining their assortments, with the objective of increasing profit contribution per square meter. These results suggest that innovative consumer durables are not outside of their reach.

Given that the U.S. is heavily covered in retail terms, could French-style hypermarkets become implanted there? Lewis (1998) suggests that this is gradually happening already: He reports on a movement by mass merchandisers to devote ever increasing, sometimes quite significant space to key grocery categories. These include not merely easy-to-handle categories (such as canned food and snacks), but hard-to-handle grocery categories such as dairy and frozen foods. This path leads general merchandise stores to evolve into hypermarkets. There are also ongoing hypermarket experiments (known as "supercenters") in the U.S., notably by the Wal-Mart chain.

It is notable that the business press regularly refers to large specialty stores as "category killers," meaning that they draw so much business that they kill the trade for other
merchants. Our results suggest that, in developed economies, the real category killers are not the specialists but are the ultimate generalists. The reason for this effect is not the drawing power of a store whose assortment makes it a destination store. The reason is the ability of a habitual store to shorten the deliberation stage of the consumer's decision-making process.

These implications should, however, be tempered. In retailing, hypermarkets have been called "the French exception," and perhaps for good reason. The spoiler effect of all-under-one-roof value stores occurs only in France. Indeed, the same French chains exist in Spain, yet they do not directly influence sales of other channels (although they may indirectly take sales from other channels due to their price effect). One explanation is that France is saturated with hypermarkets. In contrast, Spanish zoning authorities, seeing how hypermarkets have hollowed out French town centers, have vigorously limited the implantation of hypermarkets on Spanish soil.

All-under-one-roof value stores have no effect in the U.K. A possible explanation is that British mass merchandisers are smaller and more focused on perishables: they are less well identified with durables and merchandise them less vigorously. Further, in the U.K., there is fierce competition in the durable category from well-established electrical chains that vigorously discount across the board. This configuration is unique to this retail environment in Europe, and may blunt the mass merchandisers' ability to leverage their habitual-store status to sell electronic and electrical durables.

Indeed, one-roof value stores may even benefit other channels. This is the case in Germany, whose hypermarkets do not match the competitive position of their French counterparts in terms of size, accessibility, opening hours, breadth and depth of assortment, and merchandising. Thus, their coverage appears to stimulate the innovation's sales--in other channels! The mechanism may be that hypermarkets, by a mere exposure effect and by virtue of carrying the innovation at all, present the innovation to consumers (an external
effect) and suggest that it is less risky than might seem—but not so much so as to induce purchase on the spot. Consumer still make their selection in other, usually more specialized outlets, aided by the advice and selection these outlets usually provide.

Of course, distribution is not the only factor that drives the diffusion of an innovative consumer durable. Both simple innovation effects and simple imitation effects (the coefficients of external and internal influence) are substantial; they are not eliminated by the presence of covariates. The significant marketing mix variables augment the traditional Bass model. An important imitation influence is that of the diffusion of the competing brand. These brands compete vigorously, and the success of one brand in a channel comes at the expense of the other in the same channel type. It is likely that certain types of outlets create conditions that favor one brand over the other. This could be reflective of the channel’s sales personnel (or lack thereof), or the channel’s method of creating displays and locating the merchandise in the store (or catalogue). Selling a brand leads to selling more of it: The implication is that a channel type may come to be known as a place to buy a particular brand, which may alter the nature of the shoppers it attracts.

Declining prices plainly accelerate diffusion. This suggests that the incentive for a price war is strong, as price cuts result in big sales increases. From the manufacturer’s viewpoint, however, it may be more profitable to actually slow diffusion by introducing at prices high enough to create skimming profits from the innovative segment and then bringing prices down steadily but gradually to capture later adopters, albeit at lower margins (Bayus 1992). This would assume, however, the existence of some barriers to entry. If this is not the case, our results concerning the effect of price, combined with the negative impact of competitive sales, tend to indicate that a strong pioneer advantage can be obtained by introducing the first brand with a low price.
Why do some channel types carry the brand, while others discontinue it or refuse to take in on? There is strong evidence of imitation of the coverage decisions of scouts. There are four markets where there exists a specialist channel, large enough to be observable, pursuing a conventional strategy of selection, service, and advice. In three of these four markets, other channels act as troops, observing the scouts with a lag and imitating their stocking decisions. This suggests that manufacturers seeking to gain distribution would do well to target such stores. Scouts act as innovators, while other stores act as imitators.

In general, other stores do not react only to scouts. In three of five markets, channels also react to contemporaneous sales: they are market takers. This fits the usual conceptualization of a diffusion process: success begets success. Here, sales beget coverage. The implication is that, in the aggregate, channels have accurate and timely sensing mechanisms: they are quick to spot a trend and join it. Of course, if sales fall, channels will tend to drop the brand. But this effect is tempered by the considerable inertia that channels exhibit in coverage in most markets, likely due to the investments they make to carry the brand in the first place.

For the most part, distribution coverage does not exhibit a negative effect of all-under-one-roof value stores, even in France. In the U.K., channels are more likely to carry the innovation when mass merchandisers do, which may indicate a must-carry effect: consumers expect a proper channel to carry the product if even the ultimate generalists do. It is intriguing that it is only in Germany that other channels tend to avoid the brand the more it is offered to hypermarkets. This may be a way of punishing suppliers for enfranchising stores that do not support the brand well, yet undercut competitors with their pricing. In other words, channels may retaliate when they perceive the possibility of free riding. Why this happens only in Germany may be a reflection of the power of other channels vis-à-vis the lone supplier. Sony may actually have suffered from the lack of Sega's competition in
Germany. With only one brand, market potential in Germany is lower than in France, in spite of Germany's greater size and wealth. This may make the entire video console category less appealing to the consumer (lower pull), thereby increasing the channels' leverage vis-a-vis the supplier (Steiner 1993).

These results add to a growing literature that demonstrates that the effect of distribution on diffusion is likely to be both significant and complex. Capturing these effects would be useful for multiple purposes. It would be descriptively useful for theory building. It would offer guidance to managers attempting to speed and deepen the acceptance of innovative products and services. It would be useful to normative modelers in suggesting how to structure a system in order to examine optimal behavior (Mahajan, Muller, and Bass 1993). Finally, capturing distribution effects on diffusion could significantly improve the forecasting ability of a model such as the Bass model because the likely complexity of distribution effects on diffusion calls into question whether it is safe to assume that the omission of retail availability has little impact on model fit.

Of course, this study is subject to limitations. In particular, the model is tested on one new durable. Although the data requirements are formidable, further research to examine the generalizability of these results would be valuable. The model specification presented here can be adapted to include other causal factors and to fit a broad range of settings.

A fascinating issue for future research is what will be the impact of electronic commerce. Will websites (or certain types of websites) become scouts, for example? More generally, how will Internet distribution alter the dynamics of the diffusion of a new consumer durable? Will it supplement or cannibalize other forms of distribution, and under what conditions?

Another issue is that of selectivity of distribution. These results suggest that coverage tends to increase diffusion, i.e., that more coverage is better. But for certain brands, product
categories or market types, consumer acceptance might be enhanced if coverage is limited to selected outlets (Fein and Anderson 1997). This suggests there is an optimal degree of coverage that is less than 100% in some circumstances. The video console category is one for which retailer support may be less important. The product is fairly simple to demonstrate and to stock (it is a boxed product with few stock-keeping units). Given the lack of variety of attribute levels and complexity, the specialist's expertise may not be as important to the consumer as for other durables.

These results indicate that distribution channels are frequently market takers. They raise an issue: By what means do channels ascertain consumer response? What cues do they use and how do they process the information to arrive at a decision to accept or reject a new consumer durable? These issues, which have been studied for routine "new products," may well need a different set of answers for true innovations.

Inter-type rivalry in channels appears to be a powerful factor. If discounters do take sales from other channels, as they do in the context examined here (via the price effect), what are the implications for all the parties? For example, how should other channels manage their product portfolios? Should they shift away from product categories once discounters adopt them? Should they insist that the manufacturer give them special terms, such as their own branded variants? Should they adopt blanket policies favoring manufacturers that limit their distribution? Related questions exist for manufacturers. Should they attempt to slow down the move of a product category into discount outlets? Should they try to contain inter-type rivalry or accept it as an inherent feature of an evolving business? Should they follow a policy of targeting one type of outlet early, then moving to another outlet later (and if so, when)?

These findings underscore that diffusion is not out of management's hands once a product comes to exist. What managers do matters. Greater availability (distribution
coverage) and lower prices spur adoption. Competitive interplay matters as well, and it is not the case that competition merely increases primary demand. The success of one brand can markedly slow down the diffusion of another, as is demonstrated here. This competitive effect compounds, as the strength of imitation effects means that early success for one brand creates fewer adopters, hence less imitation in the future, for the other brand. In short, we demonstrate in this study the many roles played by distribution in the diffusion of an innovation, and that the distribution environment explains differences in the diffusion process evidenced across several European countries.
In contrast, the network externalities literature does recognize the importance of distribution (“accessibility,”) in influencing the rate of adoption of a network technology, which in turn influences the likelihood of one technology becoming the industry standard (Saloner and Shepard 1995).

2 The hypermarket concept was pioneered in France in 1963 by Carrefour (symbolized, in many consumers’ minds, by store personnel on roller skates).

3 A generalist may attempt to overcome this disadvantage by appointing product category buyers and pooling their purchases over stores. However, this approach makes it difficult to appreciate local market factors.

4 For example, a French hypermarket can confront a store manager with 140,000 stockkeeping units to manage (Le Bourdonnec and Noyer 1996).

5 The specification of Robinson and Lakhani (1975), where the marketing mix variables affect the marketing potential left in period t, is identical to modeling their effects on p and q, although with the additional assumption of equal effect on p and q.

6 The modeling of seasonality in diffusion models has not been addressed in the literature, although seasonality in general has been most recently by Radas and Shugan (1998). While multiple options may exist, we kept the specification of these dummy variables as affecting the propensity to buy without being influenced by others (i.e., the coefficient of external influence), after considering models using deseasonalized times series and dummy variables on the coefficient of internal influence and on the market potential. The retained specification appears less complex and provided more stable results. Where data are monthly, the two dummies represent the months of November and December.

7 The product sales represent a minor proportion of the sales of that broad product category used for weighting the number of outlets carrying this product.

8 When the category is a consumer durable, many, if not most consumers will adopt only one. Therefore, when examining all brands in a new product category, it should be expected that the diffusion of any one brand is slowed by the diffusion of competing brands (Norton and Bass 1987). This appears as a negative imitation effect, above and beyond the fact that the market potential is depleted by the prior sales of all the brands. The greater the base of adopters in a given channel of the competition, the stronger the competition’s ability to provoke imitation (that is, consumers adopting the same brand of the product in the same channel). Operationally, the greater the pre-existing pool of adopters of competing brands in a given channel type, the lower the current period’s purchases of a given brand in a given channel type.

9 In fact, a typical diffusion model was estimated with similar results to those reported in table 1. However, the coefficient of internal influence was negative, reflecting the observed tendency for coverage not to remain at the peak level over time. Consequently, the negative exponential model with saturation at one but the possibility of increasing and decreasing over time appears more representative of the phenomenon.

10 It requires some investment for a channel member to carry a new consumer durable. Not only is there the opportunity cost of shelf space and selling effort that could be devoted to another category, but there is also a certain adaptation needed. At minimum, the items must be entered into the outlet’s computer system, catalogues, and advertisements, and sales and clerical personnel must be trained to present or record sales of the new durable. Some products require additional investment, such as repair facilities. And all new categories of product require a psychological investment on the part of the outlet’s decision makers, who must agree to “bet” that the product can succeed. Once a channel member has made these financial and psychological investments, the decision to discontinue coverage is not easily made: switching costs now exist. These arguments suggest that for a given brand in a given channel type, the extent of current coverage is positively related to the extent of previous coverage, i.e., that coverage exhibits inertia.
<table>
<thead>
<tr>
<th>Country</th>
<th>Channels (code)</th>
<th>Scout</th>
<th>Troop</th>
<th>All-Under-One-Roof Value Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>Department Stores (1)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hypermartks (2)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Large electronic goods specialists (3)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mail order (4)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>Department Stores/Mail order (1)</td>
<td>✓</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Photo retailers (3)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electro retailers (4)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>Hypermartks (1)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independents (2)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Associated electro retailers (3)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Electric Multi specialists (1)</td>
<td>None</td>
<td>N.A.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mail order (2)</td>
<td></td>
<td></td>
<td>N.A.</td>
</tr>
<tr>
<td></td>
<td>Mass merchandisers (3)</td>
<td>N.A.</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independents (4)</td>
<td></td>
<td></td>
<td>N.A.</td>
</tr>
<tr>
<td>Germany</td>
<td>Department Store/Mail order (1)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electro retailers (2)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hypermartks (3)</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toy specialists (4)</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Table 2:
Values of Market Potential (M) in Units

<table>
<thead>
<tr>
<th></th>
<th>Range obtained From Stage 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Germany</td>
<td>1,000,000</td>
<td>5,000,000</td>
</tr>
<tr>
<td>France</td>
<td>2,500,000</td>
<td>6,000,000</td>
</tr>
<tr>
<td>UK</td>
<td>2,500,000</td>
<td>5,500,000</td>
</tr>
<tr>
<td>Holland</td>
<td>170,000</td>
<td>220,000</td>
</tr>
<tr>
<td>Spain</td>
<td>1,000,000</td>
<td>5,000,000</td>
</tr>
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</table>
### Table 3: Two Stage Least Squares Estimates

<table>
<thead>
<tr>
<th>Parameter Diffusion Equation</th>
<th>Effect of</th>
<th>France Estimate t – value</th>
<th>Spain Estimate t – value</th>
<th>Germany Estimate t – value</th>
<th>The Netherlands Estimate t – value</th>
<th>United Kingdom Estimate t – value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$b_1$</td>
<td>Coefficient of external influence</td>
<td>---</td>
<td>0.003</td>
<td>1.52</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>$b_2$</td>
<td>Dummy for channel 1</td>
<td>0.007</td>
<td>-4.97***</td>
<td>---</td>
<td>0.007</td>
<td>3.30***</td>
</tr>
<tr>
<td>$b_3$</td>
<td>Dummy for channel 2</td>
<td>0.005</td>
<td>2.50***</td>
<td>---</td>
<td>---</td>
<td>NA</td>
</tr>
<tr>
<td>$b_4$</td>
<td>Dummy for channel 3</td>
<td>0.007</td>
<td>5.58***</td>
<td>---</td>
<td>0.014</td>
<td>2.58***</td>
</tr>
<tr>
<td>$b_5$</td>
<td>Dummy for channel 4</td>
<td>0.005</td>
<td>4.80***</td>
<td>---</td>
<td>-0.003</td>
<td>-0.08</td>
</tr>
<tr>
<td>$b_6$</td>
<td>Seasonal effect</td>
<td>0.009</td>
<td>8.27***</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>$b_7$</td>
<td>Seasonal effect</td>
<td>0.007</td>
<td>12.40***</td>
<td>0.002</td>
<td>2.19**</td>
<td>0.009</td>
</tr>
<tr>
<td>$b_8$</td>
<td>Price</td>
<td>-0.888</td>
<td>-6.50***</td>
<td>-2.453</td>
<td>-3.67***</td>
<td>-5.800</td>
</tr>
<tr>
<td>$b_9$</td>
<td>Coverage</td>
<td>0.123</td>
<td>1.64*</td>
<td>3.704</td>
<td>0.86</td>
<td>8.178</td>
</tr>
<tr>
<td>$q_b$</td>
<td>Coefficient of internal influence</td>
<td>0.089</td>
<td>3.38***</td>
<td>0.385</td>
<td>3.58***</td>
<td>-0.002</td>
</tr>
<tr>
<td>$b_{10}$</td>
<td>All-Under-One-Roof Value Stores</td>
<td>-0.016</td>
<td>1.50</td>
<td>0.259</td>
<td>1.50</td>
<td>1.406</td>
</tr>
<tr>
<td>$q_{11}$</td>
<td>Cumulative penetration of competing brand</td>
<td>-0.050</td>
<td>-9.09***</td>
<td>-0.299</td>
<td>-3.91***</td>
<td>N.A (only Sony)</td>
</tr>
<tr>
<td>$a_1$</td>
<td>Intercept</td>
<td>0.046</td>
<td>3.55***</td>
<td>0.486</td>
<td>3.46***</td>
<td>0.854</td>
</tr>
<tr>
<td>$a_2$</td>
<td>Contemporaneous consumer sales of brand in channel</td>
<td>0.0002</td>
<td>0.09</td>
<td>0.0001</td>
<td>0.79</td>
<td>0.0002</td>
</tr>
<tr>
<td>$b_0$</td>
<td>inertia (lagged distribution coverage)</td>
<td>1.282</td>
<td>9.95***</td>
<td>0.651</td>
<td>1.66*</td>
<td>2.081</td>
</tr>
<tr>
<td>$f_0$</td>
<td>Scouts (lagged coverage)</td>
<td>-0.237</td>
<td>-1.11</td>
<td>1.374</td>
<td>2.34***</td>
<td>1.617</td>
</tr>
<tr>
<td>$f_0$</td>
<td>All-Under-One-Roof Value Stores (lagged coverage)</td>
<td>0.004</td>
<td>0.06</td>
<td>-0.226</td>
<td>-1.08</td>
<td>-2.089</td>
</tr>
</tbody>
</table>

*p < .11  *p < .10  **p < .05  ***p < .01
<table>
<thead>
<tr>
<th>Table 4: Summary of Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>• Brand Sales (Adoption) in a Channel</td>
</tr>
<tr>
<td>• Price cuts accelerate sales</td>
</tr>
<tr>
<td>• Distribution coverage accelerates sales</td>
</tr>
<tr>
<td>(market maker)</td>
</tr>
<tr>
<td>• All-Under-One-Roof Value Store</td>
</tr>
<tr>
<td>- Spoiler effect</td>
</tr>
<tr>
<td>(negative effect on sales in other channels)</td>
</tr>
<tr>
<td>- Booster effect</td>
</tr>
<tr>
<td>(positive effect on sales in other channels)</td>
</tr>
<tr>
<td>• Brand competition</td>
</tr>
<tr>
<td>- Sales of one brand in channel hurt sales of other brand in channel</td>
</tr>
<tr>
<td>• Brand Coverage in a Channel</td>
</tr>
<tr>
<td>• Inertia (follow last period)</td>
</tr>
<tr>
<td>• Sales accelerate coverage</td>
</tr>
<tr>
<td>(market taker)</td>
</tr>
<tr>
<td>• Troops follow scouts</td>
</tr>
<tr>
<td>• All-Under-One-Roof Value Store</td>
</tr>
<tr>
<td>- Avoidance</td>
</tr>
<tr>
<td>(other channels lower coverage)</td>
</tr>
<tr>
<td>- Must carry</td>
</tr>
<tr>
<td>(other channels increase coverage)</td>
</tr>
</tbody>
</table>
References


Miller, Chip E., James Reardon, and Denny E. McCorkle (1999), "The Effects of Competition on Retail Structure: An Examination of Intratype, Intertype, and Intercategory Competition," *Journal of Marketing*, 63 (October), 107-20.


