

***STRATEGIC GROUP THEORY:
REVIEW, EXAMINATION AND APPLICATION IN
THE UK PHARMACEUTICAL INDUSTRY***

by
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Structured Abstract

Category General review.

Keywords: strategic groups, strategic mapping, industrial structure, UK, pharmaceutical industry.

Purpose of this paper	This paper considers the current status of strategic group theory in the light of developments over the last three decades. It then goes on to discuss the continuing value of the concept, both to strategic management research and practising managers.
Methodology	Critical review of the idea of strategic groups together with a practical strategic mapping illustration.
Findings	Strategic group theory still provides a useful approach for management research, which allows a detailed appraisal and comparison of company strategies within an industry.
Research implications	Strategic group research would undoubtedly benefit from more directly comparable, industry-specific studies, with a more careful focus on variable selection and the statistical methods used for validation. Future studies should aim to build sets of industry specific variables that describe strategic choice within that industry. The statistical methods used to identify strategic groupings need to be robust to ensure that strategic groups are not solely an artefact of method.
Practical implications	The paper looks specifically at an application of strategic group theory in the UK pharmaceutical industry. The practical benefits of strategic groups as a classification system and of strategic mapping as a strategy development and analysis tool are discussed.
What is original	The review of strategic group theory alongside alternative taxonomies and application of the concept to the UK pharmaceutical industry.

[246 words]

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Introduction

The application of strategic group theory in strategic management research stems from an observation by Hunt in 1972 (Hunt, 1972) that, contrary to existing theory based on the structure- conduct-performance paradigm in the industrial organisation (IO) literature (Mason, 1949, Bain, 1959), there appeared to exist performance differences *between* groups of firms within the same industry as well as across industries. Hunt coined the term “strategic groups” to describe "a group of firms within the industry that are highly symmetric with respect to cost structure, the degree of vertical integration, and the degree of product differentiation, formal organization, control systems, management rewards/punishments, and the personal views and preferences for various possible outcomes" (Hunt, 1972, p.8). Since then the most commonly used definition of strategic groups has been that provided by Porter: “A strategic group is the group of firms in an industry following the same or a similar strategy along the strategic dimensions” (Porter, 1980, p.129). Porter extended Hunt’s original idea to include indirect effects leading to different strategies between firms, notably the existence of market entry barriers. (Porter, 1976, Porter, 1979). A further definition is that provided by Cool, who described a strategic group as “a set of firms competing within an industry on the basis of similar combinations of scope and resource commitments” (Cool and Schendel, 1987b). The implication is that firms in a strategic group compete adopting similar strategies and resources, leading to intra-industry segmentation.

Following this initial exploration of the phenomenon of strategic groups, research blossomed. The idea of groups of firms acting along similar strategic dimensions within industries (Porter, 1980) brought together the ideas of industrial organization, with a primary focus on the industry, with those of strategic management focused on the individual firm. In terms of analysis, the strategic group can be viewed as a middle ground between the industry and the firm (Porter, 1980, Oster, 1994). Thus, the idea of strategic groups enriched the industrial organization perspective and provided a convenient taxonomy for strategic management researchers to compare and contrast groups of firms.

Perhaps unsurprisingly, as research into strategic groups expanded so a number of problems arose. Broadly this was because of inconsistency in the variables selected for analysis and

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the techniques used to classify groups, as well as the differing objectives of researchers. For example in IO, the principle focus was on understanding the level of rivalry within the industry and its impact upon industry performance (Cool and Dierickx, 1993). Most studies encompassed a multi-industry context and employed very general, arguably almost blunt measures to define strategic groupings. Employing similar variables to identify strategic groups across industries, the common practice in IO based studies entailed trade offs and inconsistencies that arguably compromised accurate identification of strategic groups (Cool and Schendel, 1987b). Porter provided guidance on 13 possibly dimensions for defining strategic groups, but in his own empirical work tended to adopt a sole dimension, such as size or advertising (Porter, 1973, Porter, 1979). This method was pursued by subsequent researchers, such as Primeaux and Oster (Oster, 1982, Primeaux, 1985). The underlying assumption was that strategic groups invest in one or more mobility barriers that provide the structural impediments to allow significant and sustained performance differences to exist between groups of firms.

In contrast to the IO studies, most strategic management research has focused on one industry, with the twin aims of explaining firm performance and performance differences between strategic groups, usually in the context of a domestic market. A point of agreement between the majority of strategic management and industrial organization theorists, however, has been that persistent performance differences exist between strategic groups. This in spite of the fact that most empirical studies have failed to demonstrate conclusively the clear and consistent linkage between strategic groups and performance predicted in the work of Hunt (Hunt, 1972) and Porter (Porter, 1973).

In this paper we discuss the evolution of strategic group research since the 1970s and discuss its on-going value in strategic management research: is it a rich research vein or simply a worn out old seam? In spite of controversy as to whether identifiable strategic groups really exist (Barney and Hoskisson, 1990, Dranove et al., 1998), we conclude that strategic group theory still has much to offer as a focus for analysis and is superior for classification purposes in research to obvious alternatives such as Porter's (1980) generic strategies and Miles and Snow's (1978) typology. We illustrate the continuing value of strategic group theory to management research with reference to our on-going study of strategic groups in the UK

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pharmaceutical industry. McGee (McGee, 2003) has provided an overview of strategic group theory and practice. Our approach builds on this review of the origins of strategic group research and its roots in the structure-conduct-performance (SCP) paradigm in IO, by focusing upon the output of strategic group research and by providing a new application. We accept McGee's proposition that mobility barriers are synonymous with strategic choice (McGee, 2003, p.268) and contribute to his ideas on strategic mapping through the use of a three dimensional map to illustrate strategic groups within the UK pharmaceutical industry.

The Evolution of Strategic Group Theory: 1970s and 1980s

From the beginning two schools emerged in strategic group theory, the IO school based in economics and centered upon Harvard University, which included the work of Hunt, Porter, Oster, Caves and Porter and Newman (Hunt, 1972, Newman, 1973, Porter, 1973, Caves and Porter, 1977, Newman, 1978, Oster, 1982), and what is sometimes referred to as the Purdue School of strategic management drawing on the writings of Hatten, Patton and Cool (Hatten, 1974, Patton, 1976, Cool, 1985).

The research in IO followed a similar pattern with a multi industry focus and a reliance on available data on firms and various performance indices drawn primarily from available industry databases, for example PIMS¹ or Compustat. Utilising an essentially univariate statistical analysis, where measures such as firm size (Porter, 1973, Porter, 1979), advertising (Porter, 1976, Oster, 1982) or relationships with other industries (Newman, 1973) were taken as proxies for strategy, an underlying belief of all the IO studies was that performance varied between strategic groups. This idea stemmed from Hunt and is essentially rooted in the SCP paradigm within IO (Mason, 1949, Bain, 1959). Formulating competitive strategy in an industry is seen as "the choice of which strategic group to compete in"(Porter, 1980, p.149) and the principle aim is to explain performance. Entry to a market may well be a question of choosing the "loose brick" (Prahalad and Hamel, 1990), that is to say, the strategic group that is *easiest to enter* and which *best fits* the resource profile of the firm.

¹ PIMS is an abbreviation for the *Profit Impact of Marketing Study* database.

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In contrast to the approach in IO, the research undertaken at Purdue University in the 1970s was more rooted in what is now called strategic management theory. It was based on the idea that strategic groups provide a useful analytical tool to aggregate firms into those following similar strategies, with a view to comparing and contrasting them. Sparked by the observation that profitable positions are not a function of firm size or industry concentration in the US brewing industry, Hatten (1974) classified the US brewing industry into seven strategic groups. He went on to demonstrate that the profitability relationship between groups differed significantly from the profitability relationships for the industry as a whole and concluded that the industry was characterized by heterogeneous conduct that endured over time. The policy conclusion was that industry-wide strategy recipes were to be avoided. This approach was extended by Patton (1976), who employed the use of simultaneous equations to explore the relationship between various performance variables, conduct and the environment.

From these origins, research on strategic groups then went into a phase during the 1980s where various researchers looked to verify the findings of the earlier research in different industrial settings by employing different performance variables. For example, Hergert (Hergert, 1983) explored the incidence of strategic groups within fifty US manufacturing industries, risk was independently used as a definitive variable by Ryans and Baird (Baird and Kumar, 1983, Ryans and Wittinck, 1985), generic strategies by Dess and Davis (Dess and Davis, 1984) and the industry life cycle by Primeaux (Primeaux, 1985). The research results were mixed. Contemporary reviews (McGee, 1985, McGee and Thomas, 1986) pointed to the sensitivity of strategic group analysis to the choice of variables adopted and to the difficulties of comparing strategies across different industries. The conclusion was that detailed knowledge and understanding of an industry and its context were necessary in order to specify adequately the variables to be included in any useful strategic group analysis. This was a clear criticism of earlier IO studies with their application of general concepts and tools of analysis across industries. This critique was later picked up and adapted by Barney and Hoskisson (Barney and Hoskisson, 1990), who argued that strategic groups are an artefact of the methodology employed and that, in particular, the statistical technique of cluster analysis commonly used in studies to identify strategic groupings could be problematic. Cluster analysis chooses the best fit for the data between a three group or four group solution, but not

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does not clarify whether clustering the data is appropriate in the first place (Ketchen and Shook, 1996).

These criticisms of strategic group theory as it had developed especially in the IO literature from 1972 to the mid-1980s led to a further phase of research. This phase focused especially on three themes, namely: (1) the further exploration of the concept of mobility barriers (Mascarenhas, 1989, Mascarenhas and Aaker, 1989); (2) the stability of strategic groups over time (Oster, 1982, Cool, 1985, Fiegenbaum and Primeaux, 1985, Cool and Schendel, 1987b, Cool and Schendel, 1987a, Fiegenbaum, 1987, Fiegenbaum et al., 1987, Martens, 1988, Cool et al., 1994); and (3) the idea of cognitive groups (Reger, 1988, Porac et al., 1994).

Mobility barriers

Research into mobility barriers and strategic groupings in the 1980s built on the ideas of Caves and Porter (Caves and Porter, 1977, Caves and Pugel, 1980). McGee concluded that mobility barriers are a counterpart of group structures and arise from strategic decisions (McGee and Thomas, 1986). Decisions which affect the height of the mobility barrier are critical and may be expected to arise as the result of judgments that “cannot be readily imitated by firms outside the group without substantial costs, substantial elapsed time or uncertainty about the outcome of the decisions” (McGee and Thomas, 1986, p. 150). McGee also proposed a taxonomy of mobility barriers, distinguishing between market-related strategies, industry-supply characteristics and firm characteristics. It is noteworthy that the mobility barriers included were endogenous to the firm and therefore were strategic decisions under management control.

Mascarenhas and Aaker (Mascarenhas and Aaker, 1989) studying the performance implications of strategic groups within the oil industry considered that the concept of mobility barriers was pivotal to the strategic group concept and proposed a further definition of a strategic group, namely: “A grouping of businesses within an industry that is separated from other groupings of businesses by mobility barriers, barriers to entry and exit” (Mascarenhas and Aaker, 1989, p.475). They concluded that mobility barriers are much more about “who you are” and are resource dependent than “what you do” or the actions taken.

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Mobility is higher between less protected similar groups because market entry requires overcoming relatively fewer mobility barriers, a finding consistent with Caves and Porter (Caves and Porter, 1977) and the “stepping stone” idea advanced by McGee and Thomas (McGee and Thomas, 1986). Mascarenhas and Aaker therefore provided a research focus based on a common strategy conceptualisation of strategic groups. The tacit element of strategic decisions was brought more squarely into the argument. They concluded from their research that: “The results suggest credibility for the strategic group concept motivated by mobility barriers A high degree of group stability was observed, ... indicating that mobility barriers did exist ...” (Mascarenhas and Aaker, 1989, p.484).

Mobility barriers have continued to be a key concept that underpins the idea of strategic groups, providing the means by which sustained performance differences between groups can exist (Porter, 1980). However, mobility barriers as originally described (Caves and Porter, 1977) included a policy of collusion in which firms acted in concert to promote their common interest by building high entry barriers in order to protect group profits. This idea, analogous to groups of residents building the walls of a medieval city to repel invaders, was not, however, born out by subsequent research. It seemed more probable that due to the similarity of strategies pursued by firms within a particular strategic group, a number of firms made similar investments; for example, in research and development or the deployment of large sales forces. This could be prompted by following the lead of an individual firm perceived as a reference point by other group members (Bogner, 1991, Fiegenbaum and Thomas, 1995). The question of which variables to select in order to define strategic groups therefore becomes a matter of which mobility barriers best describe the structural components of an industry that prevent the free movement of firms between groups. Arguably, only a handful of key decisions may prove to be of significance; for example, employing Porter’s generic “differentiation” strategy (Porter, 1980), firms might invest heavily or selectively in research and development where patents provide an important mobility barrier. Viewed in this way, the use of mobility barriers to define strategic groups becomes a process of identifying the key strategic decisions that build and sustain market position within a given industry.

More recently Dranove et al (1998) exploring the conditions under which sustainable performance differences may persist, reiterate that an effective mobility barrier must be in

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place to prevent entry of imitation by outside competition, and, in addition, a group-level effect must occur as the result of intra-group strategic interactions (Dranove et al., 1998). These research findings were later confirmed in an empirical study of the Japanese steel industry (Nair and Filler, 2003).

Strategic group stability

Oster's work on the stability of the strategic group intra-industry structures over time (Oster, 1982) followed the methodology of Porter and defined strategic groups on the basis of high and low advertisers. She then explored the dynamics of strategic group membership within 19 consumer goods industries between 1971 and 1977. Her principle findings were that strategic groups were stable structures with a low degree of movement between groups. Oster's study deserves attention because it was the first attempt to assess empirically the extent of inter-group mobility. However, the method adopted can be criticised for the use of an overly-simple identification of group membership, i.e. low vs. high advertisers, and for the assumption that firms change group membership on an annual basis.

The work of several researchers (Cool, 1985, Fiegenbaum, 1987, Martens, 1988) on strategic group stability shared a common methodology. First, an extensive industry analysis was conducted in order to identify industry specific variables. These were then operationalized to identify strategic groups. Second, stable strategic time periods (SSTPs) were identified between which changes in strategic group membership could be observed. Third, an extensive industry analysis was conducted in order to identify industry specific variables, which were then operationalized to identify strategic groups.

The three studies by Cool, Fiegenbaum and Martens explored the dynamics of strategic groups over a considerable time period and attempted to illustrate consistent performance differences between groups. The work of Cool (1985) focused on the US pharmaceutical industry between 1963 and 1982 and that of Fiegenbaum (1987) on the US insurance industry over a 15 year period. Cool found only a weak relationship between his groups and the three performance variables he selected, suggesting that a reason for the insignificant *inter*-group variation could be the significant *intra*-group variation found. This threw doubt on the idea

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that group membership implies homogeneous performance and suggested that factors other than mobility barriers contributed to strategic success. Recently this phenomenon, predicted to occur in industries with low product market heterogeneity and strong resource inimitability (Mehra and Floyd, 1998), has become a focus of a separate line of research which suggests that firm positioning within a group has performance implications (McNamara et al., 2003). In contrast to Cool's study, Fiegenbaum identified five to seven strategic groups within the US insurance industry during the period of his study, and found significant performance differences between the three main strategic groups that he identified for all SSTPs (with the exception of his risk adjusted performance measure, which was only significant for one stable strategic time period). An interesting element of the study was the attempt to measure firm movement towards industry benchmarks, where Fiegenbaum found some support for the idea of the strategic group as a reference point. Also, in contrast to Cool, who identified four SSTPs over a 20 year time span, Fiegenbaum identified nine, with the majority lasting for only one year. Fiegenbaum attributed this primarily to the degree of industry turbulence driven by price and regulatory changes; although it is worth noting that the US pharmaceutical industry also faced turbulence during the 20 year period studied by Cool, so this explanation may not be valid. Here the idiosyncrasy of different industries stands out, underlining the difficulty of making valid comparisons between very different industries, despite the similarity in methodology and performance measures chosen by both Cool and Fiegenbaum.

The study by Martens (Martens, 1988) built on Cool's study and addressed the same industry, pharmaceuticals, although in Martens' case across five European Community member countries. Unlike Cool, who employed measures of scale, scope and performance variables, the study by Martens employed six strategic stock variables (e.g. R&D expenditure) and a performance variable. A longitudinal study was adopted, measuring strategic group dynamics encompassing 41 pharmaceutical companies over an eight year period, between 1978 and 1985. An interesting feature of Martens' study is the use of a rivalry index to measure the competition that a firm faces within a specific market segment, in contrast to Cool (Cool, 1985) who employed a general concentration ratio. However, in common with Cool, Martens failed to find a consistent performance difference between strategic groups. According to Martens, "although strategic stocks create the performance potential several other

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controllable and uncontrollable factors determine the performance a firm will attain” (Martens, 1988, p. 348). He further observed that the strategic group structure is not a very stable phenomenon in the EC pharmaceutical industry and that firms in groups that had a relatively low strategic distance experienced many strategic group shifts. But one limitation of Marten’s study is that performance was only measured in terms of an increase in weighted market share. This was shown to be dependent upon the history of the firm, environmental conditions, the therapeutic segment in which the firm was located, and the innovation rate.

The findings of Cool and Martens for the same industry, albeit in different countries, seem to cast doubt upon the key idea in strategic group theory that significant performance differences will exist between groups. A problem arises, however, because cluster analysis, employed by both researchers, is sensitive to the variables chosen to define groupings. Although both studies were focused upon the same industry, the variables chosen to separate groups were different. Cool chose to include 15 variables describing scale, scope and resource commitments; while Martens concentrated solely upon R & D variables. Another possible weakness of both studies is that the variables used may be susceptible to multicollinearity and the inclusion of several variables that are strongly correlated will act to bias the results. For example, Cool uses total drug store sales, percentage drug store sales in total drug sales and percentage branded generic sales in total drug sales as performance variables. All of these measures may be expected to be strongly correlated.

Cognitive groups

Another approach that developed in the 1980s to define strategic groups is referred to as “cognitive research”. Cognitive research is based on the notion that perception is reality and that an understanding of decision processes can help to separate strategic groups. Cognitive groupings may be expected to capture both participant perceptions and indications of future action. The cognitive research theme encompasses the idea that managers construct market models based on their personal perceptions of competition, which may differ from objective reality. It is assumed that “through processes involving induction, problem solving and reasoning decision makers construct a mental model of the competitive environment” (Porac et al., 1994, p. 119). These models are used both to determine *who* are the competition and

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where the corporate focus should be applied when competing. The outcome of realized strategy then rests, ultimately, upon the institutional and cognitive constructions of decision makers. Porac et al. introduce the idea of primary competitive groups, defined as “the collection of firms that define each other as rivals” (Porac et al., 1989, p. 414).

This approach to strategic groups comprises a minimum of two beliefs. First, that the perceptions of managers about a firm’s identity, its competitors, customers and suppliers, determine the set of transactions that link the firm with its environment. Second, that perceptions determine industry recipes or generic strategies, which in turn delineate the actions necessary to compete in the firm’s operating environment. An important assumption for groupings based on common perceptions is a common interpretation of external events, with future resource decisions based on these interpretations. In a study of strategic group perceptions among Chicago bankers, Reger (Reger, 1988) found strong evidence of consistent cognitive maps across respondents. While Porac et al. (Porac et al., 1994) studying Scottish knitwear manufacturers described the creation of cognitive communities, where industry “group think” results from managers in similarly placed firms interpreting the same environmental cues and attempting to solve similar problems. More recently in a study of strategic groups within the US banking industry McNamara et al questioned the belief “that managers within and across firms hold homogeneous beliefs regarding the competitive structure of their industry ... and find that the degree of complexity in mental models varies significantly across firms” (McNamara et al., 2002, p. 167). The authors conclude that the manner in which top managers enact their competitive environment may contribute to competitive advantage.

A notable advantage of the cognitive research stream in strategic group theory is the recognition of the importance of management perceptions in defining the competition. The major weaknesses of the research relate to the relatively small samples used in the empirical analyses and the very discrete markets chosen. In the case of the Scottish knitwear market, for example, Porac et al. (Porac et al., 1994) note the absence of sound, validated market data available to managers. This may prompt a more active exchange of views between managers in participating companies than would be the case in larger, more data rich industries. It is also important to note that drawing up strategic groups based on cognitive factors provides an

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insight into *intended* strategy, while studies that include performance measures (Dess and Davis, 1984) are comparing the outputs of *realized* strategy. This management perspective does, however, provide the opportunity to explore the mechanism behind the observed change of strategy and thus to add an additional dimension to strategic group research (Curto, 1998). An enduring problem in this type of research, however, is that people do not always do what they say they will do - nor are they necessarily always truthful when revealing their intended strategy to researchers!

Strategic Group Theory in the 1990s

In the 1990s strategic management research focused on the internal resources and competences of firms over industrial structures to explain sustained competitive advantage. In the face of developments in resource-based theories of the firm, strategic group theory was relatively neglected. Nevertheless, some research continued and was heavily focused on exploring patterns of intra-industry competition. In this context the work of Bogner (Bogner, 1991) is particularly important.

Bogner looked at the US pharmaceutical market for a period of 20 years between 1969 and 1988 and introduced the idea of the “competitive group”, which he defined as “an intra-industry combination of firms which are following similar strategies. Where firms follow similar strategies because they have different historical backgrounds, that have provided them with different stocks or competencies or assets and because different managers have identified different ways in which they can compete in the industry” (Bogner, 1991, p. 496). Bogner studied strategic group dynamics and examined various hypotheses as to why firms change their grouping and under what circumstances.

Using a methodology similar to previous research (Cool, 1985, Fiegenbaum, 1987, Martens, 1988) and two distinct sets of analysis, Bogner showed that patterns certainly exist, but that the underlying nature of these patterns was not consistent with what had been assumed to underlie strategic group structures and their dynamics. Using paired questions, he first explored the extent to which strategic groups reflected past performance and whether

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strategic groups could be used to accurately predict future market position. He then considered the effect of the environment using a similar set of paired questions, one reflecting past responses and the other future actions. He concluded that strategic groups are not simply cognitive creations but are derived from artefacts of strategic intent, resource allocations and product introductions. Strategic groups are based upon managers' decisions based on individual firm performance and objectives and not on some group homogeneity.

In a second set of questions Bogner explored whether firms change groups at times of environmental turbulence, something predicted by mobility barrier theory because barriers are likely to be lowered in a state of flux. Contrary to expectation, firms were found to move at all times and the changes were not driven by a single environmental opportunity. Results that agree with those of a more recent study into evolutionary moves within the Spanish banking industry which concluded "that at some point in time, almost any industry should show some firms moving each year when the total number of firms that compose the industry is considered ... and that individual firms will move across strategic groups in response to new environmental circumstances without excessive difficulties" (Zuniga-Vicente et al., 2004).

These results are consistent with a less deterministic view of strategic group theory and stands in stark contrast especially to the conclusions from traditional IO. In particular they challenge the widely held belief that strategic groups are differentially impacted by changes within the environment. Bogner concluded that the factors that led managers to move their firms out of a grouping are unrelated in time or focus to the occasional disruptions in the pattern of competition within the industry at large. He also concluded that a firm's ability to move is not wholly constrained by environmental or mobility barriers, whether during a stable strategic time period or at a break between SSTPs. Mobility barriers are discussed in terms of the result of *internal* choices within firms not in terms of uncontrollable external events.

Bogner argued that firms adjust their competitive position based on benchmarking within their competitive group. Economically profitable firms are ones that have the flexibility to act on changes in perception, manage to acquire appropriate assets, and change their competitive

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postures accordingly. If a firm is not performing to group standards, the reference position, then proactive choices can be made to improve competitiveness. His notion of the competitive group adds to the idea of strategic choice. Bogner's study supports the proposition that mobility barriers are not something in the environment imposed upon the firm but result from the firm's own actions.

Finally, Bogner tested the proposition that performance will consistently vary between groups. He found no support for the proposition; a result broadly consistent with that of Cool and Martens (Cool, 1985, Martens, 1988) earlier. This conclusion suggests that while the external phenomenon observed by Hunt (Hunt, 1972) is valid, Hunt's underlying causation of the dynamics of strategic groups is not supported. Bogner concluded that strategic groups measure similarities in the different strategies that firm's employ, but that the way in which a firm chooses to compete does not ultimately determine how *effectively* a firm competes. Thus intra-group differences may outweigh inter-group differences, a conclusion also consistent with an observation of Cool (Cool, 1985).

Another approach that blossomed briefly in the 1990s was an approach to strategic groups based on the pioneering work of Hannan and Freeman (Hannan and Freeman, 1977) on the population ecology of organizations. This evolutionary view of strategy led to strategic groups considered as equivalent to species. In 1991 Boeker in a study of the US brewing industry applied a population ecology perspective to derive strategic groups (Boeker, 1991) and this was followed in 1992 by a study from Carroll and Swaminathan, also on US brewing (Carroll and Swaminathan, 1992). These studies argued that strategic groups should be identified in terms of organizational form rather than perceived strategies, which can be normative in nature. In this analysis, organizational form encompasses not only the formal organizational structure but also 'all factors that define a population's niche, including especially environmental factors' (Carroll and Swaminathan, 1992, p.68). In other words, the environment, very broadly defined, determines the performance of firms. The result is a deterministic approach to strategic groups under which the scope for independent managerial decision making is severely constrained. Unsurprisingly, most researchers find such a strictly exogenous view of the formation and continuation of strategic groups unattractive.

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Appraising Strategic Group Theory Against Alternative Classification Schemes

The discussion so far has highlighted the richness of strategic group theory, as well as its weaknesses and some inconsistencies. But a discussion of the development of strategic group theory alone cannot provide a conclusive comment on its value for future management research. To go further we need to establish the desirable characteristics of a strategy classification scheme for research and assess obvious alternatives to that offered by strategic group theory.

Arguably, a strategy classification system should comprise the following characteristics to provide a useful basis for management research and practice:

1. Provide a meaningful classification of strategies employed within an industry recognized by managers within that industry as valid.
2. Allow competitive dynamics over time to be effectively measured and evolutionary pathways traced.
3. Permit flexibility in the use of a wide range of different strategies utilizing both quantitative data and qualitative and “perceptual” information.
4. Enable a fine grained analysis of strategies within an industry, allowing a detailed and meaningful classification based on multiple possible groupings rather than a highly restricted set.
5. To be readily accessible to and useable by managers.

Two obvious alternative strategy classifications to strategic groups for research in strategic management are Porter’s “generic strategies” and the Miles and Snow’s “typologies”. We now discuss each in turn and with reference to the UK pharmaceuticals industry, which is the subject of the mapping later in the paper and our on-going research, and compare their merits to strategic group theory. The aim is to establish whether strategic group theory offers a superior strategy classification based on the five characteristics above.

Porter’s approach to generic strategies plots companies along two simple dimensions, the breadth of their product/market offering against the choice of selling on price as “lowest cost

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producer” or differentiating on product benefits or other added value. Porter thus offers four broad positioning alternatives, broad market vs. focus and low cost vs. differentiation. The advantage of the generic strategies approach lies in its simplicity and comparative ease of application. All of the data necessary to populate the model are readily available. The principle weakness of generic strategies is that it represents a blunt and crude measure to identify and portray subtle patterns of strategic choice. It does not allow the sophisticated separation of different but broadly similar strategic choices.

In the pharmaceutical industry, for example, a primary driver is the supply of new products. But Porter’s classification does not allow for the separation of companies employing an extensive licensing strategy, for example as pursued by the company Wyeth, as against a strategy based primarily upon researching own compounds, as adopted, for instance, by Merck. It must also be recognized that research costs are a significant mobility barrier in the industry. Pharmaceutical companies are forced by the economics of the research process to employ a differentiated marketing approach targeted at the broadest market possible to recoup their research costs before patent expiry. Therefore, while the product/market dimension has some value within this industry, the differentiated vs. low cost dimension is too blunt to provide significant explanatory power. Porter’s generic strategies may, however, be perceived as supra groupings into which different sets of strategic groups may fit; a conclusion hinted at by Porter: “The three generic strategies represent three broad and consistent approaches to successful strategic positioning They are different broad types of strategic groups that can be successful depending on the economics of the particular industry”(Porter, 1980, p 152). In other words, strategic group theory provides the potentially fine grained analysis in which the concept of generic strategic can be nested.

The Miles and Snow typology (Miles and Snow, 1978) differentiates firms into four groupings - defender, prospector, analyzer and reactor. Again two key dimensions are used to separate firms, namely breadth of product/market domain, a dimension also chosen by Porter, and the degree of environmental uncertainty. The nub of Miles and Snow’s argument hinges on three points. First, that managerial or strategic choice represents the primary link between an organization and its environment. Second, that management’s ability to understand and manage the organization’s interaction with its environment is the key to success. Third, that a

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primary distinguishing factor between organization types is the multiple ways that management responds to environmental cues. In essence, the Miles and Snow typology broadly classifies firms into three discernable strategic types and reactors, which arguably represents a catch all category representing no clear strategy and equivalent to Porter's "stuck in the middle". The primary variables used to classify firms and position them along the two dimensions are product/market domain, growth engine, technology, planning, structure, control, performance appraisal and co-ordination. Clearly, the last five of these variables are all "internal" to the firm and effectively invisible to the external observer and therefore to apply Miles and Snow's typology in research requires the gathering of perceptual information. This brings with it the attendant problems of distinguishing between realized and intended strategy and the mapping of evolutionary changes is also rendered problematic. Thus, while Miles and Snow's classification allows the consideration of a number of variables, the taxonomy presents a number of problems with regard to data gathering, ease of application and interpretation.

In contrast, the strategic group taxonomy, we believe, offers a more flexible, transparent and meaningful method to classify, compare and contrast firms by their strategies than that offered by 'generic strategies' or by Miles and Snow. It permits both sophisticated mathematical analysis of relationships and simpler analysis using strategic mapping. Strategic group analysis can encompass both quantitative and qualitative variables. Table 1 provides a comparison of the different typologies according to the earlier five characteristics of a useful strategy classification scheme, namely meaningfulness to managers, ability to map the evolution of the dynamics of the industry, data flexibility, sensitivity to multiple groupings and accessibility to managers. While all three approaches – generic strategies, Miles and Snow and strategic groups – can be meaningful to managers, strategic group theory offers advantages over one or other of the alternatives with regards to the other desirable characteristics.

INSERT TABLE NUMBER 1

ABOUT HERE

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The earlier review of strategic group theory since the 1970s identified the different ways in which the concept of the strategic group had developed as a tool for determining competitive performance, at least in part due to differences in the way in which the concept had been operationalized. Simplistic cause-effect relationships derived from the IO literature, and especially on the role of mobility barriers, had given way by the 1990s to the study of more complex relationships, in which strategic decision making both shapes and is shaped by strategic groupings and in which managerial cognition is important. The result was a richer theory of strategic groups; but since the early 1990s the emphasis in strategic management research has laid more in resource-base theories of the firm, including the study of core competencies, than strategic groups per se. Nevertheless, our conclusion is that the concept still has considerable potential in strategic management research provided it is used with care. We now illustrate its value through a strategic mapping of the UK pharmaceutical industry. This mapping forms the basis of our current research into the application of strategic group theory.

An Application of Strategic Group Theory: the UK Pharmaceutical Industry

Strategic group maps allow managers and researchers to develop a classification of strategy conducted in their industry. Also, through comparing maps at different time periods, the competitive dynamics and evolution of an industry may be better understood. Moreover, the patterns of strategic behaviour present within the industry can be identified and may be of value in predicting future company moves. Finally, identification of “reference companies” (Bogner, 1991, Fiegenbaum and Thomas, 1995, McNamara et al., 2003) within strategic groups simplifies competitor analysis, as group members may generally be expected to invest in similar ways to and follow the strategies of the lead company within the group. Our strategic mapping exercise below is based on detailed research into the UK pharmaceuticals industry drawing upon company reports, web sites, published industry appraisals, interviews and the direct experience of one of the authors, who was until recently a senior manager in UK pharmaceuticals. The mapping emphasises the importance of intra as inter-group dynamics and particularly the role of mobility barriers, strategic group stability, and management cognition and management decisions based on individual performance and

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objectives. In other words, the mapping is a product of the developments in strategic group research reviewed above and provides a synthesis of the different approaches to strategic group theory. It uses two key strategic drivers in pharmaceuticals as axes. In constructing a strategic group map, Porter (1980, p.152) has suggested that “the best strategic variables to use as axes are those that determine the key mobility barriers”.

The importance of research and development within the pharmaceutical industry has been cited by many authorities (Redwood, 1988, Corstjens, 1991, Taggart, 1993, Agrawal, 1999). The cost of research activity generally constitutes equivalent to 15% to 20% of total revenues in the industry and is a major mobility barrier both into the industry and within the industry between different markets and different market segments. The cost is correlated with the number of therapeutic areas or “body systems”, for example respiratory or gastrointestinal, which are actively researched and maintained to “world class” standards. One obvious axis for a strategic group mapping of the UK pharmaceuticals industry is therefore “active therapeutic areas”.

With the cost of research and development of each new chemical entity in the order of \$800m (Hawthorne, 2003) and patent expiry a critical competitive watershed, the importance of building a market presence rapidly has increased the role of an effective sales force to build prescription share and differentiate products from the available alternatives. Sales force “detailing” costs, for many companies are the greatest operating expense, with the cost of sales and marketing frequently in the order of 30% of total revenues. The term detailing is one used in the pharmaceutical industry to describe calls on doctors to explain the features and benefits of a product. A second obvious axis for a strategic group mapping of the UK pharmaceutical industry is therefore the number of details or sales calls, where sales-force size acts as an effective mobility barrier in three main ways. First, the investment required limits field force size for many companies. Second, fielding a large sales force acts to differentiate a product from the competition and provides a barrier that competitors must overcome. Third, mopping up available doctor appointments effectively excludes the competition from the opportunity to compete. In effect, all pharmaceutical companies compete for available time with the doctor, which is a finite resource.

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The use of a bubble chart offers the opportunity to introduce a third variable to separate companies - “leadership”. Leadership, as measured by a dominant sales position within a given therapeutic area, acts in our mapping as a proxy for two important strategic dimensions, namely technological leadership and relative price. Technological leadership within the pharmaceutical industry is generally associated with being first to market, where the initial entrant has the opportunity to establish a dominant market share. The company’s price position tends also to be strongly associated with market entry because the UK profit and price regulation scheme (PPRS) under National Health Service (NHS) regulations only allows the company to agree a price at point of entry. Subsequently, no price rises for the same product are allowed. This results in UK pharmaceutical companies generally adopting one of two pricing strategies, which are illustrated in Table 2. The first entrant sets the ceiling price for that type of product, which is then either adopted by the next entrant (i.e. a strategy of price parity) or the new entrant may attempt to gain share through offering similar benefits at a discount (i.e. a price discount strategy). For example, in the table Losec was the first anti-ulcer drug, introduced in 1989, and later competing products were priced at a discount. In contrast, for anti-depressants Seroxat was priced at parity with the first product, Prozac, introduced two years earlier, although the later entrants price discounted. For cholestorol lowering drugs there are examples of both parity and discounting pricing strategies.

INSERT

TABLE 2 ABOUT HERE

A strategic map for the current UK pharmaceutical industry, drawing on the above discussion of axes and variables is provided in Figure 1, where twelve strategic groups are identified. In the mapping exercise the greater the size of the circles, the larger the number of areas in which a company has therapeutic leadership. Overlapping circles indicate that the companies within a strategic group have similar configurations of detailing activity and therapeutic areas served. Table 3 provides details on the number of therapy areas, the sales force activity incurred presented as thousands of details, and leadership as used in the mapping exercise. It also provides a summary of which companies fall in which of the strategic groups in the mapping. The positions are discussed in more detail below. The data used in the analysis were drawn

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from the combined British Pharmaceutical Industry and Hospital Audits together with data from the UK Promotional Audit and were based on the databases of IMS Health. IMS Health is the leading provider of market information to the UK Pharmaceutical Industry.

INSERT FIGURE 1 & TABLE 3 ABOUT HERE

Group A consists of the companies Lundbeck and Servier. These companies are both of European origin and both focus their attention upon one area of therapeutic medicine. Both companies spend a substantial amount on sales force but are not overall therapeutic leaders. Use of Porter's generic strategies (Porter, 1980) would classify these companies as pursuing a focused differentiated strategy.

Group B is interesting in that it includes all of the Japanese companies within the industry, i.e. Sankyo, Takeda, Yamanouchi, Eisai, Ajinomoto, and Fujisawa, together with two recent European entrants, Menarini and Orion. Of these it is worthy of note that Sankyo and Yamanouchi entered the UK market via acquisition acquiring Pan Pharma and Brocades respectively, in contrast to the other recent entrants all of whom have established their position organically. The only surprise in this group is Reckitt Benckiser an industrial company that is the world number 1 in household cleaning but has a small pharmaceutical division. This group appears to encompass virtually all the industry new entrants in recent years, who appear to have adopted a similar focused entry strategy based upon no more than two therapeutic areas and supported by a moderate-sized sales force.

Group C comprises Mundi Pharma and Elan, both US drug delivery companies, together with UCB Pharma, a niche speciality pharmaceutical company engaged in research and development in the fields of allergic/respiratory diseases and disorders of the central nervous system. All three companies are pursuing a focused differentiation strategy based upon a limited number of therapy areas.

Group D includes Ferring and Schering AG both niche pharmaceutical companies

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together with 3M, Procter and Gamble and Solvay. These are all large diversified industrial companies with limited pharmaceutical operations. All are focused upon four therapeutic areas and employ relatively small sales forces. The exception is Ferring, which does not employ a conventional detailing force.

Group E encompasses Leo laboratories, a Danish company specialising in pharmaceuticals and animal health, Merck KGAA, which is a German pharmaceutical company with a strong interest in generics, Ivax, a US branded generic manufacturer, and Baxter, a US company specialising in hospital products. This group is somewhat of a hybrid hence the dotted line on the mapping and includes a number of companies that appear diverse, with both Merck KGAA and Ivax marketing generic products.

Group F includes Bayer and Lilly both companies that have recently experienced strong market changes, Bayer with the withdrawal of its main product Lipobay and Lilly that lost 90% of its revenues from Prozac following patent expiry. The third company, Shire Pharmaceuticals, recently underwent dramatic changes following the removal of its chief executive. There is evidence from our research that all three companies have reduced their promotional expenditure whilst considering their options.

Group G comprises Boehringer Ingelheim, Bristol Myers Squibb and Johnson and Johnson. All field good sized sales forces and support a broad and not wholly congruent range of products both to the retail and hospital markets. All three companies derive between 20% and 30% of revenue from sales to hospitals.

Group H consists solely of Roche, a company engaged in a number of healthcare related businesses and that grew both organically and as a result of merger. Roche derives 40% of its revenues from the hospital market and fields a number of specialised sales teams rather than the large, mainly GP oriented, field forces typical of rival companies of a similar size. Roche employs a differentiated strategy aimed at a broad section of the market.

Group I occupies the middle ground within the UK pharmaceutical industry. The

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companies within this strategic group include Abbott, Astra Zeneca, Sanofi Synthelabo, Schering Plough and Wyeth. All of these companies derive more than 85% of their revenues from the retail pharmaceutical market. All, and particularly Astra Zeneca, Wyeth and Schering Plough, are known for strongly targeted, aggressively driven sales forces, which concentrate upon general practitioners. All with the exception of Schering Plough have grown in part through merger or acquisition and all are pure pharmaceutical companies. Sanofi Synthelabo and Novartis are the only members of this group with an interest in generic medicines. These companies sell through high contact coverage of their targeted customer group and operate a broadly differentiated strategy.

Group J includes Merck Sharp and Dohme together with Pfizer. These two companies have a lot in common. They are both US based pharmaceutical companies renowned for large and high coverage contact sales forces, high spending on research and development, and they derive more than 90% of their revenues from the retail market. Support for this positioning appears in a recent book on Merck, which cites the company's executives as saying that Pfizer is their number one competitor (Hawthorne, 2003).

Group K companies span a broad range of therapeutic areas and derive up to 30% of their revenues from sales to hospitals. All of these companies are the result of serial mergers and all face the problem of sustaining their present size given declining industry research and development productivity. Given the number of therapeutic areas that they are involved in, they all have large numbers of differently focused sales teams to support and invest heavily in both product promotion and research. Their strategy, therefore, is very much broad market and differentiated.

Group L companies appears to be stuck in the middle. Goldshield is a branded generic manufacturer and relies largely on telesales to sell its products to retail chemists and hospital pharmacies rather than via doctors. The company faces strong competition from generic manufacturers with a lower cost base. Celltech is a biotechnology company that has been around a long time but which has yet to produce a significant

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product. The company has grown through acquisition and derives the bulk of its sales from products acquired from Medeva, one of its acquisitions. It is not apparent that either of these companies has a clear positioning and the share prices of both companies have suffered recently. To denote this somewhat hybrid group it is surrounded by a rectangular dotted line.

This example of a strategic mapping based on the UK pharmaceutical industry illustrates a number of the potential benefits from undertaking a strategic group analysis. Application of the method enables an overview of the industry to be presented, differentiating between firms and groupings, and provides evidence of a good deal of congruence within the strategic groups identified; for example, the inclusion of Merck and Pfizer together, the grouping together of all of the Japanese entrants, and the inclusion within group K of companies that have participated in serial mergers. The results strongly support the argument that strategic group analysis can provide a useful taxonomy of industry strategies. At the same time, the analysis raises interesting research questions; for example, why have no Japanese companies adopted a more aggressive sales stance given the size of their parent companies; have their parents forced them to grow organically? Such questions can form the basis for a successful competitor analysis to improve strategy formulation and implementation. Our analysis suggests, therefore, that the strategic group mapping provides a useful basis for research on strategies in the UK pharmaceutical industry.

Conclusion

Strategic group theory developed from the early 1970s based on analysing structural impediments that protect industry positions and profits from erosion by preventing free movement of firms within an industry. The emphasis in strategic management research in the 1990s on resources and competences, along with the growing diversity in approaches to defining strategic groups in strategic group theory in the 1980s, led to some neglect of the subject in more recent times. There has been 'Much uncertainty about the importance, or even the existence, of strategic groups' (Warren, 2002, p. 196).

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The argument in this paper is that strategic group theory still provides a useful approach for management research. This has been illustrated by comparison with two obvious alternatives in strategic management research – Porter’s generic strategies and Miles and Snow’s classification of strategic positioning – and through the development of a strategic mapping of the current UK pharmaceutical industry. The paper has detailed the main developments in strategic group theory and has contrasted the various approaches adopted. The result today is a rich research vein rather than a worn out seam. Strategic group theory provides a means for managers and researchers to aggregate firms into groups employing similar strategies to permit a better understanding of the competitive dynamics of an industry and its evolution. In terms of future research, strategic group theory would undoubtedly benefit from more directly comparable, industry-specific studies, with a more careful focus on variable selection and the statistical methods used for validation. As we have noted, some earlier research appears to have deficiencies both in terms of the variables used and in an over-simplistic use of cluster analysis. Future studies should aim to build sets of industry specific variables that describe strategic choice within that industry and the statistical methods used to identify strategic groupings need to be robust to ensure that strategic groups are not solely an artefact of method. This is the focus of our continuing research into strategic group theory and its application in the UK pharmaceuticals industry.

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Table 1:

Comparing the Characteristics of Alternative Strategy Typologies

Typology	Meaningful to Managers	Able to Map Evolution Dynamics	Flexible to strategy measures and data Sources	Allows multiple groupings	Readily Accessible to Managers
Porter “Generic Strategies”	Yes	No	Yes	Low	Yes
Miles & Snow	Yes	No	No	Low	No
Strategic Groups	Yes	Yes	Yes	High	Yes

Table 2:**Pricing Strategy in the UK Pharmaceutical Industry**

MARKET	PRODUCT	COMPANY	INTRODUCED	PRICE	Relative Price
Anti-ulcer drugs	Losec	Astra	1989	28.56	1.00
	Zoton	Wyeth	1994	23.75	0.83
	Protium	Abbott	1996	23.65	0.83
	Pariet	Eisai	1998	22.75	0.80
Cholesterol lowering drugs	Zocor	MSD	1989	29.69	1.00
	Lescol	Novartis	1994	12.72	0.43
	Lipostat	BMS	1996	29.69	1.00
	Lipitor	Pfizer	1997	29.69	1.00
	Lipobay	Bayer	1997	17.35	0.58
Anti-depressants	Prozac	Lilly	1989	16.58	1.00
	Seroxat	GSK	1991	16.58	1.00
	Efexor	Wyeth	1995	11.99	0.72
	Lustral	Pfizer	1996	16.2	0.98

Note: prices lower than 1.0 indicate use of a price discount strategy.

Table 3:**Strategic Groups in the UK Pharmaceutical Industry**

	Number of therapeutic areas served	Annual detailing units (000's)	Number of leadership positions in therapeutic areas	Strategic group in which the company is located in the mapping
SERVIER	1.00	109.3	0	A
LUNDBECK	1.00	124.6	0	A
SANKYO	1.00	28.6	0	B
AJINOMOTO	2.00	0.6	0	B
FUJISAWA	2.00	1.7	0	B
RECKITT	2.00	19.5	0	B
ORION	2.00	26.5	0	B
EISAI	2.00	28.8	0	B
MENARINI	2.00	38.4	0	B
YAMANOUCHI	2.00	65.3	0	B
TAKEDA	2.00	79.6	0	B
ELAN	3.00	14.5	0	C
UCB PHARMA	3.00	51.5	0	C
MUNDI PHARMA	3.00	72.4	0	C
FERRING	4.00	0.0	0	D
3M	4.00	21.6	0	D
PROCTER	4.00	31.1	0	D
NOVO NORDISK	4.00	31.7	0	D
SCHERING AG	4.00	48.9	0	D
SOLVAY	4.00	66.0	0	D
BAXTER	5.00	0.0	0	E
IVAX	5.00	27.8	0	E
AKZO NOBEL	5.00	51.5	0	E
LEO	5.00	61.8	1.00	E
MERCK KGAA	6.00	25.6	0	E
BAYER	7.00	9.9	0	F
SHIRE	7.00	32.6	0	F
LILLY	7.00	67.2	0	F
BOEHRINGER ING	8.00	83.0	0	G
BMS	9.00	51.1	0	G
JOHNSON & J	9.00	51.3	0	G
ROCHE	13.00	68.7	1.00	H
ASTRA ZENECA	7.00	233.2	1.00	I
SCHERING PL	9.00	137.0	0	I
SANOFI SYNTH	9.00	171.8	1.00	I
ABBOTT	9.00	176.9	0.	I
NOVATIS	9.00	199.4	0	I
WYETH	10.00	204.4	1.00	I
MSD	10.00	365.4	1.00	J
PFIZER	12.00	390.7	1.00	J
PHARMACIA	13.00	208.2	4.00	K
GSK	13.00	282.2	2.00	K
AVENTIS	14.00	148.0	0	K
GOLDSHIELD	9.00	0.2	0	L
CELLTECH	9.00	12.6	0	L

Leadership figures refer to the number of leadership positions in different therapy areas that the company holds. A value of 0 denotes no leadership in any therapy area.

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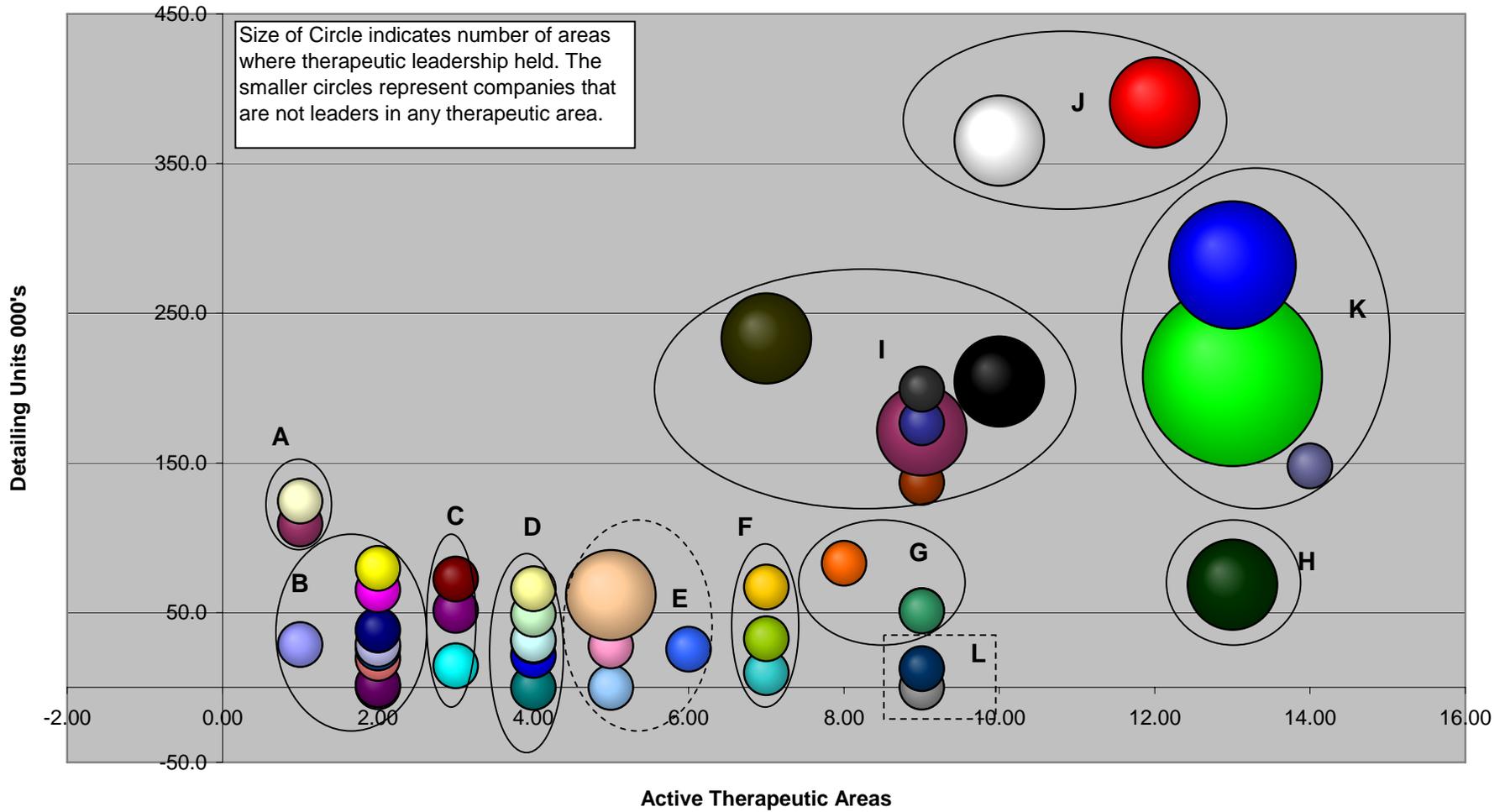
Appendix

Data Sources

All these analyses were conducted using the standard quantitative databases of IMS Health the leading provider of market information to the UK Pharmaceutical Industry. The strategic group map displayed encompasses data from the combined British Pharmaceutical Index and Hospital Audits together with data from the UK Promotional Audit.

Figure 1:

Strategic Groups In The UK Pharmaceutical Industry 2002



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