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# CONTENTS

**PART 3 THE CONDUCT REGARDING COMPETITIVE LINKS**

# 1 Introduction and overview

In modern economic systems the supplier (marketer) of a product or service generally encounters two major parties in the marketplace:

(i) the buyers (consumers) with their needs and preferences, who can decide whether or not to buy the offered product, and

(ii) the competitors who offer more or less similar alternative products or services, which these buyers may choose instead of the offered product to satisfy their needs.

In marketing, over a period of more than three decades, the dominant research tradition has been the study of the links between suppliers and the first party - the buyers - with an emphasis on consumer behaviour. This emphasis is understandable given that the basic characteristic of marketing is customer orientation. The work on consumer behaviour has produced important knowledge about consumer decision making and has yielded a large variety of models that can be used to predict the market share of a product, given the characteristics of the consumer population and the marketing mix of the supplier. Generally, in these models, competition is included implicitly.

Up to now, the link between suppliers and the second party - the competitors - has received a limited, but growing attention in marketing science. In the economic literature, the study of competition has a long standing tradition with 'classic' authors such as Cournot, Schumpeter, Chamberlin and Bain. In marketing, however, the early publications explicitly devoted to the issue of competition only stem from the late seventies and early eighties. In those years, competition became fiercer in many consumer markets, due to market saturation and decline, rapid development of superior technologies, and growing internationalisation of competition. As a result, firms were forced to view competitors as a more substantial market party than before. Parallel to this development, marketing scholars researched the competition issue with increasing frequency. Looking at the general textbooks on marketing one can observe this development. The early ones almost totally neglected the competition issue, treating it as a rather vague environmental factor relevant for marketing planning. For instance, in the first edition of Kotler's 'Marketing Management' (1967), competition is mentioned only casually on five pages. In Howard's early textbook 'Marketing: executive and buyer behavior' (1963), the term competition is even not included in the index at all. In contrast, in Kotler's 8$^{th}$ edition of 'Marketing Management' (1994), six substantial sections on competition are included (covering in total more than 50 pages), focusing on competitive intelligence systems, competitive analysis, competitive attack and defence strategies, etc. Another illustration of the growing and serious attention marketing scholars are paying to the competition issue is the fact that a special issue of the Journal of Marketing Research (August 1985) was entirely devoted to the theme 'competition in marketing'. Since then, more than 120 papers, dealing with several aspects of competition in marketing, have been published in the top scientific marketing journals.

In modern economies, the most dominant market form is the oligopolistic market where the number of suppliers is rather small and their products are typically different to some degree, but remain potential substitutes in the perception of the consumers. This implies that changes in the marketing policies of a supplier will not only affect his own marketing performance (i.e. sales, market shares, profits), but also the marketing performances of his competitors. We say that the competing firms are '*competitively linked*' to each other, which means that they are mutually dependent on each other's marketing activities with respect to their marketing performance. In this thesis we will use the term *'competitive link'* to address the mutual dependency relationship between competing firms[1]. Being competitively linked to each other implies that marketing instruments of one firm influence to some extent the marketing performance of the other. It also implies that in deciding on optimal marketing policies, each competitor has to consider the (contingent) decisions of the other competitors (Zajac and Bazerman, 1991). As a result of being involved with both parties - buyers and competitors - competing firms are continuously in a process of acting and reacting to both consumers as well as to each other. In Figure 1.1, the situation is visualised with a number of competing *firms* (Firm 1 to Firm N), each directing its own marketing proposition (i.e. product, price, communication and distribution) towards the consumers in the market and each aiming to sell its products and services to those consumers. The fully drawn arrows in Figure 1.1 represent these attempts of the firms in the direction of the *consumers*.

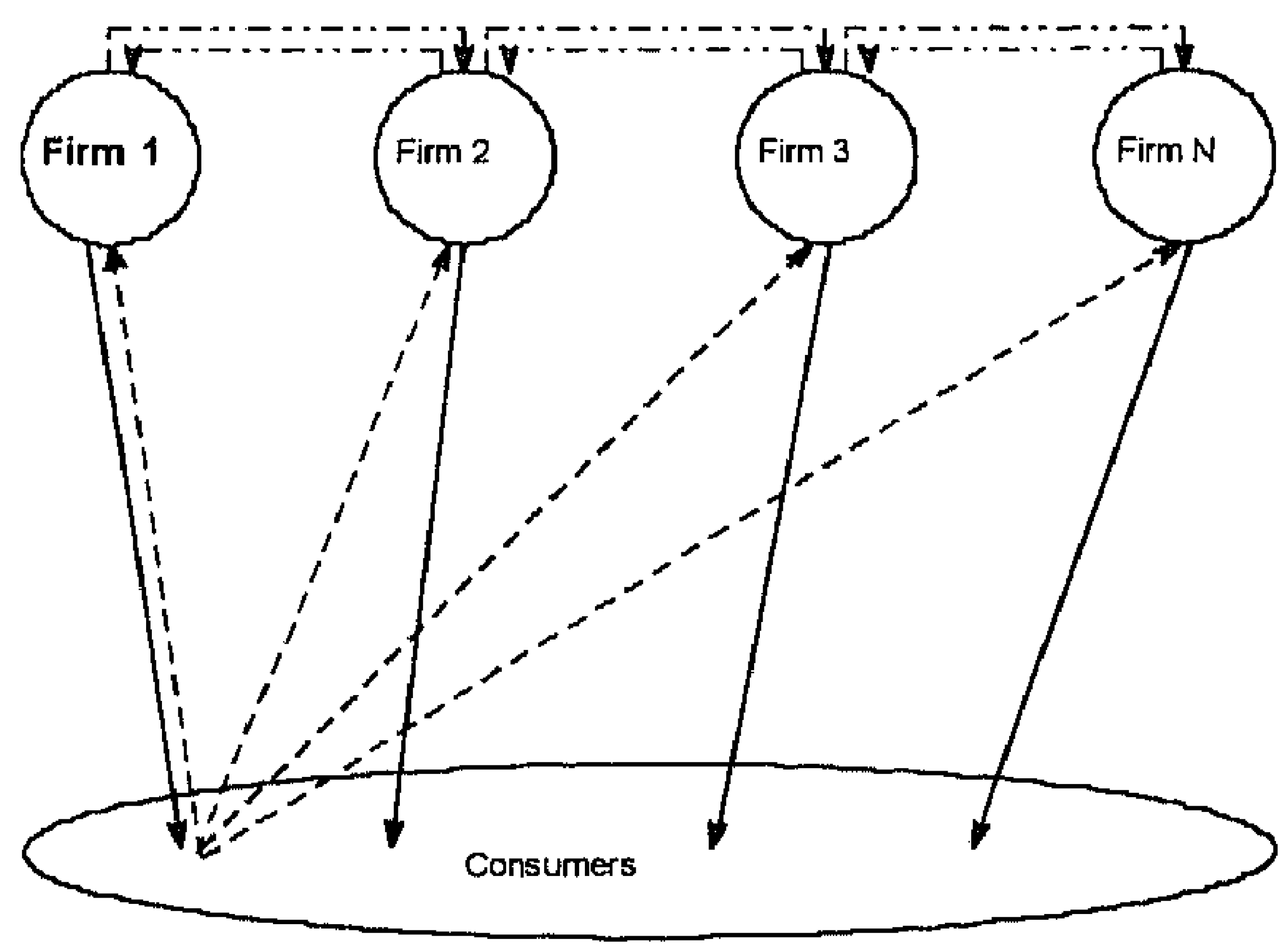


*Figure 1.1 Competitive Links in Marketing*

[1] Friedman (1983, p.1) calls those links 'strategic links'. In order to avoid any confusion about what is meant with the term 'strategic' we will call these links 'competitive'.

There is also a flow back from the consumers to the firms: the response of the consumers in terms of product purchases (i.e. money for the goods sold) and market information. Such a flow is represented in Figure 1.1 by a dotted arrow, back from the consumers to the acting firm (for clarity, an arrow has been drawn only for Firm 1). Because a deliberate marketing action by a firm is typically meant to influence consumers' buying behaviour (e.g., to attract more consumers and increase sales), consumers' responses to the action will not only affect the performance of the acting firm itself, but will also affect to some extent the performance of the competing firms (which might lose sales and market share). In other words, there are *cross-effects* of the marketing activities of one firm on the performance of the competitors. In Figure 1.1, these cross-effects are indicated by the dotted crosswise arrows from the consumers back to the *competing* firms (for clarity, also these arrows are drawn only from the perspective of Firm 1). These arrows can be viewed as a summary indicator of the actual competitive links between firms. They summarise the actual dependency relationships between firms, which may vary in strength toward different competitors and may also vary for the distinctive marketing instruments a firm may use.

Finally, due to their mutual dependencies via the buying behaviour of consumers, firms are continuously in a process of acting and reacting to *each other*. For example, a price reduction by one firm may be matched by the other competitors or warded off by them using promotion activities. A new product introduced by one firm may be followed by the others, etc. These marketing actions and reactions are represented by the dotted arrows between the competing firms at the top of Figure 1.1.

The framework presented in Figure 1.1 leads to three fundamental questions regarding competitive links addressed in this dissertation:

(i) With which other firms does a firm have a competitive link? We will call this the issue of the *identification* of competitive links. In terms of Figure 1.1, this issue poses the question of who are the Firms 1 to N?

(ii) How do competitive links become apparent in terms of the cross-effects of marketing instruments? We will call this the issue of the *content* of competitive links[2]. In relation to Figure 1.1, this points to the nature of the backward drawn arrows from the consumers towards the competitors.
(iii) How does a firm behave towards firms it is competitively linked with? We will call this the issue of the *conduct* regarding competitive links. It refers to the top arrows between the firms in Figure 1.1.

For diagnosing competition, a distinction has been made by Day & Wensley (1988) between 'customer-focused' and 'competitor-centered' approaches. Customer-focused approaches take the vantage point of diagnosing competition by analysing the competitors' propositions from the perspective of the customers. By contrast, competitor-centered approaches study competition by analysing the activities and performances of competitors directly. Following on this distinction, in this thesis we distinguish *three* perspectives from which competitive links will be studied: two customer-focused perspectives and a competitor-centered perspective.
The *first* perspective is customer-focused. It addresses competitive links from the vantage point of *individual consumers*. From this perspective one may try to detect the 'closeness' of products in terms of product similarities and product substitutabilities as perceived by customers. This perceived 'closeness' of products essentially forms the foundation for the competitive dependency relationships, i.e. for the competitive links between the supplying firms.
The *second* perspective is also customer-focused, but has its focal point at the *aggregate market* level. Here, competitive links may be investigated, for example, by studying the cross-elasticities regarding a firm's marketing activities with respect to the competitors' sales and shares.
The *third* perspective is competitor-centered and departs from customer-focus by analysing competition from the vantage point of the *competitors* themselves. This can be done, for example, by analysing the competing firms' action-reaction behaviour.

[2] The term 'content' is also used in connection with strategic management (cf. Pettigrew, 1988; Mintzberg, 1990). There, the content of a strategy refers to the 'what' of the strategies. Likewise, in this thesis, the content of a competitive link refers to the 'what' of a dependency relationship between competing firms.

Since these three perspectives are focused at different levels of the market constellation exhibited in Figure 1.1, we will refer to them as *levels of perspective*: (1) the *individual consumers* level, (2) the *aggregate market* level and (3) the *competitors* level. If these three levels of perspective are applied to the *identification, content, and conduct* issues of analysing competitive links, we arrive at the structure of this dissertation. It contains three main parts addressing the three research issues formulated above, while each of the issues is studied from a different perspective: Part 1 focuses on 'The identification of competitive links' and is studied in this thesis from the perspective of the individual consumers. Part 2 deals with 'The content of competitive links' which will be studied from the perspective of the aggregate market. Part 3 examines 'The conduct regarding competitive links' and will be studied from the perspective of the competitors. We will now briefly elaborate on the content of each part of the research.

Part 1 The identification of competitive links

The question to which other firms a firm is competitively linked, i.e. with whom is there a dependency relationship, can be studied on each of the three levels of perspective described above. On the competitors level one may, for instance, focus on objective technical similarities between products. Standard industry classifications (e.g., SBI- and SIC-classifications) are typical examples of such an approach. From a marketing point of view, however, the technical similarity of products is neither a necessary nor a sufficient condition for being competitively linked. In marketing science, most methods for identifying competitive links take the perspective of the consumers and can therefore be classified as customer-focused. The analysis can be done either from the aggregate market level perspective or from the individual consumer perspective. In the former case, one typically measures and analyses actual cross-effects of marketing instruments on possibly competing products (e.g., by analysing cross-elasticities). This is a *direct* way of investigating actual dependency relationships between competitors. A limitation of this approach is the fact that it depends on actual marketing activities firms have performed in the past, and one can only observe competitive links occurring as a result of those activities.

Alternatively, one can also try to identify (potential) competitive links from the individual consumers perspective. After all, in essence, competitive links arise as a result of the consumers' choice processes regarding the product offerings available to them. By studying the choice processes of consumers, for instance by analysing brand perceptions or by analysing brand switching behaviour, much can be learned about which products are 'close' to each other, at least in the mind of the consumer[3,4]. Note that this is an *indirect* way of identifying potential competitive links between firms. One assumes that if products are close to each other in the eyes of the consumer, the supplying firms will probably be mutually competitively linked. In the marketing literature, many *market structure analyses* techniques have been published, which specifically aim at identifying levels of competition among brands within a product category, based on the closeness of brands while using information from and about individual consumers. Researchers either use *judgment* information (e.g., perception data as input for MDS-analyses) or *behaviour* information (e.g., consumer purchase data for analysing brand switching behaviour) to analyse to what extent products are in competition (cf. Day, Shocker and Srivastava, 1979). Currently, new technologies are rapidly emerging, which enables the market researcher to monitor the purchase behaviour of consumers far more closely than ever before. The availability of behavioural data will probably increase further, for instance due to the development of electronic shopping. Parallel to the growing availability of data, the need for methods to analyse these data will also grow. Since, in marketing science, many methods have already been developed to this end, we devote the first research part of this thesis to investigating these methods. Chapter 2, '*Identifying competitive links based on consumer choice behaviour*', provides a review of the numerous methods developed during the past twenty-five years, which may be used by a market researcher to identify competitive links, using information about the consumers' purchase behaviour. Thus, in terms of the sub-title of this dissertation ('*a three-level perspective*'), in this part of the research, we analyse competitive links from the first-level perspective, i.e. the individual consumers.

[3] Here we refer to choice processes at the product/brand level, i.e. the process of choosing brands within a particular product category (e.g., the choice between different brands of soft drinks). Of course, choice processes and competition also exist on the level of product categories (e.g., the choice between soft drinks and coffee) or even on the generic level (e.g., the choice between food products and leisure products, cf. Abell, 1980; Kotler, 1994).

[4] In this thesis we alternately use the terms products and brands, both indicating the supplying firms' offerings to the market, unless a distinction between the two terms is necessary in the context of the discussion.

Part 2 The content of competitive links

The second research part in this dissertation (Chapters 3 and 4) focuses on the issue of the *content* of competitive links. After having identified with whom a firm is (potentially) competitively linked, the next key question is how each of these links becomes apparent in terms of the cross-effects of the marketing instruments. The cross-effects demonstrate how each pair of competing firms is actually mutually interdependent, especially with respect to their marketing activities. We will use the term 'content' of a competitive link here to address the notion that each link is 'filled' with a specific configuration of cross-effects that the different marketing instruments have on the mutual performances. Figure 1.2 illustrates this conception. The various dashed and dotted arrows can be seen as a magnification of the crosswise dotted arrows towards the competing firms exhibited in Figure 1.1. The approach for analysing the content of competitive links is essentially customer-focused. The perspective is on the aggregate market level, i.e. the *second-level* perspective.

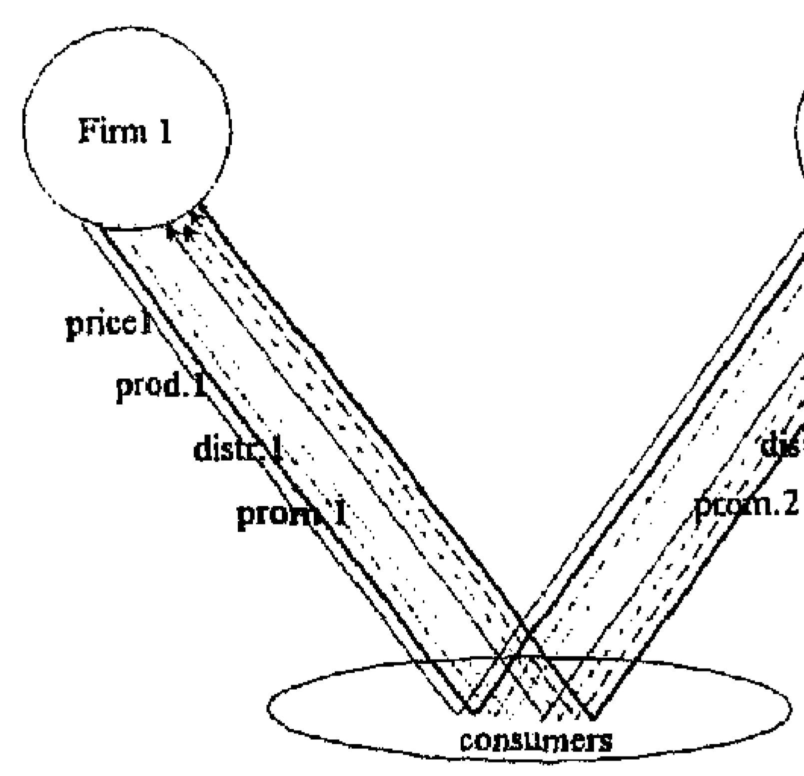


*Figure 1.2 Illustration of the 'content' of a competitive link between firm 1 and a competing firm 2*

This thesis contains two chapters devoted to the content issue. Chapter 3, '*Methods for analysing the content of competitive links*', describes how in the marketing literature the content of competitive links has been studied up to now. In particular, we will discuss two prominent, but very different approaches for analysing the content of competitive links. On the one hand, an econometric approach developed by Cooper & Nakanishi (1988), called 'Competitive Maps', which analyses cross-effects in an attraction-model framework. On the other hand an abstract-deductive approach, called the 'Defender model', developed by Hauser & Shugan (1983) and Hauser & Gaskin (1984), which builds upon a consumer choice model to infer competitive links on the aggregate market level. As will be demonstrated in Chapter 3, the two approaches are similar in the sense that they both aim at inferring and analysing competitive effects of marketing instruments. They are quite divergent, however, with respect to the modelling, the methodology, the applicability, and the information provided about the content of competitive links.

One of the few methods that combine the virtues of both approaches was developed by Shugan (1987). He developed a method for inferring the brand locations in the Defender model from supermarket scanning data. While Shugan's idea is appealing, the proposed method for inferring the brand positions is subject to a number of restrictions. In Chapter 4, *'Full-information maximum likelihood estimation of brand positioning maps using supermarket scanning data'*, we will build forth on Shugan's approach, and develop an alternative method with a number of advantages. One of the main advantages of our method is, that it makes it possible to simultaneously infer both the brand locations and the consumer preference distribution from scanning data.

Part 3  The conduct regarding competitive links

The third and final part of research in this thesis concentrates on the *conduct* issue regarding competitive links. The key question is how firms go about inter(re)acting to each other, given the fact that they are mutually dependent on each others' marketing activities. This is an issue that has been studied for a long time by oligopoly theorists. Since the 1838 Cournot-model, many studies have been performed, predominantly using an abstract-deductive way of reasoning. Also in marketing science, a vast abstract-deductive research tradition exists, where 'optimal' marketing policies are deduced, given a specific set of assumptions about the market, about the behaviour of consumers, and about the firms and their offerings (cf. Eliashberg & Chatterjee, 1985). Often, game theoretical concepts are used for these purposes (cf. Moorthy, 1985, 1993). Moorthy (1993) points out, though, that the usefulness of such deductive approaches for practical competitive marketing decisions is limited: "problems arise, therefore, in using these models to recommend competitive strategies for firms...", due to the fact that "..optimal competitive strategies must necessarily be situation-specific. And the dimensionality of the 'situation-space' is large" (Moorthy, 1993, p.186).

In this thesis, however, we are not so much interested in the normative side of the conduct question ('how should firms behave') but rather we focus on the descriptive, empirical side of marketing conduct in competitive situations ('how do firms behave'). The approach for studying this issue is essentially competitor-centered, because the subject of observation is competitor response and not market (consumer) response. We look at competitive links as it were 'through the eyes of competitors'. Accordingly, this part of research looks at competitive links from the *third-level* perspective.

In Chapter 5, *'Analysing the conduct regarding competitive links'*, the various ways in which competitive marketing conduct has been studied so far will be discussed. In particular, we will focus on the 'reaction-matrices approach', a general research methodology for diagnosing competitive behaviour, which was initiated by Lambin, Naert & Bultez (1975) and further developed by Hanssens, Leeflang, and others (cf. Hanssens, 1980; Plat & Leeflang, 1988; Leeflang & Wittink, 1992). In addition to this general methodology, we will also address the current descriptive body of knowledge concerning actual competitive reaction behaviour. One of the conclusions will be that empirical research on competitive reaction behaviour is quite scarce. There is a lack of knowledge, especially concerning the factors explaining competitive reaction behaviour.

In Chapter 6, *'Competitive marketing reactions to new product introductions'*, we contribute to the descriptive body of knowledge on competitive reaction behaviour, by conducting an empirical study focusing on the explanation of marketing reactions by firms, as a response to new product introductions by competitors. The empirical findings from this study are based on

98 interviews held with marketing managers responsible for a particular product(group) in a fast moving consumer good product category.

We conclude this dissertation with a brief '*epilogue*', that addresses some general research developments in the field of marketing and competition. It also gives a reflection on the specific research performed in this thesis.

Let us now summarise the structure of this thesis. We view competition in marketing as a process by which mutually dependent firms act and react to the consumers and to each other with the aim of fulfilling their respective marketing objectives. The mutual dependencies between the firms considered here are customer-driven and arise because of the autonomy of consumers deciding to buy products from one firm or from another. We call the mutual dependency relationships between firms *'competitive links'*. We are concerned with three issues related to competitive links, the *identification* of competitive links ('with whom does a firm have a competitive link'), the *content* of competitive links ('how does a competitive link become apparent in terms of the mutual cross-effects of marketing instruments'), and the *conduct* regarding competitive links ('how do firms behave towards firms they are competitively linked with'). These three issues will be addressed in this dissertation. We further distinguish three levels of perspective from which competitive links are studied: the *individual consumers* level, the *aggregate market* level, and the *competitors* level. Figure 1.3 summarises the structure of this thesis, combining the three research issues with the three distinctive levels of perspectives we use for analysing them. While in the first two parts of research in this thesis the emphasis will be on investigating and developing methodologies for analysing competition, in the third part we will focus on and extend the substantive body of knowledge on competitive behaviour.

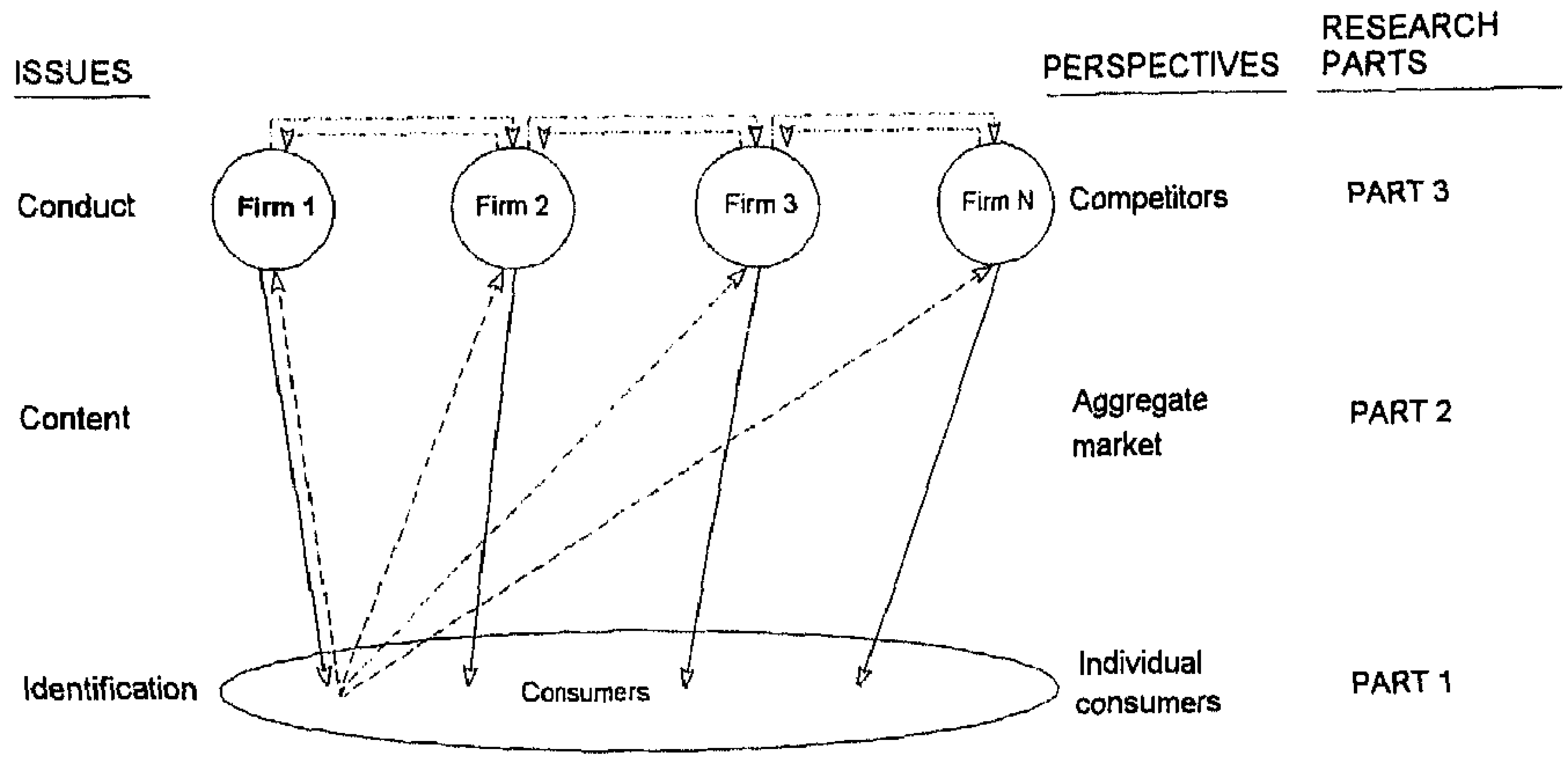


*Figure 1.3 Issues and perspectives for analysing competitive links in marketing*

We conclude this introduction with some remarks about the boundaries of this thesis. First of all, it is clear that we confine ourselves to the 'tactical' competitive setting of marketing managers operating with their products in a certain, existing consumer market. Main focus is on 'internal competition', that is on rivalry between incumbent firms. We do not explicitly address the more strategic competitive settings where the environment is defined broader and decisions typically are taken at the level of strategic business units, and focus on such issues as new business development, internationalisation, merging and partnering, etc. Many studies on this issue have been performed at interface of marketing and strategy (cf. Porter, 1980, 1985; Hamel & Prahalad, 1994; Prahalad, 1995). For our purposes, the broad, 'Porterian' competitive environment is only relevant for as much as it influences competition at the product/brand level.

Another observation is that, in our conception of competition, marketing channels (e.g., retailer organisations) are not explicitly defined as a third market party as proposed by Wensley (1994). Certainly, retailers form an important factor, especially in consumer markets. In this thesis, we focus on 'horizontal' competition between suppliers of products. Retailers are treated as being a part of this competition if and only if they act as autonomous suppliers in the market by offering their own products (i.e. 'distributor owned brands') to the consumer market. In that sense, marketing channels indeed form a factor in this study.

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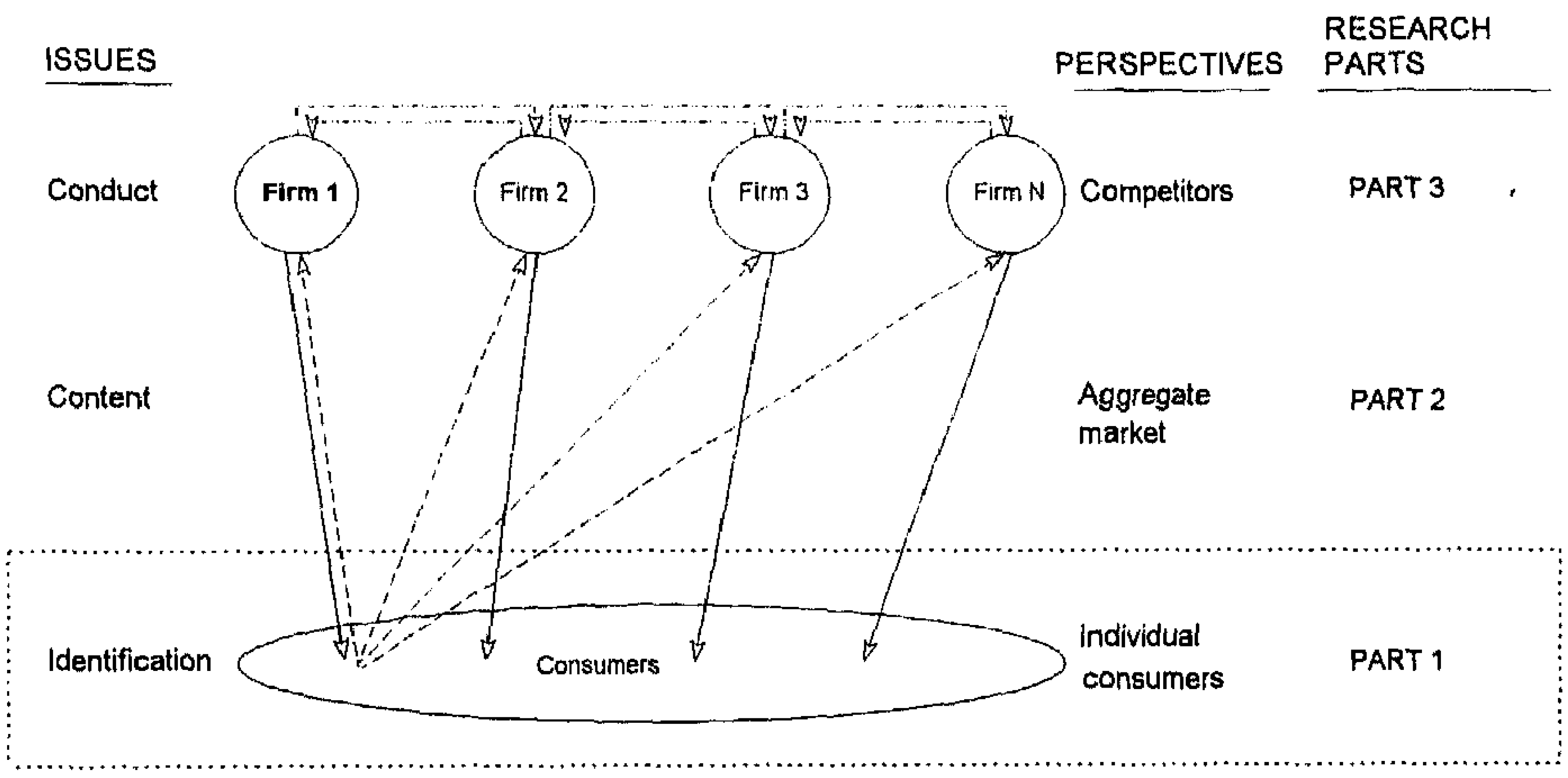
# Part 1

## The identification of competitive links



## 2 Identifying competitive links based on consumer choice behaviour*

### 2.1 Introduction

For practically every product there exist competing products. For a marketing decision maker it is of paramount importance to know with which products he is competing, i.e. with whom he is competitively linked. The aim of this chapter is to review the methods and techniques available for identifying competitive links. We discuss the way the so-called 'market structure analysis' techniques can be helpful for this purpose. In particular, we focus on methods based on data about the actual product choice behaviour of consumers. Before going into the specific methods and techniques, however, we will first elaborate on the specific objectives and demarcations of this chapter.

For many marketing decisions that need to be made in an organisation, the analysis and understanding of the competitive environment is of great importance. After all, even elementary matters such as market share analysis and product positioning are strongly dependent on how one defines and experiences the market and the competitive arena (Weitz, 1985; Prahalad, 1995). It depends on the type of decision under consideration, how narrow or broad the competitive arena should be defined. For instance, when dealing with strategic issues, such as new business development, internationalisation, mergers and acquisitions, the strategic window must be opened

* This research part builds on an earlier publication: Waarts, E., 1992. Concurrentiestructuren ontrafeld: analysemethoden gebaseerd op geobserveerd gedrag. *Jaarboek voor de Nederlandse Vereniging van Marktonderzoekers*, 95-118.

wider and the competitive arena defined broader than when dealing with a tactical marketing decision. In this thesis, as has already been pointed out in the first chapter, we will *not* focus on the broad, strategically relevant competitive environment, but rather we will zoom in on the tactical level of the product-market combination[1]. The starting point is the situation (as in Figure 1.1) of the marketing decision maker who, for a specific product or brand, wants to use marketing instruments with the goal of influencing the market position and/or the profit performance of the product. These decisions take place in a market context in which a number of competing, though not identical, products exists and where each of the firms strives for the favours of consumers. The implication of this setting is that the firms marketing these products are mutually dependent or *competitively linked* to each other with respect to the effectiveness of their marketing policies and, thus, with respect to their marketing performances.

The central question in this chapter is: how can a firm identify to which other firms it is competitively linked? There is a large number of formal methods and techniques developed over the past twenty-five years that can be helpful for this purpose. Generally, these methods can be classified as customer-focused because they rely on information from or about consumers. A distinction can be made, though, between approaches focusing on the aggregate market level and approaches departing from the (individual) consumer level. From the aggregate market perspective one can identify competitive links *directly* through the analysis of the actual cross-effects of marketing instruments. Typically, when taking this approach, one would first select a set of potentially competing products. Thereafter, one would measure, instrument by instrument, the actual cross-effects between each of pair of products, based on information about the marketing instruments employed (e.g., shelf-prices, advertising expenditures, etc.) and about the sales performances of the products. The output of such analyses can produce detailed information, in fact addressing not only the identification of competitive links, but also addressing their content. We will focus on that issue in the second part of this thesis.

[1] For the 'strategic' decisions category, a large number of methods and techniques has been developed (e.g., portfolio analysis, strategic group analysis) that aid managers in the structuring and understanding of their environment. A useful overview of methods and techniques for this type of decisions can be found in e.g., Prescott and Grant (1988).

*Identifying competitive links based on consumer choice behaviour*

As an alternative approach, one can investigate the possible existence of competitive links from the individual consumers' perspective. In that case, briefly speaking, one tries to identify competitive links in an *indirect* way, by assessing the 'closeness' of products in the perception of consumers. In the literature, methods for identifying levels of competition (i.e. closeness) among products are called '*market structure analysis*' methods (cf. Srivastava, Leone and Shocker, 1981; Urban, Johnson and Hauser, 1984, Kumar and Sashi, 1989). These methods predominantly utilise data about customers, their perceptions, their preferences, and their purchase behaviour. Hence, they address the fundaments of competitive links, namely the 'closeness' of products in the eyes of consumers.

Within the large collection of market structure analysis techniques, Day, Shocker and Srivastava (1979) and Lilien & Kotler (1983) make a distinction between methods based on *judgment* information (e.g., consumers' perceptions of products) and methods based on information about the actual purchase *behaviour* of consumers (i.e. the outcomes of this behaviour in terms of actual products purchases). Day et al. (1979) state that purchase behaviour provides the best indication of what people do, or have done, but not necessarily what they might do under changed circumstances. Judgment information gives better understanding into future patterns of competition and the reasons for present patterns. Within both categories - judgment-based and behaviour-based - a large number of research methodologies has been developed. While both approaches are interesting in their own right, in this thesis we have chosen to investigate further one of the two, namely the behaviour-oriented methods[2]. This specific class of methodologies is especially interesting, given the fact that behavioural data are becoming increasingly inexpensive and available to the manager and the market researcher, for instance due to the emergence of scanner panels. The challenge for the market researcher and the marketing manager will be to transform the often large quantities of data into relevant information (Wierenga, 1995).

[2] For the other category, methods based on judgment data, we refer the reader to the existing overviews by Day et al. (1979), Rao and Sabavala (1980), Srivastava, Leone and Shocker (1981), Srivastava, Alpert and Shocker (1984), Hruschka (1986) and Bucklin and Srinivasan (1991).

*Objectives*

To summarise the scope of this chapter: we will address the issue of the identification of competitive links between products. We have already discussed briefly the main research avenues in this respect. The objective of the remainder of this chapter is to review and investigate the possibilities of identifying competitive links using market structuring analysis methods. Especially, we will confine ourselves to a certain 'class' of methods, namely those which are based on information regarding actual consumer choice behaviour, as opposed to methods which are based on judgment data. Within the chosen class of methods, many techniques have been proposed in the literature. In this chapter, we will review the key developments in this field in the context of their value for identifying competitive links. In that respect, we will not discuss all the published methodologies in depth, but concentrate on those methods which we consider 'landmarks' in the development of inferring levels of competition from consumer choice data. For each selected methodology we will discuss the underlying model principles. While the original publications sometimes use different notation systems, we will use a uniform notation system, for as much as possible. Therefore the formulation of a model in this chapter might differ slightly from the original formulation. Also, for each methodology we will present an example illustrating the methodology and assess its value for identifying competitive links. In addition, we present a taxonomy of methods, classifying the various methods according to a number of attributes concerning the data requirements, the methodology, the output and the information that can be inferred from the methods about the possible existence of competitive links between brands.

## 2.2 Market structure analysis

A market structure can be defined as a configuration of products which are perceived as substitutes by consumers (cf. DeSarbo, Manrai & Manrai, 1993). The structuring problem is usually conceptualised as one of identifying levels of competition among brands in a well defined product-market (cf. Fraser & Bradford, 1983; Urban, Johnson and Hauser, 1984; Kumar and Sashi, 1989). As has been mentioned already, many techniques have been developed in order to derive market structures, including those using information about the brand choice behaviour of consumers. Typically, what happens for developing such a method is that the researcher has a data set containing information about the actual purchases made within a particular product category by a group of consumers on a number of consecutive purchase occasions. This may, for instance, be in the form of strings of brand purchases by consumers over a number of consecutive purchase occasions, or in the form of a single aggregate brand switching matrix. Furthermore, the researcher also specifies a theoretical model for structuring markets, including assumptions about the choice behaviour of consumers. In the analysis phase, the data are used to parameterise and to validate the model. The type of model used in the method is essential, because it forms the fundament of the structuring principles.

Generally, the theoretical models for translating the data into meaningful market structures borrow from consumer behaviour research. For example, a substantial collection of the earlier methods is based on the paradigm that consumers simplify the process of product choice according to a hierarchical scheme (cf. Tversky and Sattath, 1979; DeSarbo, Manrai & Manrai, 1993; Engel, Blackwell and Miniard, 1995). The assumption is that a total set of products can continually be divided into subsets (or 'partitions'), within which increasingly strong similarities exist between products, with respect to the attributes. In this context, consumers are assumed to make use of a set of decision rules, including noncompensatory and compensatory rules, to decide on which product they will prefer (cf. van Raaij, 1988). Some structuring methods assume a process of sequential elimination by aspect (e.g., Butler and Butler, 1970). In that case, a consumer decides on his product choice in a sequential fashion, each time making further choices among subsets in a category. The process starts with a subset decision at the highest level in the hierarchy, that is the attribute the consumer first decides on. All products belonging to the non-selected subgroups are eliminated for further consideration. Next, the consumer chooses a sub-subset for the second most important attribute, the other products are eliminated again, and so on. Finally, at the bottom of the hierarchy a number of products remain in the choice set of the consumer, from which he makes a final choice.

Such a process can yield various market structures. Consider, for example, Figure 2.1, exhibiting two hypothetical hierarchical structures for a (lower) part of the soft drink market, in particular focusing on the product subset cola's. In this example, consumers may first decide on the *type* of cola they wish (light or regular), before deciding on the *brand*. In that case the structure would be type primary (Figure 2.1, Structure A; cf. Kalwani & Morrison, 1979). Alternatively, the process may be the other way around, if consumers first choose the brand and thereafter decides on the type (Figure 2.1, Structure B; Brand primary structure).

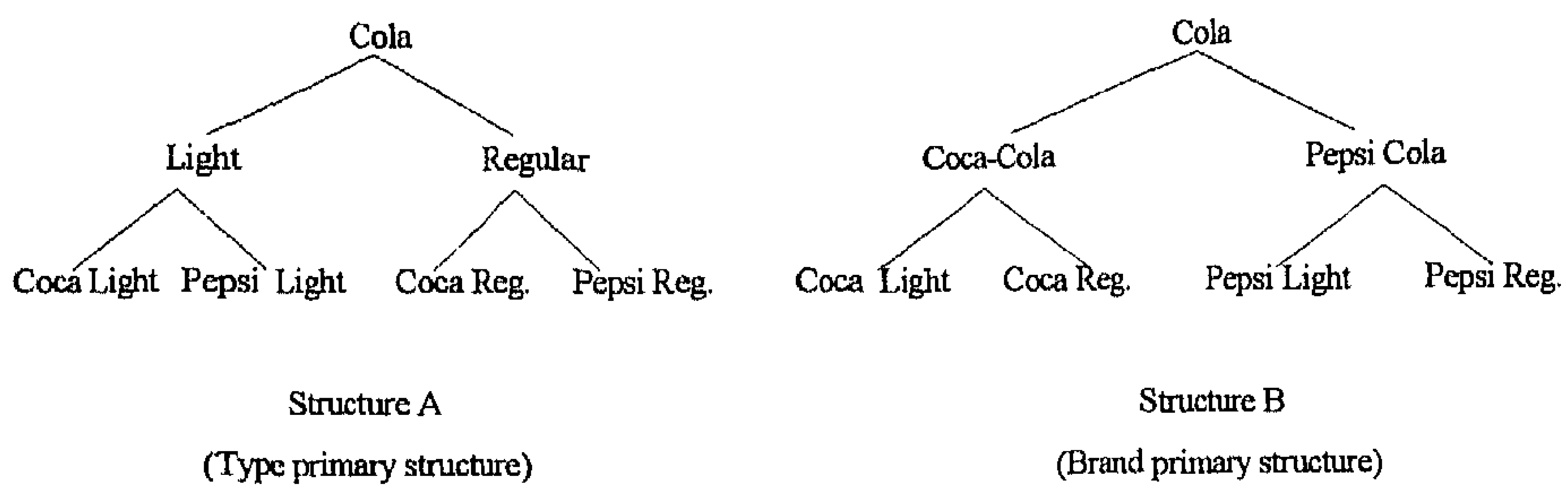



*Figure 2.1 Hypothetical hierarchical market structure diagrams for colas*

According to this approach, each product competes more directly with products located in the same subset than with products belonging to another subset. In terms of competitive links, links can be assumed to be stronger between products within the same subset than between products belonging to different subsets. For example, probably the link between Coca Light and Pepsi Light is stronger in the Type primary structure than in the Brand primary structure. This can be presumed because consumers perceive products in the same subset to be relatively close substitutes as compared to product from different subsets. Therefore, consumers are expected to be more easily influenced by marketing instruments in making a different product choice within subsets than between subsets. For example, in a Type primary structure, a 10-cents price-off for Coca Light would probably cause a number of consumers to buy Coca Light instead of Pepsi Light, because they compete closely on the same level in the market structure. One would thus expect a relatively strong competitive link between the two. In the Brand primary structure, though, the same 10-cents off action for Coca Light would probably draw customers from Coca Regular, and cause less effect on Pepsi Light because in that structure it is relatively difficult to let consumers switch from buying

Pepsi to buying the Coca brand, regardless the type of cola. The competitive link between the two is therefore expected to be relatively weak[3].

While the methods for analysing market structures use models describing hypothesised consumer choice behaviour, the consumer choice decision process itself is not directly observable. Instead, based on observed actual purchases resulting from the decision processes, one may test a model against the data and try to infer a market structure that could be responsible for the observed purchase behaviour. This is essentially what the market structure techniques described here attempt to do. Many of the methods yield a hierarchical diagram of the inferred market structure (e.g., Butler and Butler, 1970/71; Urban, Johnson and Hauser, 1984; Grover and Srinivasan, 1987; Kumar and Sashi, 1989). In addition, a number methods have been developed that capture the structure responsible for the choice behaviour in a multi-dimensional space (e.g., Elrod, 1988, Elrod & Keane, 1995).

*General limitations*

Before we enter into the developments of the market structure analysis methods for identifying competitive links, we will first review a number of general limitations that stem from the exclusive use of actual product choice data. In this context, Day et al. (1979) mention:

- Methods using data on various consecutive purchase choices of the consumer as input for the analysis, are only suitable for the analysis of frequently purchased products (thus not for durable goods), unless the purchase data is experimentally acquired in a lab situation. Furthermore, the market has to be stable, especially during the time period in which the purchase data is gathered. This is so, because the researcher has to assume that the observed product choice behaviour during the research period was stochastic in nature, and was not influenced by the marketing activities during that period.

[3] Note that this does not imply that the intensity of *rivalry* between Coca and Pepsi would be greater in the Type primary structure as compared to the Brand primary structure. It could well be that in the Brand primary structure Coca cola would even do more to draw customers away from the Pepsi brand (e.g., offer 25-cent price-off) than in the Type primary structure.

- Generally, the methods are not capable of generating the relevant product set. They depart from an *ex ante* defined collection, and may be sensitive to changes thereof. One should already take this into consideration when collecting the data. In fact, one of the basic demands that Shocker, Zahorik and Stewart (1984) place on a good market structure analysis method, namely that the derived structure should not be sensitive to changes in the product set, is generally not fulfilled.
- switching probabilities are usually based on panel data, which may obscure individual switching behaviour if the data are reported by only one member of the household. Observed switching can then result from different members of the household making consistent but different purchase decisions. Also, the analysis of purchase data can be distorted if consumers buy multiple products at the same time. In that case it is not possible to determine the sequence of switching.
- The methods generally do not differentiate according to usage occasions. For example, if a consumer usually buys a brand, say 'Amstel regular beer', for normal use, and sometimes buys 'Kylian special beer' for special occasions, one would register a switch from Amstel to Kylian, although the products are not direct substitutable. Already during the specification of the product set to be researched, one should take this problem into account. This, however, requires *a priori* knowledge about the structure. But then again, it is the structure that one is looking for in the first place.

Notwithstanding these general restrictions, methods based on actual choice data do have relevance for identifying possible competitive links, because they basically aim to infer levels of competition between groups of products. The restrictions point to the fact that one should be careful in applying the methods in the right situation and that one should be careful when drawing conclusions about market structures and possible competitive links.

Since the beginning of the seventies, a series of methods has been developed, which differ with respect to the underlying model, type of analysis, type of representation, and/or applicability. As was pointed out before, the objective of this part of the research is to discuss those methods which can be considered 'landmarks' in the development of this research field. We start with the first landmark in the history of market structuring, the Hendry-model.