COMPETITIVE RESPONSE AND MARKET EVOLUTION

by

H. GATIGNON*
and
D. SOBERMAN**

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* The Claude Janssen Chaired Professor of Business Administration and Professor of Marketing, INSEAD, Boulevard de Constance, 77305 Fontainebleau Cedex, France.

** Assistant Professor of Marketing, INSEAD, Boulevard de Constance, 77305 Fontainebleau Cedex, France.

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Hubert Gatignon and David Soberman*

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* Hubert Gatignon is the Claude Janssen Chaired Professor of Business Administration and Professor of Marketing and David Soberman is Assistant Professor of Marketing, both at INSEAD, France. This paper is prepared to serve as Chapter 6 of Barton A. Weitz and Robin Wensley, eds., Handbook of Marketing, London: Sage Publications.
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Abstract

The objective of this chapter is to provide a framework for understanding the research that has been conducted on competitive response and market evolution and to indicate areas where research is needed to deepen our understanding of the subject area. Not surprisingly, the premise upon which this framework is based flows from the title of the chapter. There could easily have been two separate chapters; one on competitive responses and the other on market evolution. However, a primary contribution of research in this area is that these two topics are inextricably linked. One cannot properly review the research in one area without making significant if not germinal references to the other area. Accordingly, we review the contributions that academics in both business administration and economics have made in understanding the effects of competitive responses on market evolution and the impact of market evolution on competitive responses. The framework used for this review also helps in the identification of new research directions.
1. INTRODUCTION

Our objective is to review the major areas of research that relate to the dimensions of “competitive response” and “market evolution”. We develop a conceptual framework that considers the interactions between these two key constructs of “competitive response” and “market evolution”. We, therefore, first identify what the key dimensions of competitive response and market evolution are. Then, we review the literature that addresses the impact that competitive responses (to a variety of market initiatives) can have on the evolution of a market. We then examine the research that considers how the evolution of a market can constrain and influence the responses of firms within an industry. Our framework also considers the impact that environmental (or exogenous) factors can have on both dimensions of “competitive response” and “market evolution.” Such factors may assist to distinguish between the cause and the effects of some of the interactions between competitive response and market evolution. In each section, we identify several areas where we believe that further research is both necessary and can yield fruitful advances.

More specifically, we can represent the area of investigation using the framework shown in Figure 1. This framework can be useful for organizing and structuring our review of this literature. The focus of this chapter is about the links between the competitive dynamics dimensions (bottom left box in Figure 1) and the dimensions of market evolution (bottom right box in Figure 1).

In the second section of this paper, we characterize the dimensions along which competitive responses can be described and we then define the characteristics of market evolution. Within each box in Figure 1, the list of dimensions that are discussed in this chapter is shown for both competitive dynamics and market evolution. In the third section, we review the literature and propose new directions for research concerning how
competitive responses affect market evolution and vice-versa (how market evolution impacts competitive responses). While each aspect has received individual attention in past research, the interaction between the two remains under researched. Lambkin and Day (1989) made this observation over a decade ago yet their call for research in that direction has remained for the most part unanswered. We propose a stream of research that goes beyond the population ecology concepts that they suggest. In this section, we include an analysis of the role of external forces in explaining changes in these dimensions.

2. DIMENSIONS OF COMPETITIVE RESPONSES AND CHARACTERIZATION OF MARKET EVOLUTION

The Primary Dimensions of Competitive Dynamics

Two streams of research concerned with competitive dynamics have received considerable attention in the marketing literature. The first of these streams concerns the entry and exit of competitors. This is the focus of population ecology, which provides a source of explanations for the evolution of markets from a supply side point of view. Lambkin and Day (1989) clearly establish the importance of that perspective and explain the role of key population ecology concepts (e.g., structural inertia, r-strategists versus k-strategists, specialists versus generalists). The essence of the theory consists in the impact of strategic choices concerning the firm (e.g., technological or organizational) at the time of entry as a function of the stage of the product life cycle. Beyond the questions of whether multiple types of organizations can coexist at the same stage and of the ability to develop a valid harmony of firms, Carroll (1985)’s argument of resource partitioning combines the dynamics between generalists and specialists. Aldrich (1999) summarizes this approach and especially the notion that generalists can stratify the market, which stimulates the entry of specialists. However, the theory remains at the level of competition between these firm types and does not consider the specific action or strategies used by the firms to compete and does not develop implications on evolution of demand. We devote our discussion to actions of the firms that may occur at any time when entry is likely or when entry has already happened. Consequently, even though we do recognize the existence of structural inertia (Hannan and Freeman 1977), we focus our
analysis on **pre-emptive activities** of incumbents, i.e., the decisions firms make that stifle or encourage competition with emphasis on the impact of firm entries and exits over time.

The second broad stream of research concerns the dynamics of competition between firms and brands competing in a single or multiple markets. In this section, we focus our discussion on the characterization of these **competitive reaction patterns**. The goal will not be to review all the issues surrounding competitive reactions, but only the literature as it relates to describing the types and forms of reactions that can be used to categorize competitive reaction strategies. In the second part of this paper, we then relate these reaction strategies to the evolution of markets.

**Pre-emptive Activities**

Pre-emptive activities are strategies to control the speed with which new products or firms enter a market. Naturally, this determines the extent to which products proliferate over time and ultimately the competitive density in the market.

With the threat of entry or the threat of additional competition in a market, incumbents devote considerable time and energy to pre-emptive activities. The objective of these activities is to limit competition by a) making the market less attractive to new competitors in order to reduce their likelihood of entering the market or b) signaling information to the new entrants about the market (or the incumbents) that affects the marketing decisions of new competitors. For example, an incumbent could develop new technology that makes the market less attractive to an entrant who does not have access to the technology. Alternatively, an incumbent may make irreversible and observable investments in plant, distribution or service capabilities (that reduce the cost of responding aggressively to a new competitor). In this section, we discuss the important literature on various pre-emptive actions that are undertaken by incumbents: investment in over-capacity, innovations, signaling and launch timing.

**Investment in Over-Capacity.** In the industrial organization literature, there exists a long tradition of examining barriers to entry that are created as the result of competition between oligopolistic firms (see Bain 1956 and Scherer and Ross 1990). This literature examines how branding, advertising and distribution channels of existing firms can constitute significant barriers to new entrants. In general, however, these barriers form
naturally and do not obtain from the specific intent of incumbents to “deter” or alter the decisions of potential incumbents. More recently however, a number of researchers have examined how incumbents can take decisions that have the express intent of changing the decisions of potential entrants (Spence, 1977; Dixit, 1979 and Demsetz, 1982). This literature focuses on the decision of an incumbent to invest in excess capacity in order to reduce the cost of responding to an entrant that does enter. The authors focus their discussion on manufacturing capacity; however, the logic advanced by this work is as applicable to investments relating to distribution and after-sales service. In the following section, we consider a more complex response by incumbents, that of investing in R&D.

**Innovation.** Amongst the strongest deterrents to a potential entrant are technological disadvantages either in the production of a good or service or in the performance of the good or service (from the perspective of an end-user). As a result, incumbents devote considerable time, effort and resources to the identification and creation of technological advantages. This literature has its roots in the “Diffusion of Innovation” literature (Arrow 1962). While it is possible for any agent in an economy to engage in R&D, it is generally accepted that incumbents are in a better position to engage in innovative activity within a sector due to their knowledge, their expertise and their ownership of plants and laboratories suitable for the testing of new products and processes (Gilbert and Newbery 1982; Adams and Encaoua 1994).

**Types of Innovations**

Generally, the literature looks at innovations that either improve the quality of existing products or reduces the cost of producing them (Abernathy and Utterback 1978; Athey and Schmaltzer 1995). **Improvements in quality** are observed to generate upward shifts in demand or in the prices people are willing to pay (for a good or service). In contrast, process innovations provide a **reduction in the unit cost** of production but do not affect end users’ willingness to pay for the product. Some innovations provide a combination of performance and production cost benefits but in most cases, an R&D project can be categorized based on whether its primary thrust is to affect the benefits that consumers obtain from the product or to provide benefits to the firm in terms of producing the product.
This distinction is useful but recent work demonstrates that product innovation, however, is a richer concept than simply an improvement in quality. The use of differentiation as a pre-emptive action by incumbents has received considerable attention (Bain 1949, 1956). This view of pre-emptive product differentiation has been analyzed in the context of spatial models (Lane 1980; Judd 1985) with focus on an incumbent’s “crowding” the product space by launching additional products. Incumbents are assumed to have cost advantages in launching line extensions. An interesting extension to this idea relates to R&D that focuses on innovations that add benefits to a product beyond the products available in a market place (Eswaran and Gallini, 1996). An example of this would be the child seat recently developed for Polaris personal watercraft (a.k.a. Wave Runners). Such innovations broaden the appeal of a product to other end users (families with a small child) without materially affecting the benefit obtained by other users.

Therefore, we identify three different types of innovation that are observed to have different effects on market evolution: 1) quality improvement, 2) added benefits to reach new segments of consumers and 3) cost reduction for producers.

Innovation Strategy

The quintessential problem for an incumbent is how to retain the ownership of an innovation (and the incremental profits it generates) once it has been discovered. It is not easy for an innovator to establish full property rights over an innovation because of spillover or the degree to which an innovator discloses the “secret” of the innovation to other firms by simply making the product available in the marketplace (Schumpeter 1943). Clearly, this problem is most severe with product related innovations such as the above-mentioned child seat for Wave Runners. Similar to end-consumers, competitors can purchase the new product and through reverse engineering attain the capability to produce the product themselves.

The problem of spillover (with innovations) leads to the need for a system of patents to allow firms to recoup R&D costs through “temporary monopolies” (Schumpeter 1943; Arrow 1962). When an incumbent is able to obtain patent protection for an innovation, the pre-emptive effect is high and there are many categories such as pharmaceuticals and high technology where incumbents devote significant energy to R&D leading to “patentable” innovations.
However, obtaining and enforcing patents requires considerable capital and expertise and some incumbents do not have this option. Moreover, there are processes and products where obtaining patents is extremely difficult. Until recently, many business processes were ineligible for patent protection. A U.S. Supreme Court decision in January of 1999, *State Street Bank & Trust Co. vs. Signature Financial Group Inc.*, suggests that new processes, as well as products, can be patented\(^1\). Nonetheless, the ultimate impact of this decision and the definition of what constitutes a *business process* remain to be seen.

Without patent protection, process innovations (i.e. that provide reductions in unit cost) are easier to protect since they are implemented within the manufacturing or delivery system of the innovating firm (and by definition, the physical product is unchanged). In theory, a competitor needs to observe the production or delivery process of the innovator for spillover to be significant. Often the innovator can prevent this. Nonetheless, there are situations where process innovations are subject to spillover (d’Aspremont and Jacquemin 1988; Kamien, Muller and Zang 1992; Choi 1989; Vonotras 1989).

The idea that incumbents create advantage by obtaining access to innovations that are not available to entrants is simple but this idea leads to three types of actions that incumbents can take:

a) Invest in R&D that has high probability of producing an attractive innovation
b) Form alliances with other incumbents to develop innovations
c) License existing technological advantages to other incumbents

We now discuss each of these actions in detail.

*a) Invest in R&D that has high probability of producing an attractive innovation*

Much of the R&D literature focuses on the impact of R&D investment on consumer welfare\(^2\). Nonetheless, significant research is devoted to managerial decisions that need to be faced in the context of R&D policy. Because R&D is a strategic investment, much of the literature follows the spirit of work mentioned earlier by Spence (1977) and Dixit (1979; 1980) where strategic decisions allow an incumbent to improve the ex-post profitability of a market threatened with entry by a new firm. Adams and Encaoua (1994)

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\(^1\) Heckman (1999) discusses the implication of this U.S. Supreme Court decision to marketers.

\(^2\) See for example, Eswaran and Gallini (1996) where the authors study the ultimate impact of patent policy on consumer welfare.
examine the activity of a monopolist faced with a potential entrant and they find that a monopolist might invest in technologies that are *socially undesirable* in order to prevent the entry of a new competitor.

\[ h) \text{ Form alliances with other incumbents to develop innovations} \]

The formation of associations in industry has received considerable attention and the objectives of these associations invariably involve the sharing of costs, information, facilities or the adoption of common standards. Bloch (1995) notes that these associations are considered to be major factors in the profitability and technological innovation of many industries. There are a number of papers that examine the challenges of managing cooperative R&D including Katz and Shapiro (1986), d’Aspremont and Jacquemin (1988), Suzumura (1992), Bhattacharya, Glazer and Sappington (1992) and Gandal and Scotchmer (1993). Without delving into the detailed findings of this work, suffice to say that alliances can be an effective framework for facilitating innovation and this can serve to make the market less attractive to entrants. Others such as Leahy and Neary (1997) and Brod and Shivakumar (1997) consider the public policy implications of cooperative R&D and the potential need for government intervention.

\[ c) \text{ License existing technological advantages to other incumbents} \]

Gallini (1984) shows how an incumbent firm might license its technology to an entrant in order to reduce the entrant’s incentive to invest in R&D. Eswaran (1994) extends this idea to the strategy of deterring an entrant by licensing to (other) weaker incumbents. The literature also highlights the potential shortcomings of licensing as a strategy to deter entrants. For example, Yi (1999) shows how entrants can form R&D joint ventures among themselves to counter strategic licensing by an incumbent.

The purpose of reviewing these various innovation strategies is to highlight the different approaches that firms can use to create advantages within a market. A key observation is that the differential impact of these alternate innovation strategies on “market evolution” has been largely ignored by academics and will prove to be a fruitful area for future research.

**Signaling.** Signaling is a competitive response that can be undertaken by an incumbent or an entrant in order to provide information to a party that lacks the
information in question. As noted by Bergen, Dutta and Walker (1992), when a key party to a transaction lacks quality information (which is also known as a problem of ‘Hidden Information’), it can create problems in many marketing situations. Rothschild and Stiglitz (1976) analyze one of the most famous examples, the insurance market in which the principal (the insurance company) cannot distinguish between high and low risk customers. With many durable products, the same problem is evident when products cannot be evaluated prior to purchase. The literature generally focuses on the equilibrium outcomes that result when a market is characterized by a spectrum of quality levels and buyers cannot determine quality prior to purchase.

Spence (1974) introduced the logic of signaling to economics i.e., that a high quality seller may engage in costly activity to identify himself as higher quality. This is possible when sellers of high quality have cost advantages over sellers of low quality in making signals. Kreps (1990) provides further insight into the manner by which signaling can facilitate the exchange of higher quality in the context of products and workers. The economics and marketing literature identifies a number of potential signals including advertising (Klein and Leffler 1981, Schmalensee 1978 and Milgrom and Roberts 1986), price (Bagwell and Riordan 1991, Srinivasan 1991, Chu 1992, Balachander and Srinivasan 1994) and the strategic use of signage in retail settings (Anderson and Simester, 1998 and Mishra, Prasad, Heide and Cort, 1998). Given the alternative signals available to a manufacturer or retailer, a number of questions remain unanswered. These include issues such as how a marketer chooses between signals and why certain signals that seem to be as costly for a high quality seller as for a low quality seller, nevertheless, seem to function. Reconciling the single shot signaling models (Spence 1974) with those that rely on repeated transactions (Klein and Leffler, 1981) appears to be an important area for further investigation. Another application of signaling is proposed in the context of distribution strategy where a retailer’s reputation can be used to signal quality about a manufacturer’s product (Chu and Chu 1994). From a perspective of channel research, this raises a number of interesting issues such as how a retailer might use a manufacturer to signal quality or taking this idea one step further, how consumers might use different channels to signal information to retailers or manufacturers. Because a fundamental dimension of

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3 Nelson (1974) refers to these products as "experience goods". Akerlof (1970) underlines how “hidden information” can interfere with the operation of markets.
quality is performance (higher quality products either fail less, cost less to fix, or perform better), the use of performance warranties as signals has also received considerable attention (Spence 1977, Grossman 1981, Lutz 1989, and Gal-Or 1989). With performance as a primary dimension of quality, it costs a seller less to “guarantee” performance for a high quality product (independent of whether the guarantee is provided as insurance or as a commitment to repair or replace the product). Thus, an incumbent with higher quality can use a longer warranty to “signal” higher quality. A further extension of this idea is the use of a money-back guarantee to signal higher quality (Moorthy and Srinivasan 1995).

Of course, entrants sometimes develop products that exceed the quality of incumbents and in this case, they will face a similar challenge (i.e. that of credibly communicating to consumers that their products are better). In order to charge a premium for their product, they may be forced to engage in costly signaling behavior (such as offering non-standard warranty protection). In the following section, we consider a form of communication by a firm that, in contrast to signaling, is of negligible cost.

**Pre-Announcements**

An endemic characteristic of signaling situations is that consumers have strict preferences for high quality over low quality and there is generally one primary attribute of interest “quality”. In such situations, costless signals (or cheap talk) will never function effectively since it is “costless” for a low quality seller to do whatever a high quality seller does. Thus, it is not possible for a high quality seller to separate himself from the norm. However, there are clearly a number of situations in which the preferences of buyers are not strict, i.e., ceteris paribus, some consumers prefer a focal firm’s product and other consumers prefer the competitor’s products. In these situations, simple low cost announcements by firms about their attributes may suffice to improve matching of buyers with sellers. As noted by Calatone and Schatzel (2000), pre-announcements are inexpensive options to inform customers, employees, competitors, channel members and other related parties of a firm’s intentions. The attractiveness of pre-announcements needs to be balanced against their costs. For example, pre-announcements may imply legal obligations on the part of the firm making the announcement. An interesting area for future research is to examine the “tying one’s hands” effect that pre-announcements can have in markets with uncertainty. When a firm’s reputation is powerful, a further
challenge with pre-announcements is that the cost of making an unfulfilled pre-announcement can be high.4 Nevertheless, the marketing literature highlights the use of pre-announcements. Eliashberg and Robertson (1988) conceive pre-announcements as a form of signaling where, because of their impact, costs can ultimately be incurred. First, pre-announcements can provide valuable advance information to competitors (who can then use it to the detriment of the focal firm) and second, pre-announcements can result in a significant loss of reputation for a focal firm if it is unable to deliver on the pre-announcement.5 This suggests that an interesting area for future research would be to analyze the perceived costs and the use of pre-announcements by firms with a range of reputations. Eliashberg and Robertson consider both consumer and competitive rationales for pre-announcing and these ideas are further developed in Robertson, Eliashberg, and Rymon (1995). Here the use of pre-announcements to influence competitor behavior is highlighted (to pre-empt competitors and provide them with a basis for not pursuing a product in the same market). The use of pre-announcements for pricing is also considered by Heil and Langevardt (1994) and not surprisingly, a primary focus of this research regards anti-trust issues (it is evident that communication between competitors focused on price can facilitate price collusion).6 The marketing literature focuses primarily on the use of pre-announcements, their impact and their antecedents yet advances little in the way of theoretical justification for their effectiveness.

An important question is why costless announcements work as “conveyors of information” when it is equally easy for a seller to convey false information (recall that the greater expense incurred by a low quality seller to send a high quality signal is the theoretical basis for the effectiveness of signaling). As noted earlier, when pre-announcements involve legal obligations (making a given pre-announcement irreversible) or a firm’s reputation is at stake, the question is less difficult. However, even in the

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4 Kreps (1990) and Milgrom, North and Weingast (1990) model the reputation effect as a Repeated Prisoners’ Dilemma game and show how reputation can be an effective vehicle for promoting honest trade. Similarly, Landes and Posner (1987) show how branding provides a form of insurance or guarantee to the buyer about a product so branded.

5 Eddy and Saunders (1980), Chaney, Devinney and Winer (1991) and Lane and Jacobsen (1995) discuss the role of announcements of new product introduction and brand extensions as a basis for stock market evaluations.

6 An interesting application of these issues can be found in the HBS case “American Airline and Value Pricing” (5/11/94).
absence of these conditions, pre-announcements may be a useful mechanism for an entrant or an incumbent. As long as there is a degree of alignment in the preferences of the Sender and the Receiver, Crawford and Sobel (1982) show that costless talk or pre-announcements can reduce information asymmetry and allow a market to function more effectively (even when a direct penalty is not incurred by a sender for sending a false message). By allowing groups of consumers to find or interact with sellers of specific types, this form of communication can facilitate greater alignment (or matching in the marketplace) in the needs of both buyers and sellers (Gibbons 1992). Practical applications of these ideas are found in the marketing literature on pre-announcements. In fact, Moore (1992) provides an example of “cheap talk” in the context of a simulated market where participants take action to avoid destructive price wars. Similar to a real market, participants communicate with each other by sending coded signals of retaliation in order to reduce the likelihood of price cuts by the competitor. The benefits of sending costless messages in this environment follow from the long-term alignment of firms’ incentives (i.e., it is better to avoid price wars).

When neither signaling nor pre-announcements are viable or feasible for firms to communicate information to their competitors or consumers, they may be forced to resort to alternative strategies. Nevertheless, with the advent of the Internet and the low cost it implies for sending messages, conventional wisdom suggests that firms may find it easier to resolve detrimental information asymmetries through the use of pre-announcements. As the reach and importance of the Internet as a marketing channel increases, the importance of pre-announcements is likely to increase. However, there will always be situations in which high quality sellers cannot provide credible information about quality. Here, the only alternative may be to engage in significant trial activity with users who are unfamiliar with their products.

**Trial Programs**

Trial activity is tantamount to a disclosure of quality and high quality firms have an incentive to disclose that they are in fact, high quality or they will not be recognized by consumers (Stiglitz 1987, Grossman 1981). However the cost of trial is frequently a barrier to such disclosure (i.e. the cost of trial programs). For high-ticket items, which include many durable goods, the cost of trial is clearly very expensive. However, even for products with low per-unit costs, the cost of an extensive trial program can be prohibitive.
For example, an extensive trial for a new beer in the U.S. can cost upwards of $12 million (Sellers and Welsh 1994). A further issue concerns the multi-dimensional nature of many products. As noted by Lancaster (1990), the most difficult challenge for a marketer with a multi-attribute product is perhaps the matching of attributes to customer needs. Here, trial can play the role of both disclosing experience attributes and matching attributes with customer preferences. An application of this idea is found in Gerstner, Davis and Hagerty (1995) where money back guarantees can be used to provide free trial opportunities to consumers. Nevertheless, the cost of the trial, even in situations where the firm can repossess the product (as with a money back guarantee) can be prohibitive.

**Certification Procedures**

Where external certification organization exists within a market, this may be the optimal approach for an incumbent or entrant to demonstrate the relative qualities of their products (Stiglitz 1989). Frequently, the existence of external certification depends on the involvement of the government to protect the public interest (Carlton and Perloff 1994). When available, certification can provide a useful vehicle for a firm with high or unique quality to communicate its characteristics to new consumers.

**Launch Timing.** Perhaps the single most effective response to a potential entrant (who is “threatening” to enter because she is known to offer advantages to consumers over the existing products) is to pre-empt her by launching a comparable product. The benefits of pioneering advantage are well documented in the empirical literature by Robinson and Fornell (1985), Urban et al (1986) or Bowman and Gatignon (1996). In addition, explanations for the advantage based on individual consumers are proposed Carpenter and Nakomoto (1989) and Kardes and Kalyanaram (1992). These advantages are argued to come from the “setting” of consumer expectations or because consumers find it easier to remember of products that were available first. Frequently these advantages can lead to situations where inferior existing products can retain leadership in the face of superior new entrants.

Disadvantages of going first are that the first entrant may not choose the optimal levels for the attributes and it may be easier for a second entrant (without the baggage of an existing consumer franchise), to adopt preferred level of certain attributes. Carpenter and Nakomoto (1989) also note that later entrants tend to perform better when they offer
levels on certain attributes that are significantly different than those offered by the pioneer. In a sense, the pioneer plays the role of “test marketing” for the later entrants. If the pioneer launches a product that is close to the revealed preferences of consumers then, the pioneering advantage can be enormous. It follows that Carpenter and Nakomoto (1989) find that me-too products fare poorly even when they provide similar attributes at a somewhat lower price\(^7\). However, if the pioneer’s offering is a) significantly different on certain attributes from the preferences of consumers and b) difficult to modify because of either supply or demand-side considerations, the later entrants have the advantage of learning from the pioneer’s mistakes. Note that this situation, which is not uncommon, contributes to the higher risk that is often associated with “going first”.

A further consideration appears to be the role that pioneers play in creating awareness for “the category” as opposed to building awareness and brand equity for themselves. Late entrants have the advantage of free riding on the market-making investments of the pioneer. Support for the importance of the pioneer’s creating of category awareness for the benefit of later entrants is found in the work by Zhang and Markman (1998). They assume that a number of defining category characteristics are those that are possessed by the pioneer. When a late entrant bases its positioning on those characteristics (alignable differences) and is perceived to be superior on those attributes, it can be preferred over the pioneer. In contrast, when a late entrant bases its positioning on differences that are not characteristic of the pioneer, consumers find it more difficult to remember and process the late entrant’s message. In a sense, the pioneer not only plays the role of test marketing for the late entrant but also provides a framework (product attributes) that a late entrant can use to communicate effectively with consumers.

In summary, “moving first” is certainly a common and frequently successful response to pre-empt an initiative by a new entrant. Nevertheless, it is a strategy that can also lead to a number of disadvantages when the category is new and consumers need to learn in order to become regular consumers in the category.

\(^7\) The most likely situation for the launch of me-too products is clearly when the pioneer has launched a product without any weaknesses.
Competitive Reactions

An important dimension of marketing strategy concerns the understanding and the predictability of how a competitor responds to a move made by another competitor. This includes the marketing interaction behavior among existing competitors or brands, as well as the reactions of incumbent firms to new entrants in the market. Research on this topic generally follows a normative approach, an analytical approach (especially game theoretic), a behavioral approach or an empirical approach (that is data driven). As a result, this topic has provided the marketing field with a rich array of research (Gatignon and Bansal 1990, Robertson and Gatignon 1991, Kuester, Homburg and Robertson 1999).

Early work focused on investigations of the intensity of competitive rivalry among competitors and made significant progress to better understand the conditions that engender intense rivalry. A next step was to understand more specifically, which marketing mix instruments are being used, when, and under what circumstances. While the attention has been primarily directed to understanding pricing and advertising reactions, some recent work considers the innovativeness of the new product or entry and the innovativeness of the product response (Kuester, Homberg and Robertson 1999, Shankar, Carpenter and Krishnamurthi 1999).

Product modification due to competitive entry is an important aspect of normative models such as Defender (Hauser and Shugan 1983, Hauser 1988). For example, Defender prescribes that an incumbent firm should modify its product in the direction of the attribute of strength. Reactions may also entail decisions about how many brands a firm should have in its product line. Villas-Boas (1998) models the number of brands as a decision by the manufacturer. He shows that the number of brands depends on how many of the market segments are actually offered an acceptable product and whether the manufacturer coordinates his decision with the retailer. Schmalensee (1978) also considers the product proliferation issue but in a preemptive move to prevent entry in the industry.

Reactions involving product modifications or the introduction of new products require understanding the dimensions of the products on which to innovate and the technological aspects of such changes. The variables that have been considered to characterize innovations offer opportunities for new research directions. These characteristics are
typically derived from the consumer’s perspective in terms of both the adoption decision process and in terms of the sociological aspects of that process. The technological viewpoint offers perspectives that have not been considered in marketing, although the extant literature in technology management and strategy addresses some of them.

Gatignon, et al. (2000) develop a structural approach to assessing innovation. They suggest that an innovation can be comprehensively described by distinguishing between the locus of innovation in a product’s hierarchy (core/peripheral), between different types of innovation (generational and architectural), and between the characteristics of an innovation (incremental/radical, competence enhancing and competence destroying). The results show that competence based innovations have the most powerful and consistent effects, while innovation types have the weakest and most inconsistent effects on innovation performance and organizational change. The characteristics of the innovation in terms of radicalness and competences appear to be important dimensions for understanding how innovation affects competitive behavior dynamics.

While most reactions are assumed to be retaliatory, the Defender model underlines that the best reaction is sometimes to cut expenditures or increase price. Consequently, a third stream of research analyses the direction of the response, i.e., retaliation, accommodation, complete withdrawal or the competitor’s move is ignored (not reacted to). Iyer and Soberman (2000) provide insight about optimal reactions in terms of product modifications that firms can implement to neutralize or accommodate offensive or defensive product modifications by a competitor. The literature also recognizes the multi-market nature of competition and the importance of including the domain of the reaction for fully understanding the way firms respond to each other (Shankar 1999). A dimension of reactions that has not been the object of attention until recently concerns the timing of these reactions (Heil and Robertson 1991), that is the speed with which firms react to a competitor’s move. While speed had been typically assimilated to the aggressiveness of the reaction, and consequently to the reaction intensity, Bowman and Gatignon (1995) show that speed needs a different set of explanatory mechanisms, mostly based on organizational variables. The timing of reactions has also been shown to have a significant impact on performance (Smith et al. 1989, Gatignon, Robertson and Fein 1997). Recent research has moved away from looking at each of these characteristics one
by one and considers the complexity of the reaction patterns. The reaction can involve a single marketing mix variable or multiple ones. The reaction can use the same marketing mix like a price match or a different mix variable (Leeflang and Wittink 1996). Therefore, the reactions can be simple or complex and involve a single or multiple variables. Ramaswamy, Gatignon and Reibstein (1994) analyze these patterns with the PIMS data. More specifically, Gatignon, Robertson and Fein (1997) consider the breadth of the reactions as a key factor explaining the success of a defense strategy, finding that the most successful defense concentrates on few mix variables rather than spreading resources on too many. Nevertheless, the role of the breadth of reactions has not been fully explored. In particular the difference in the nature of the effects of breadth versus the intensity of a reaction with a single mix variable needs further study.

The Primary Characteristics of Market Evolution

Most of the literature concerned with market evolution, whether normative or descriptive, considers the evolution of the market as predetermined mostly by the demand. In fact, demand cannot evolve if the manufacturers do not produce and market appropriately the product. While this idea has been advanced, it is still a relatively recent concept that has received little attention. We will, therefore, take the perspective that the evolution of a market depends on the strategic decisions of the firms that manufacture and market the products in addition to evolution of demand (i.e., changes in the needs of customers). In order to structure our analysis of the impact of competitive dynamics on market evolution, we first define the key dimensions of market evolution. These can be structured as: 1) diffusion and growth, 2) market structure and 3) technological evolution.

Diffusion and Growth

The diffusion of an innovation can be described in terms of the time of the first adoption and in terms of the speed and pattern with which the innovation reaches its maximum potential level. This can be expressed, as Rogers (1983) does, at the individual unit of adoption where adoption necessitates the acquisition of the innovation and then its use by the adopter. It can also be described in terms of breadth of use and depth of use. A parallel is made by Dekimpe, Parker and Sarvary (2000) where the diffusion in a country is described by the time between an innovation’s availability and its eventual adoption within a specific country. Once an innovation is adopted, it then diffuses
throughout the country in question. Diffusion modeling in recent years has contributed to explicitly recognize the key elements of the process. First, in terms of the describing the phenomenon, the characterization of the diffusion is explicit in terms of (1) the patterns of diffusion, (2) the potential penetration level and (3) the speed of the diffusion within the population. Second, the phenomenon’s units of analysis include the total market or product category and the market segments or the brands within a market. Third, the explanation of the diffusion process has emphasized the presence of network externalities, as well as the critical role played by marketing decision variables. Most of the research to date has considered the speed of diffusion at the product category level with a network effect due to the existing set of adopters. Recently, Kuester, Gatignon and Robertson (2000) have considered the role of key marketing strategy decisions on the speed of the diffusion. We do not intend to repeat these points here. Instead, we will focus on the factors that relate more directly to competitive dynamics.

**Speed of Diffusion.** The seminal approach of Bass (1969), suggests that the diffusion process can be understood as the result of an innovation effect (which is exogenous) and an imitation effect (which is proportional to the number of adopters at any point in time). The key parameters of the Bass model are thus, a coefficient of external influence (driving the innovative behavior), a coefficient of internal influence (during this imitative behavior), and the ultimate number of adopters (when the diffusion process is complete). While much of the focus of diffusion research, especially with a strategic orientation, has been about the speed with which an innovation diffuses, the explanation for differences in the speed of diffusion across markets remains limited. Following the theory of Rogers (1983), a number of researchers have conducted empirical tests of how relative advantage, compatibility, trial-ability, observability, complexity and perceived risk affect the speed of diffusion (Ostlund 1974). Srivastava et al. (1985) model and estimate directly the influence of these variables on the parameters of the Bass diffusion models that relate to the speed of diffusion. In the context of multinational marketing, explanations about differences in the diffusion of the same innovation across countries have been analysed. These explanations concern differences in the social system characteristics. For example, Gatignon, Eliashberg and Robertson (1989) study the role of mobility and Dekimpe, Parker and Sarvary (2000) consider the heterogeneity of the
social system, as measured by the number of ethnic groups in the country. Still much remains to be done to understand the determinants of diffusion speed.

**Network Effects.** Network externalities have gained considerable popularity in many fields, including in the study of new product diffusion in Marketing. Three different kinds of network externalities should be considered. The first one concerns the utility derived by the users of the innovation that increases as a function of the number of users of that innovation. This corresponds to the standard imitation or coefficient of internal influence in the Bass model. The second kind relates to the increased utility derived from the use of other related products or technologies co-evolving with the innovation. This could include the co-evolution of computer hardware and software. The third aspect concerns the influence of the installed bases of older related technologies (Dekimpe, Parker and Sarvary 2000). The existence and the importance of these three different kinds of network effects may be critical to understand market evolution and competitive dynamics.

**Market Structure**

While the diffusion of innovations is typically studied at the aggregate level, the process implies the interactions of multiple segments purchasing among several competing brands with some level of differentiation made available through diverse distribution channels. These typically evolve over time. It is, therefore, critical to analyze the structural changes that occur in the market over the product life cycle. Three basic changes occur: (1) perceptions and preferences of consumers change over time, (2) their responses to the marketing mix variables change over the product life cycle and (3) the structure of the distribution of the product changes over time.

**Evolution of perceptions and preference evolution.** Preferences are not anterior to the introduction of the innovation in the consumer’s mind. Instead, the perceptions and the preferences of consumers are to a great extent formed by the first products available on the market. Carpenter and Nakamoto (1989) provide a theory of the first mover’s advantage based on this explanation. Rosa et al. (1999) define markets as « knowledge structures » that are unstable. Over time, these knowledge structures become more stable.
(Rosa et al. 1999). Buzzell (1999) mentions how useful it would be to better understand the changes in perceptions that occur during the early periods of a new market.

**Consumer response to marketing mix variables.** A significant literature now exists on how the marketing mix elasticities change over the product life cycle. Based on early normative theories (Mickwitz 1959), the patterns across product categories tend to share similarities but also show significant departure from a unique pattern. For example, for price elasticity, see Wildt (1976), Simon (1979), Liu and Hanssens (1981), Lilien and Yoon (1988), Parker (1992), Parker and Neelamegham (1997) or Parker and Gatignon (1996). For advertising elasticity: Parsons (1975), Arora (1979), Winer (1979), Parker and Gatignon (1996). Then changes in a marketing news elasticities, which may be in part due to the actions of marketers (such as the introduction of new brands and/or new versions of products that fulfill the same needs), force firms to adapt their marketing strategies. Their ability to adapt to these changes can also influence market evolution.

**Channel Structure.** It is difficult to dissociate a market from its distribution channel. In fact, distribution is a key variable that may condition the diffusion of an innovation. The role of the channels of distribution has been shown to influence the selection of which products to market. In addition, early studies of the power of supermarkets provide evidence that big retailing chains actually have power over the manufacturers. Therefore, while in theory the manufacturer decides through which channels to distribute its new products, this choice is often restricted and the success of a new product may depend on the distribution in some key channels. In that respect, because of their mere size or because of the leading role they play as scouts of the market, some channels have a different influence on the diffusion process than others. This is complicated by the fact that the channels monitor the early performance of new products and may decide to carry them or not as a function of their early market performance (Bronenberg, Mahajan and Vanhonacker 2000).

**Technological evolution**

One area which may show the greatest promise for new research concerns the role of technology in today’s markets. As pointed out by Buzzell (1999), technology is
important even in relatively mature consumer product categories like diapers. Naturally, it plays a critical role in technology intensive markets (John, Weiss and Dutta, 1999). However, our understanding of how technology evolves, how it perturbs markets and creates opportunities for others, how it affects firm performance and the organization are questions begging for answers. Anderson and Tushman (1990, 1991) theorize about the evolution of markets in terms of technological discontinuities. Especially, they argue for periods of turmoil that exist before a dominant design emerges (Tushman and Murmann, 1998). The concepts of competence destroying and competence enhancing innovations provide a possible explanation for the changes in a market, especially changes in competitive dynamics due to the enhancement or obsolescence of the competences of the firms in the market (Tripsas 1997). Competence-destroying and competence-enhancing innovations may also provide a basis to understand market dynamics from the resource-based perspective of firm strategies.

3. INTERACTIONS BETWEEN COMPETITIVE RESPONSES AND MARKET EVOLUTION

We now examine the interrelationships between competitive responses and market evolution. First, we discuss how some of the competitive actions described above can explain the evolution of markets. Then, we evaluate how these competitive responses depend on the market evolution itself. We also review the literature that considers how environmental or exogenous factors can affect competitive responses and market evolution in this section. These include the characteristics of the regulatory environment (patents, licensing, and competition laws), ownership of resources and appropriability factors.

The Effects of Competitive Responses on Market Evolution

A number of studies have analyzed the relationship between competitive response and demand in the marketplace. These are related to a few of the possible links between the primary dimensions of competitive dynamics on the left hand side of Figure 1 and the characteristics of the market shown in the right hand side of Figure 1. Therefore, this leaves significant areas for future research by filling the gap of possible links not yet covered across the items in these two boxes.
There are clearly many possible combinations among the dimensions of competitive responses and the characteristics of market evolution. We discussed, for example, innovation strategies and whether to form alliances for R&D development. This immediately raises the research question of the role that an “innovation” alliance strategy may have on a) the speed of market development and b) the level of competitive rivalry that is obtained in such markets. A key objective might be to compare the level of competitive rivalry in markets where new product development is done internally to markets where R&D is frequently a cooperative activity.

Kuester, Gatignon and Robertson (2000) review how strategic firm decisions can influence the speed of diffusion of an innovation. These decisions concern technological strategic choices and entry strategy choices. By restricting attention to the firm introducing an innovation only, a number of the issues relevant to this chapter are considered in their work. The R&D strategy in terms of competence-enhancing and competence-destroying innovation is shown to affect the speed of diffusion of the innovation. Part of their discussion is suggestive of new research as well. For example, many innovation strategy variables are also essential elements of competitive behavior of a market. In fact, the authors devote a section of the paper to a discussion of how the timing of product launches is an important dimension of competitive dynamics. In a thorough study of pharmaceutical products, Shankar, Carpenter and Krishnamurthi (1999) show that an innovative late entrant outperforms the pioneer by realizing higher sales growth and obtaining higher repeat buying rates. In addition, they demonstrate that that entrant has a significant negative impact on the pioneer, both in slowing the diffusion of its brand but also in reducing the effectiveness of its marketing mix instruments. Their study also illustrates the impact of innovativeness on the market potential of the brands. Innovativeness appears to dominate any effects which might have been due to order and timing of entry because an innovative entrant’s potential surpasses non-innovative late entrants and is at least as high as the pioneer’s. This brand level analysis of the evolution of demand is also supported at the aggregate level by Mahajan, Sharma and Buzzell (1993) who develop a model with cross brand effects and use it to estimate the impact of entry on aggregate demand. They show that in the case of Kodak’s entry into the instant camera market, Polaroid benefited from the expansion of demand due to the Kodak
introduction even though Kodak drew a significant portion of its sales from Polaroid’s potential market.

The marketing mix plays a critical role in developing markets, both in terms of making consumers aware of the product (and communicating its features), i.e., developing a market potential and in terms of speeding the diffusion. More specifically, Jain and Rao (1990) conclude their modeling of the impact of price on the demand for consumer durables by suggesting that price influences the consumer’s decision to buy or not buy but the timing of when to buy is governed by the diffusion process.

It is also important to recognize the role that declining price has on market expansion. There are clearly two effects that drive the diffusion or growth of markets. The first is the growth in potential users of a product or service as they become aware of it either through media channels or myriad social processes. The second is the natural expansion of a market that occurs due to declining prices. As noted by Tellis (1988), as categories mature, product-level elasticities increase because the number of potential substitutes increases and consumers become better informed of alternative brands (see also Liu and Hanssens 1981). Following the inverse elasticity rule, in these conditions, the optimal response for firms is to reduce price (Tirole 1988). The reduction in price of course leads to an increase in volume. This is effectively a simple descent down a demand curve and may have little to do with consumer acceptance of a new innovation. Frequently in empirical studies, the second effect is ignored and the growth rates are attributed entirely to the speed by which a population accepts and ultimately embraces a new product or service. In building a model of the diffusion process, it would appear important to both discriminate between and recognize these two effects.

The role of marketing mix variables differ at different stages of the product life cycle and are themselves subject to a diffusion process of their own. Jones and Ritz (1991) modeled this directly for the distribution mix. However, as pointed by Gatignon and Robertson (1991), the effects of the marketing mix variables are not instantaneous but follow a process themselves over time. Not surprisingly, this determines in part the diffusion of the product (Franses 1994). Bronnenberg, Mahajan and Vanhonacker (2000) show that the marketing mix variables have not only strong effects on market share but also that, through a feedback mechanism, market share impacts (with some lag) the levels
of marketing mix, especially distribution. This effect is most intense early after introduction of the product category but decreases over time.

Marketing mix activities are, however, partly conditioned by the competitive activities, which could explain in part the varying nature of marketing mix elasticities over the product life cycle. For example, Gatignon (1984) shows that competitive reactions influence the effect of advertising on price elasticities. Consequently, competitive markets where firms react strongly to each others’ moves may develop the total demand for the product category directly by making the product category more salient in the consumers mind and indirectly by making consumers more responsive to other marketing mix elements. The sheer higher density of competition may also impact the consumers’ response to marketing mix variables (Bowman and Gatignon, 2000).

It should also be noted that the technological evolution in a market has not, to our knowledge, been treated as a dependent variable resulting from the competitive nature of markets. A resource-based view of strategy would consider that the technological evolution of a market follows from strategic choices of firms based on their competitive competences. Therefore, perhaps the technological evolution of a market is an endogenous outcome rather than an exogenous factor, as typically considered. Accordingly, this view also offers new avenues of investigation.

The Impact of Market Evolution on Competitive Responses

Much of the research about explaining competitive reactions has been done in the context of incumbent reactions to new product entry. Although firm specific factors have been analyzed to explain firm differences in responses (Gatignon, Anderson and Helsen 1989), market evolution explanations correspond directly to the research stream demonstrating the importance of the structural factors of the industry (Biggadike 1979, Robinson 1988).

Several characteristics of market evolution have been studied in terms of their impact on competitive responses. We group these variables by the explanation of the reasons why they impact competitive responses. Three types of explanations can be found in the literature: (1) the strategic attractiveness of the market inherent to its evolution, (2) the
changing competitive market structure with the entry of new competitors and exit of others, and (3) the evolution of consumer response.

**Strategic Attractiveness of the Market**

*Market Growth.* The growth rate of a market is a major indicator of the attractiveness of a market in market/portfolio analysis. High growth suggests higher market potential in the future and leads to investments by firms in these markets. Also, share gains in growing markets are worth more than in mature markets because the returns will grow as the market grows (Day 1986). Several empirical studies indicate that firms defend their investments strongly in high growth markets. This has been observed within established industrial markets (Ramaswamy, Gatignon and Reibstein 1994) as well as in the context of reactions to new entries (Robinson 1988). High growth markets have also been observed to exhibit faster competitive reactions (Bowman and Gatignon 1995).

Interestingly, however, there is both empirical support and argument for the opposite. Cubbin and Domberger (1988) find that advertising reactions to an entry are more likely in static than in growing markets and the portfolio literature argues that gaining share is easier in high growth markets (Aaker and Day 1986). An underlying explanation is that competitive reactions are low if sales increase at an acceptable rate. However, Day (1986) and Wensley (1981) have questioned this view. They argue that expectations about sales and deviations from these expectations are critical in determining the nature of competitive reactions. Day (1986) contends that expectations are very high in high growth markets and disappointments explain strong reactions.

There are further arguments for why competitive reactions may be lower in high growth markets. First, as sales increase in a high growth markets, there may simultaneously be increases in the complexity of market structure, i.e., different firms may be generating growth by focusing their marketing activity on distinctive groups of customers. As a consequence, sales cross-elasticities might be smaller than if primary demand were relatively flat. Given that competitive reactions are stronger when cross-elasticities are high, this might result in less reaction.

Second, it may also be that market growth has different effects on different marketing mix variables. Advertising clearly has long-term effects. Thus, managers might avoid making immediate changes to advertising when there are sudden changes in the
competitive environment. This tendency would be stronger when the market is growing and advertising is already planned as a long-term investment.

Finally, it is also possible that high growth markets are more uncertain and firms might wait and see before reacting. This would follow the findings of Biggadike (1979) and Robinson (1988) who find that start-up businesses react less because of higher uncertainty associated with the impact of their actions.

In spite of these arguments, the majority of evidence supports the idea that market growth is positively correlated with stronger reactions. This is consistent with Bowman and Gatignon (1995) who find that firms react more quickly in high growth markets.

**Capacity Utilization.** Another explanation for lower competitive responses in high growth markets would be that firms in such markets might be at full capacity. This variable does not itself fully explain competitive reactions but it certainly affects them. If an industry is currently at full capacity, the urgency to react is less critical because a successful reaction could lead to increased demand that the firm might not be able to supply. Consequently, this variable acts as a moderator of the growth factor. The impact of market growth on competitive response should increase as capacity utilization decreases.

**Product Standardization.** As markets evolve, so do the products offered in the industry. At least from the technological perspective, standards tend to develop, even if segmentation leads to some differentiation. This standardization reduces the ability of firms to distinguish their products and as a result, markets become more price sensitive. Consequently, as a market evolves towards standardization, price becomes a typical instrument of reaction. Thus, we should expect the commoditization of markets to lead to strong price competition and lower prices. Interestingly, in study of retail markets, Campbell and Hopenhayn (1999) find that larger markets are associated with lower margins and more customers per establishment. However, Fershtman and Pakes (2000) demonstrate that there may be forces that counteract the tendency to standardize as a market evolves. In an evolutionary dynamic model, these authors show that a collusive environment (which is more likely as the number of firms in an industry decreases) can
lead to greater variety in the products offered to consumers. Given these countervailing effects, it is perhaps unsurprising that Ramaswamy, Gatignon and Reibstein (1994) obtained inconclusive results in their analysis of how the degree of price competition changes as a function of the age of the market. The study is based on PIMS data and it is also possible that PIMS data may be too aggregate (in terms of the unit of analysis) to measure the strength and speed of price responses in new markets. Longitudinal data may be more appropriate to observe these effects.

Environmental Stability. Environmental instability refers to environments/markets in which many changes occur and/or the timing of these changes is difficult to predict. A critical source of instability is the rate of technological change (Mansfield 1961). For example, in some industries, firms typically renew all or part of their product line frequently. The technological standard may also change often in some industries while others conserve the same technology throughout the entire history of the industry. Organizations born in periods of technological change may be better adapted to new changes in technology than others. This would follow from population ecology research and is supported by Bowman and Gatignon (1995)’s finding that firms respond faster to new product entry if they face a high rate of technological change.

Market Entry and Exit

The competitive structure of a market evolves throughout the product life cycle with new entrants but also with exits. A newcomer causes a disruption in the market (Schumpeter 1943) and a new brand poses a threat to existing brands that typically monitor the behavior of their competitors to the extent that they can. Therefore, incumbents who are focused on maintaining their position in a market are typically the firms that respond most aggressively to new entries. Monitoring of competitors is a typical characteristic of markets with a limited number of competitors. As markets contain many players, it may become harder to monitor each competitor. Although several studies have failed to identify market concentration as a significant factor explaining the extent or the speed of responses, Kuester, Homburg and Robertson (1999) found a strong but negative impact on several aspects of the reactions: retaliation with changes in the product mix are less likely in concentrated markets, reactions tend to be
slower and more concentrated with fewer marketing mix variables (low breadth). These cross-sectional results are consistent with economic theory which argues that concentrated markets are less competitive. Therefore, if these results were to apply within an industry over time, one could hypothesize that, if a market evolves with new competitors, concentration typically decreases and incumbent reactions increase in intensity, speed and breadth. Conversely, in an industry with strong network effects where markets typically become more concentrated over time, we might expect incumbent reaction to decrease in intensity, speed, and breadth.

In addition to this direct impact of entry on the competitive nature of markets, a market entry may change the elasticities of the competitors’ marketing mix variables. Using this idea, Shankar (1997) explains why some firms retaliate while others may not. It also explains changes in marketing mix allocation. There is little research to provide insight as to what factors would allow a prediction of how the marketing mix elasticities would change across firms and for different entrants. Research on changes in marketing mix elasticities over time focus on how environmental factors affect competitors (Bowman and Gatignon 1996, Parker 1992).

One possible moderator is the impact of the entry itself on primary demand. Most studies of competitive reactions ignore the primary demand effects. If an entry increases primary demand, the incumbents do not feel necessarily the effect of the entry on sales or profitability. The threat should be expected to be stronger if the primary demand for the industry is not expected to improve due to the entry. This factor could be added to the framework presented by Shankar (1999) to understand the entrant’s expectations of the incumbents’ reactions. Jayachandran, Gimeno and Varadarajan (1999) discuss multi-market competition as a function of the product line strategies of the competitors. Competitors that develop products positioned differently and/or targeted at different segments of consumers in order to take advantage of the varying nature of customer needs leads to market expansion and deter potential new entrants thus reducing the competitiveness of the market.

A further issue is to consider how the creation of barriers to entry (for example through experience, fixed assets or advertising) as an industry matures affects the nature of competitive response. On the one hand, the creation of barriers to entry may remove
the need for the incumbent firms to innovate since the likelihood of an aggressive new competitor is reduced by the barriers to entry. On the other hand, increased barriers to entry may create an incentive for incumbent firms to increase their efforts to innovate since the barriers to entry can provide an opportunity for the incumbent to price a new innovation aggressively and thereby recoup the costs of development. An interesting area for future research is to measure the nature and gravity of competitive response as the degree of concentration changes.

**Evolving consumer response**

Regardless of the market structure, as markets gain maturity, consumer expectations and behaviors change. While dynamics of customer expectation and behaviors may be more easily tractable in B2B markets, generalization and theorizing with respect to demand evolution has been sparse. For consumer markets, research has focused on the changes in marketing mix sensitivity resulting from changes in consumer expectations and behaviors. No general pattern appears consistently across the many empirical studies studying the evolution of marketing mix elasticities over the product life cycle. One potential explanation for this is that customer characteristics themselves change as markets move from early growth to late growth and eventually to maturity. For example, Bergemann and Välimäki (1996) analyze the impact on competing firms of “customer learning through experimentation”. In this model (where a key aspect of the product is not observable), the firms choose introductory prices below marginal cost to sustain experimentation. Prices rise thereafter, as the relative merits of competing products become better known. In general however, as markets mature and growth slows, customers typically become more price sensitive and less responsive to advertising. Beyond the explanation due to increased competitiveness of the markets, these relationships follow the changes in the buyers’ profiles (innovators versus imitators or leaders versus followers) and theories of consumer learning. These changes in market demand characteristics affect competitive responses. Gatignon, Anderson and Helsen (1989) followed by Shankar (1997, 1999), Kuester, Homburg and Robertson (1999) use marketing elasticities to predict competitive responses. The higher the elasticity relative to the competitors, the stronger are the reactions.
External Influences and their Impact on the Relationship between Market Evolution and Competitive Interactions

Having considered the relationships between competitive dynamics and market evolution which may exist without the influence of external mechanisms, we now analyze four external factors that appear to have played a significant role recently in changing competitive dynamics and market evolution (Figure 1). These are (1) the use of patents and licensing, (2) the deregulation of advertising and marketing activities, (3) the deregulation of pricing and/or supply considerations and (4) technological innovations in marketing support activities.

Patents and Licensing

As noted by Tirole (1988), patents provide the patent holder with a temporary monopoly in order to provide incentives *ex ante* for companies to invest in R&D. In most countries, a patent holder also has the option of licensing her innovation. Thus, without loss of generality, we assume that patent protection and the potential to license are both external factors that increase the attractiveness of investing in speculative R&D. It is important to note that the degree of patent protection across industries and across countries is highly variable. In the pharmaceutical industry and computer industry, patents have been primary drivers behind the success of major firms (see *The Economist*, “Patent Wars”, April 8, 2000 and “Pfizer’s prize”, Feb. 12, 2000). Yet in many sectors, patent protection is weak (Scherer and Ross 1990) and a current focus of government attention in recent months has been to strengthen patent protection.

For example, the Canadian government increased patent protection for pharmaceuticals in 1992 ([http://cbc.ca/consumers/market/files/health/drugpric.html](http://cbc.ca/consumers/market/files/health/drugpric.html)) and this led to important structural changes in the competitive marketplace i.e. R&D spending as a percent of sales has doubled since the regulatory change.

Thus, it seems apparent that the direct impact of increased patent protection is to increase the amount that firms invest in R&D. Our interest is in the secondary effects that such regulatory changes might create. One possibility is that pre-announcements will tend to have greater weight in industries where patent protection is strong (it will be more difficult for competitors to generate a viable response to a pre-announcing competitor).
Therefore, when firms have the ability to pre-announce, increases in patent protection should lead to greater pre-announcing thereby amplifying the impact of technology (and creating greater disparity in firm size and higher industry concentration). A further possibility is that the ex post incentive for an incumbent to invest in technology may be lowered since replacing the inferior technology will cannibalize existing sales (Ghemewat 1991).

While the primary effect of increasing patent protection is ultimately to increase the elasticity of R&D spending, there are two further potential effects that such changes may generate:

1. Given R&D’s strategic character, an analogy can be made with the findings of Shaked and Sutton (1982) and Iyer (1998) with respect to quality or service investments. This analogy suggests that firms are likely to become asymmetric competitors where one firm becomes the technology leader and others continue to supply the existing technology to the market but at much lower prices.

2. Given that firms are spending large sums to develop technology that may ultimately be nullified by the patent of a competitor, such changes also increase the motivation for firms to merge. Consistent with this observation, Scherer and Ross (1990) find high concentration indices in industries where patent protection is strong and R&D spending is high.

**Deregulation of Advertising and Marketing Activities**

A number of well-known markets such as pharmaceuticals and tobacco and service markets such as lawyers and doctors face significant barriers to marketing activity. In most Western countries, downstream advertising of prescription drugs is banned and most tobacco companies face significant regulation with respect to the form of communication that they can utilize.

Due to advances in technology, certain industries are becoming better understood in terms of their negative externalities and these industries may well face more (and not less) regulation. In the tobacco, alcohol, and OTC drugs industries, the net effect of regulation is to create artificial distortions in the spending budgets of firms. For example, tobacco firms in North America diverted significant funds from advertising to event sponsorships (car racing, cultural events, skiing) with the restrictive regulations that were implemented in the 1970’s. On the one hand, this may have limited the growth and popularity of
tobacco and its consumption has declined steadily since the 1970’s. On the other hand, these regulations tend to limit the degree to which tobacco firms compete with each other and may have contributed to higher profits.

Nevertheless, a significant factor that affects economic development in many western economies is the freeing up of many facets of business, which in the past have been heavily regulated (notably telecoms, utilities, transportation, and the media). Interestingly, an effect of deregulation for certain marketing activities is to make reaching and communicating with consumers less costly. With profit maximizing behavior, this means that a number of customers that were previously “too expensive” to reach may become attractive with deregulation. We need only think of degree of marketing activity that one now observes in many of the previously regulated industries. Thus, an obvious first order effect is to increase the spending that firms allocate to marketing.

A second order effect in mature categories where the differences between brands are not major may be an overall reduction in industry profitability (Tirole 1988). As noted above, a first order effect of advertising deregulation is for firms to spend more on advertising (the de facto impact of advertising deregulation is to reduce the cost of sending messages to potential consumers). When overall category demand is inelastic, the main objective of company’s advertising is to attract consumers who would otherwise have purchased from a competitor. In these conditions, it follows that higher advertising increases competition between firms and ultimately, this can lead to lower profits (Soberman 2000). As a result, many firms have responded to the deregulation of marketing activity by trying to increase the level of perceived differentiation of their products. For example, with the deregulation of long distance telephone service, a significant factor has been the efforts of competitors to differentiate themselves through numerous call plan options and special services.

**Deregulation of Pricing and or Supply Considerations**

A second level of deregulation concerns the regulation of pricing and supply. Regulation has been used by many governments to protect certain industries and ensure profitability for firms that might otherwise have been unable to finance large up-front

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8 In spite of creating supra-normal profits for firms in these industries, the regulations may be well justified. Our discussion does not include the negative externalities of products such as tobacco and alcohol (i.e., the societal cost of tobacco or alcohol related health problems), which is beyond the scope of this paper.
fixed costs. In addition, regulation has been a preferred form of ensuring reasonable levels of investment in industries which are natural monopolies (industries with declining marginal costs). The best examples of natural monopolies are industries with significant network effects (telecommunications, railroads, utilities). A number of papers highlight the challenge of network access pricing for firms that wish to compete after deregulation (Spulber and Sidak 1997, Armstrong and Vickers 1996, 1998). For example, how much should Sprint (a long distance service provider) have to pay in order to access lines that are owned by Southwestern Bell (a local service provider that also competes with Sprint in providing long distance service)? A key observation is that even with deregulation, there continues to be a need for government involvement especially when there is an absence of a competitive network.

Deregulation is also an important factor in many industries where until recently there was heavy government involvement for military or strategic reasons. The usual impact of deregulation is to increase demand (in the case of price deregulation) or to increase supply (in the case of supply deregulation). In general, the impact of deregulation is increased sales volume and greater economic efficiency in the short term. The ability of firms to limit the profit erosion created by pricing deregulation is affected positively by the degree to which there is cross-ownership and multi-market contact between operating firms (Parker and Roller 1997). Nevertheless, the main effect of pricing deregulation is the lowering of prices which generally leads to reduced profits for firms in the industry. When significant R&D expenditures or fixed costs are essential to compete in this market, deregulation may even lead to a reduction in the quality of service. This is especially true when these investments are sunk and prices charged for products are unrelated to these expenditures. In this case, strategic investments have a money burning character (Iyer and Soberman 1999) and pricing deregulation has the potential to make firms strictly worse off.

A second order effect of such deregulation when it leads to reduced profits for industry players may be the appearance of intermediaries who take on the role of coordinating the market (Bernheim and Whinston 1986). Iyer and Soberman (1999) also show how an intermediary can be used to better coordinate strategic decisions even when

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9 A thorough discussion of natural monopolies can be found in Varian (1992) and Tirole (1988).

10 Quotas are the most direct form of supply control; however, restrictive licensing can also be used to achieve the same objective.
active firms continue to compete on the basis of price. An interesting area for future research is to analyze the activity and growth of intermediaries in markets where deregulation has occurred recently.

Another point, which affects companies that have been deregulated, is that the lowering of prices tends to push all firms to the “lowest common denominator”. That is, firms feel pressure on their profit margins and, as a result, they reduce the level of service that they provide. In these conditions there are strong incentives for firms to distinguish themselves by offering a variety of price service combinations. Firms can avoid the dilemma of “lowest common denominator” competition by providing different service for different customers. Hence, over the past 20 years, the deregulation of the airline industry has led to the creation of new level of service “business class” (in addition to economy class and first class). In addition, frequent flyer programs provide further opportunities for firms to distinguish the level of service they provide to different customers.

In sum, deregulation of supply and prices generally has positive economic effects because it increases the level of competition between participating firms. On the other hand, the reduction in profits generally associated with deregulation can also lead to strategies by competing firms such as delegation or increased differentiation through a broadening of the product-line (for example).

**Technological Innovations in Marketing Support Activities**

The main technological innovation that has impacted marketing support activities is the arrival of the Internet (Balasubramanian, Peterson, and Bronnenberg, 1997). This has lead to a number of behaviors that are likely to impact the evolution of a market. First, the greater ease of contacting customers and transacting with them may lead to greater competition. As noted in Balasubramanian (1998), the direct marketer effectively enters into competition with all “bricks and mortar” retailers because location is not relevant for a retailer whose presence is Internet-based. This paper highlights the complexity of competition that exists when the Internet marketer competes with traditional retailers and manipulates the coverage of the direct channel. Nevertheless, a key observation from this research is the degree to which the direct channel can bring prices down in traditional

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11 Pruzan (1996) underlines the “vast marketing opportunities” that result from deregulation where firms can now “target” many customers through a variety of media and “special business customer services”.

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markets. In fact, Sheridan (1999) suggests that websites may lead to a commoditization of banking.\footnote{Sheridan (1999) underlines that banks feel compelled to invest heavily in internet services without having a clear strategy of how they intend to compete (at the very least, the natural outcome of such behaviour is likely to be reduced profits).}

However, we must also balance this observation with the potential of less competition. When not all firms are able to make the switch to electronic based services and communication (for financial or resource-based reasons), industries may evolve to have one or two dominant firms. For example, a number of large PC manufacturers such as Wang, Packard Bell, IBM and Compaq have all suffered due to the tremendous growth of Dell and Gateway which specialize in Internet-based distribution.\footnote{Wysocki, B. (1999), “Corporate Caveat: Dell or Be Delled”, \textit{Wall Street Journal Europe}, May 10, 1999.}

Second, the increased importance of Internet business and shopping is likely to lead to greater price competition and comparison-shopping by consumers (Lal and Sarvary 1999). This is especially true for products that are primarily search goods (Nelson 1974).\footnote{These attributes have also been called experiential and non-experiential attributes (Smith and Kempf 1998), or non-digital and digital attributes (Lal and Sarvary 1999).} As noted by Balasubramanian, Peterson, and Bronnenberg, (1997), firms may be quite strategic in letting their consumers use the Internet to obtain information easily. Nevertheless, the advent of search engines and shopping agents is likely to have an important impact on the level of competition for products that are highly substitutable. These institutions have the role of assisting consumers to process and use the enormous amount of information that is available on the Internet (Iyer and Pazgal, 1999). Iyer and Pazgal show that in some cases these institutions may actually reduce the intensity of price competition in the market.

Other institutions have also formed as a result of the ease by which the Internet can bring diverse sellers and buyers together. As noted by Klein and Quelch (1997), these include on-line auctions, exchanges and post and buy websites. The impact of these institutions on markets is difficult to predict however, auctions sites such as Freemarkets Online are observed to provide significant benefits to their clients.\footnote{See HBS Case Freemarkets Online 1999 for further information.} The impact is to make it more difficult for a supplier to charge a price that is non-competitive to a downstream firm. Ultimately, this has the potential to accelerate consolidation or exit by firms that cannot charge competitive prices.
Finally, a key concern raised by the growth of the Internet concerns the way that information is generated and collected on the Internet. In fact, consumers’ concern about an invasion of privacy is an important barrier to the growth of internet-based business (Wang, Lee and Wang 1998). Because users of the Internet leave traces with every keystroke, there are a number of key issues including the access, collection, monitoring, analysis, transfer, and storage of personal information. While the direct effect of privacy concerns will be to slow growth, the Internet may have the side effect of sensitizing consumers to the collection of information in all arenas. Over time, this might make it more expensive to collect and use customer-specific information.

4. CONCLUSION

The objective of this chapter has been to provide an integrative framework for better understanding how two key research areas in marketing, Competitive Response and Market Evolution are inextricably linked. In the past, researchers have studied Competitive Response primarily through analyzing how firms react to initiative actions (product, price or marketing mix) made by competitors. For the most part, this research is focused in well-established markets primarily due to the lack of reliable time-series data in new markets and virgin categories.

In contrast, the study of market evolution has focused primarily on the diffusion and growth approach or on the analysis of market structure (which has its origins in the early industrial organization literature). In general, the literature does not address the manner in which competitors respond to each other affects the development of markets and vice versa.

Yet we have significant intuition that the interaction of competitors has a strong and important effect on the development of markets. We need only look at the difference between markets that have been highly regulated in some countries (and competitive response is effectively eliminated) and deregulated in others to highlight the difference in the evolution of markets. For example, the landscape and the evolution of the broadcast/cable TV market in the USA (largely deregulated) is significantly different than that of Europe (highly regulated) and these differences can be largely attributed to the
efforts of US broadcasters to respond to each other while at the same time meeting the needs of a rapidly growing market.

Thus, we have attempted to provide a basis for better understanding the links between these two areas by highlighting the areas where much work remains to be done. We do this by first, providing a comprehensive review of the primary dimensions of competitive response. It proves useful to divide the dimensions of competitive response into those that are pre-emptive and those that are responses to existing competitors. We then review the important literature on market evolution that follows from the two approaches previously mentioned. The most important parts of the chapter are the sections that discuss the impact of Competitive Response on Market Evolution and vice versa. There is already some research that is useful to understand these impacts in the context of our framework. Yet these sections highlight a number of links where our understanding remains limited or conjectural at best. Our discussion of external influences is intended to provide a richer basis for considering these links in the future. With the rapid changes in technology and communication that appear to be impacting all markets of significance, we believe it is necessary to consider external factors in order to better understand the relationship between Market Evolution and Competitive Response. It is our hope that the framework we present here will assist in that regard.
REFERENCES


Bergemann, Dirk and Juuso Valimaki (1996),"Learning and Strategic Pricing", Econometrica, Vol. 64, No. 5 (September), 1125-1149.


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Brod and Shivakumar (1997), “R&D cooperation and the joint exploitation of R&D”, 


Lancaster, Kelvin (1990), "The economics of product variety: survey", Marketing Science, 9, 3 (Summer), 189-206.


Mickwitz, G. (1959), Marketing and Competition, Societas Scientarium Fennica, Helsingfors, Finland (available from University Microfilms, Ann Arbor, MI).


Scherer F. and David Ross (1990), Industrial Market Structure and Economic Performance, 3e, Dallas, TX: Houghton Mifflin.


Primary Dimensions of Competitive Dynamics

• Pre-emptive Activities
  - Investment in Over-capacity
  - Innovation
  - Signalling
  - Launch Timing

• Competitive Reactions
  - intensity
  - marketing mix instruments
  - direction of response
  - speed
  - complexity
  - breadth

Primary Characteristics of Market Evolution

• Diffusion and Growth
  - Speed of Diffusion
  - Market Potential
  - Network Effects

• Market Structure
  - Perception/Preference Evolution
  - Consumer Response to Marketing Mix
  - Channel Structure

• Technological Evolution

External Influences

• Patents and Licensing
• Deregulation of Advertising and Marketing Activities
• Deregulation of Pricing and/or Supply Considerations
• Technological Innovations in Marketing Support Activities

Figure 1 – A Framework for Understanding Interactions Between Market Evolution and Competition Dynamics