

MARKETING MIX EVALUATION AND TEST-MARKETING

NEW-PRODUCT INTRODUCTION BASED ON PRE-TEST MARKET DATA *)

by Ingo Böckenholt
and
Wolfgang Gaul
Professors
Institute of Decision Theory
and Operations Research
University of Karlsruhe
Fed. Rep. of Germany

SUMMARY

New-product introduction approaches which have been designed to simulate the awareness-trial-repeat purchase process with regard to new frequently purchased consumer products have attracted considerable attention from both academic and practising marketing people. The interest in this area is documented as well by the variety of proposed approaches as by the large number of reported commercial applications by some of the approaches. In this paper the current version of a pre-test market system will be described which is designed to perform a comprehensive analysis of individual choice, perception and preference data, offers different ways to compute market share estimates, takes into consideration cannibalization and draw effects in the underlying product class, allows for a segmentation based identification of mostly preferred perceptual space locations with respect to the choice alternatives under study and provides different options for evaluating the given data by means of e.g. internal, external, deterministic, probabilistic, uni- and/or multidimensional analyses. Some features of the used methodology will be illustrated on the basis of a case study recently evaluated in collaboration with a market research institute.

*) Research has been supported by the Deutsche Forschungsgemeinschaft.

INTRODUCTION

A key factor for firms' long-term health is their ability to periodically develop and introduce new products and services and/or to improve old ones. We will use the abbreviation NPI (New-Product Introduction) in referring to activities of this kind. Both a relative high failure rate (see e.g. Booz, Allen and Hamilton (1982) who report that 35% of all NPI between 1976 and 1981 did not meet company-specific and strategic criteria) and considerable amounts of money spent on R & D activities for NPI indicate that within the area of management decisions NPI-tasks belong not only to the most important but also to the most difficult ones.

Thus, it is not surprising that approaches and techniques designed to support decisions and to reduce risks related to NPI have attracted remarkable attention from both academic and practising marketing people.

With regard to the successive steps of the NPI-planning process (a possible sequence of steps would be: definition of markets and selection of market segments + generation and screening of new product ideas and concepts for these segments + consumer-based concept evaluation + management-based and economic concept evaluation + actual development of physical attributes + generating and evaluating the product/marketing strategy + pre-test market evaluation + test-market evaluation) this paper will mainly deal with PTM (Pre-Test Market)-modelling, a relatively new and increasingly used methodology for evaluating new products which can be applied prior (and, often, instead of) test-market evaluation.

A common objective of both PTM- and TM (Test-Market)-modelling is to forecast the performance of the new product (e.g. in terms of market share, sales volume, ROI, and the like) and to identify unanticipated problems associated with NPI. One important advantage of PTM-modelling is that it can reduce NPI-costs (at least, one saves TM-costs for those products which have been identified as failures by PTM-modelling) significantly. Reviews and first classifications/comparisons of PTM- and TM-modelling can be found in Assmus (1981, 1984), Erichson (1979, 1980), Factor and Sampson (1983), Lilien and Kotler (1983), Narasimhan and Sen (1983), Robinson (1981), Shocker and Hall (1986), Urban and Hauser (1980), Wind, Mahajan and Cardozo (1981) and Wind (1982) - to mention just a few.

Additionally, a brief comparison between some PTM- and TM-approaches will be presented in the next section. Then, the current version of an own PTM-system will be described which is especially designed to perform a comprehensive analysis of individual choice, perception and preference data which belong to the essential data collected within PTM-modelling. Moreover, the system offers different

ways to compute market share estimates, takes into consideration cannibalization and draw effects in the underlying product class, allows for a segmentation based identification of mostly preferred perceptual space locations with respect to the choice alternatives under study and provides different options for evaluating the given data, e.g. by internal, external, deterministic, probabilistic, unidimensional and/ or multidimensional analyses (for first attempts to take into consideration aspects from artificial intelligence and knowledge engineering within NPI-software see Gaul and Schaer (1987)).

Some important features of the used methodology will be illustrated on the basis of one of the case studies recently performed in collaboration with a market research institute.

Finally, some conclusions and outlooks for further research will be given.

NPI - MODELLING

In this section we do not attempt to give a complete survey about all approaches concerned with NPI-modelling but rather focus on some important characteristics which are needed for description and understanding of how essential parts of the most well-known approaches are designed and what type of analysis will be supported (for additional information see e.g. Robinson (1981) and Shocker and Hall (1986) (for a critical evaluation of PTM-approaches) and Assmus (1984) and Narasimhan and Sen (1983) (for a comparison of TM-approaches)). Tab.1 summarizes some advantages and disadvantages of PTM-modelling.

ADVANTAGES	DISADVANTAGES
PTM provides results within short time (usually 3 months in comparison to 9 - 12 months for TM).	PTM is less applicable for products with low purchase frequency and/or irregular usage pattern and for some especially pioneering products.
PTM based research and results are easier to keep secret.	PTM can handle problems which might appear in actual distribution only by simulation (e.g. delays in delivery, trade acceptance).
PTM offers a variety of diagnostic information and a greater flexibility in testing alternative product designs and marketing plans than TM.	PTM databases may lack validity (e.g. nonrepresentative sample, unrealistic advertisement exposure or buying situation).
PTM can effect considerable cost reduction (at least 1 : 10 as relation for PTM : TM costs).	Changes in economic environment and competitive reactions can only be simulated.

Tab.1: Advantages and Disadvantages of PTM-modelling

From Tab.1 one can see that PTM-modelling is not intended to substitute TM-modelling, rather it provides a lower cost, faster and more discrete methodology to identify unanticipated problems associated with NPI and offers a variety of diagnostic informations especially for product improvements. PTM- and TM-modelling complements one another to some extent so that strengths (weaknesses) of PTM-models may - in some sense - be interpreted as weaknesses (strengths) of TM-models.

In Tab.2 some key features which are usually used for characterizing NPI-approaches are listed together with ten selected models. Similar as in e.g. Lilien and Kotler (1983) and Narasimhan and Sen (1983) model characteristics are structured with respect to different stages of the NPI-process (awareness-trial-repeat purchase) and include additional diagnostic information such as draw and cannibalization effects, preference and positioning analyses as well as segmentation evaluations.

In the awareness stage consumers are considered to have become aware of the new brand through the firms' promotional activities. In the trial stage the trier class includes consumers who have made one purchase of the new brand while in the repeat purchase stage the repeater class consists of consumers who have purchased the new brand more than once. The various NPI-models differ in the way how it has been tried to anticipate or track out the behaviour of (potential) consumers of the new product and of competitors in the market in different NPI-stages. In Tab.2 a selection from the most popular and best documented NPI-approaches is presented and compared with the current version of an own development, called SUCCESSOR 1.2, which will be described in more detail in the next section.

Three types of models are considered in Tab.2. Although emphasis lies on PTM-models (ASSESSOR, COMP, LITMUS, LTM, NEWS/PLANNER, PERCEPTOR, SUCCESSOR) also TM-models (NEWS/MARKET, SPRINTER, TRACKER) and a recent development of a defence model (DEFENDER) designed to evaluate how an established firm should react against NPI-efforts of a competitor are tried to be described within the same framework of NPI-characteristics.

A visualization of the relationships among the different models based on the characteristics of Tab.2 is depicted in Fig.1. The representation is obtained by applying MDS-techniques to the information contained in Tab.2. Fig.1 already reveals essential information concerning the structure of the area of NPI-modelling. PTM- and TM-models are clearly discriminated and separated from the defence model. The PTM-models are divided into two groups. One group consists of approaches such as ASSESSOR (Silk and Urban (1978)), COMP (Burger, Gundee and Lavidge (1981)), LTM (Yankelovich, Skelly and White (1981)), PERCEPTOR (Urban (1975)) and SUCCESSOR 1.2 (see the next section). LTM has been one of the first PTM-models and can be seen as a pre-

Characteristics / Approaches	ASSESSOR	COMP	DEFENDER	LITMUS	LTM	NEWS	PERCEPTOR	SUCCESSOR	TRACKER	SPRINTER III
Type of model										
Pre-test-market	x	x		x	x	x	x	x	x	x
Test-market			x							
Defence										
Awareness	x	x		x	x	x	x	x	x	x
initial awareness				x		x				
decay over time				x		x				
advertising effects				x		x				
sampling effect				x		x				
coupon/promotion effect				x		x				
Trial stage										
differentiation over time	x	x	x	x	x	x	x	x	x	x
price sensitivity			x	x		x				
distribution sensitivity	x	x	x	x	x	x	x	x	x	x
advertising effects			x	x	x	x	x	x	x	x
sampling effects	x			x	x	x	x	x	x	x
coupon/promotion effects				x	x	x	x	x	x	x
Repeat Purchase Stage										
depth of repeat	x	x		x	x	x	x	x	x	x
price sensitivity				x		x				
distribution sensitivity					x					
Diagnostic Information										
forecast by time period				x		x	x	x	x	x
draw/cannibalization	x		x							
effects										
competitive reaction										
preference analysis	x	x								
probabilistic model										
internal one-dimensional/	x									
multidimensional analysis										
external analysis		x								
positioning analysis			x							
segmentation										

Tab. 2: Description of Selected NPI-Approaches

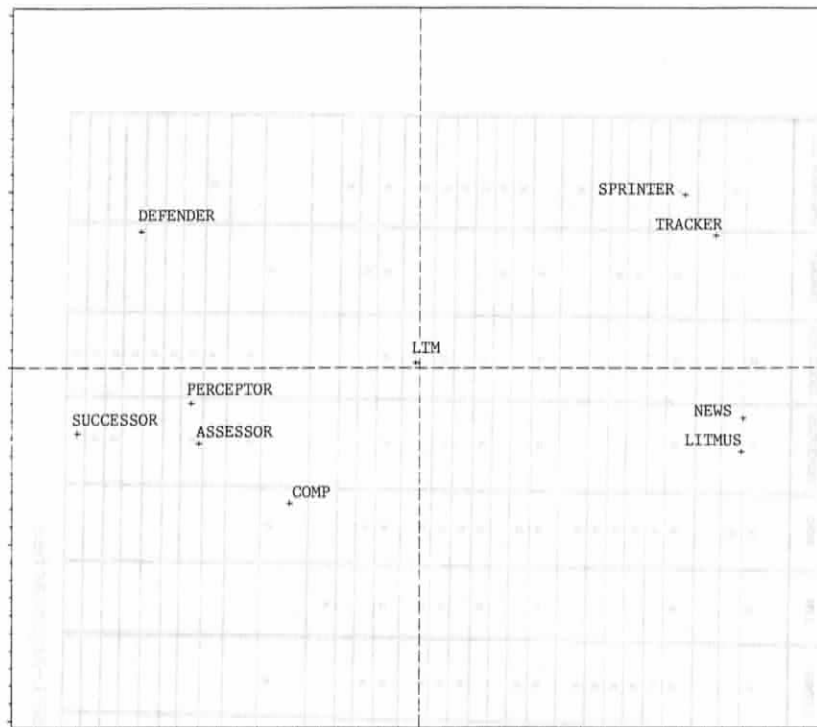


Fig.1: Comparative Map of Ten NPI-Approaches

cursor of both ASSESSOR and COMP. In SUCCESSOR features from different PTM-approaches are combined with own developments.

The approaches in the other group of PTM-models, NEWS (Pringle, Wilson and Brody (1982)) and LITMUS (Blackburn and Clancy (1982)) have more features in common with TM-approaches than those referred to before. Here, it has to be mentioned that NEWS can be used to analyze PTM-data (NEWS/PLANNER), as well as to scope with the TM-situation (NEWS/MARKET). From the documentation of NEWS it seems that both versions use the same model structure. One difference is that the input for NEWS/PLANNER is derived from consumer research prior to the introduction of the new brand to TM. Comparing both groups of PTM-models one of the major differences to be mentioned is that approaches of the second group rather focus on the evaluation of observed purchase behaviour while approaches of the first group are more designed to analyze perception and preference data. The TM-models SPRINTER (Urban (1969)) and TRACKER (Blattberg and Golanaty (1978)) build a group of their own as expected.

A position distinctive from the positions of all the other approaches in the MDS representation is occupied by the defence model DEFENDER (Hauser and Shugan (1983)). This approach allows to analyze how a firm should adjust its marketing expenditures and price to defend its position in an existing market against an attack by a competitive new product (see e.g. Hauser and Gaskin (1984) for a comparison of DEFENDER with alternative techniques such as ASSESSOR and Shugan (1987) for an extension to time series price-sales data as e.g. available from supermarket scanner data).

SUCCESSOR-METHODOLOGY

As the proceeding section has indicated there is no single method able to evaluate the whole amount of information which could be collected for NPI-purposes.

On the other side there is no existing NPI-system which offers the joint evaluation of NPI-data by competing approaches.

The methodology implemented in the current SUCCESSOR 1.2 version and outlined in the following emphasizes the evaluation of brand perception, brand preference, price acceptance, brand choice and some kind of marketing planning data. As visualized in Fig.2 a set of submodels is available in SUCCESSOR 1.2 and can individually be put together to allow for a variety of different evaluations.

One class of submodels is designed for the analysis of brand perception and brand preference data. To start with the latter type of data, there has been a number of studies which investigated the behavioral validity and reliability of preference data as a predictor of consumer purchase decisions (reviews are given in e.g. Best (1978), Blin and Dodson (1980), Silk and Urban (1978) and Shocker and Srinivasan (1979)). Researchers have reported about the predictive power of preference data, especially when choice objects are members of subject specific relevant or evoked sets, and have qualified brand preference as a useful surrogate in the absence of actual brand choice behaviour. Within the set of preference data collection procedures the method of paired comparisons is the most popular one (see e.g. Böckenholt and Gaul (1986b) and Gaul and Böckenholt (1986) for a description of different variants of the method (e.g. graded paired comparisons, constant-sum method) and for a discussion of characteristic features which seem to cause its popularity as well as for a presentation of some selected examples out of the broad range of marketing applications (e.g. to evaluate consumer preferences related to NPI (Silk and Urban (1978)), to analyse positioning strategies for a new product (Urban (1975)), to model price-response relationships (Kaas (1977)) or to evaluate first effective impressions of advertising messages (Böckenholt and Gaul (1984))).

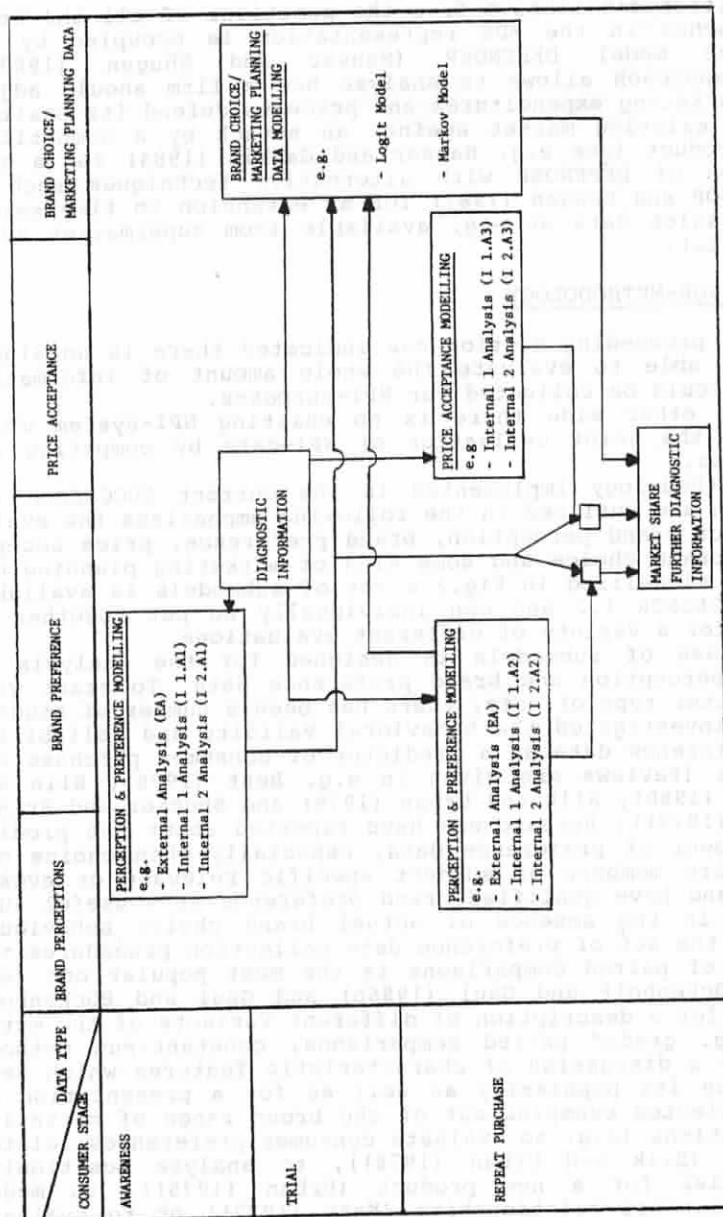


Fig. 2: Structure of SUCCESSOR 1.2

Concerning methodological aspects of how paired comparisons data can be evaluated probabilistic multidimensional scaling models which take into account both inconsistencies in observed choice behaviour and the often multidimensional nature of choice objects have been developed (see e.g. Böckenholt and Gaul (1984, 1986a, 1987) for recent reviews and comparisons of probabilistic scaling techniques). Especially, methods which allow for a subject-specific representation of preference behaviour are of interest (see e.g. Carroll (1980) and De Soete and Carroll (1983) for an approach in which a probabilistic vector describes the preferred preference direction and Böckenholt and Gaul (1986a) and De Soete, Carroll and De Sarbo (1986) who independently developed an approach in which a probabilistic ideal point describes the preferred preference position). A main objective is to identify the most preferred directions and/or positions in a multidimensional so-called "joint perceptual space" and to link this information to some kind of market estimates.

From a managerial perspective it is also essential to receive information on how to specifically alter existing products or design new products.

Here, perception data with respect to the different brands are needed.

The submodels incorporated in the current SUCCESSOR 1.2 version are able to relate preferred perceptual space directions and/ or positions to selected brand characteristics. This kind of linkage of perception and preference data is performed by a technique called I1A (Internal-1-Analysis). Besides I1A an I2A (Internal-2-Analysis) is offered by SUCCESSOR 1.2 where only the pairwise preferences are evaluated (a pure internal analysis). In an EA (External Analysis) the pairwise preference judgements are explained in terms of (transformed) interesting attributes or characteristics (where transformations may be obtained by such well-known data analysis techniques as e.g. multidimensional scaling or factor analysis, see e.g. Hauser and Koppelman (1979) for a review with regard to alternative perceptual mapping techniques).

A further class of submodels is designed to support decisions which are concerned with assessing price relations in the interesting market and determining the introduction price of the new product. With respect to this task price acceptance data have to be collected. The analysis of this kind of data aims at answering questions concerning the maximal acceptable price level (upper bound) for both the new product and the established brands. Also, price acceptance data can be linked with brand perception and brand preference data to take into account how further product features and stated preferences (between different products but also between products and amounts of money assigned to products) can help to evaluate the NPI-situation. Again,

I1A and/ or I2A can be applied e.g. in terms of probabilistic ideal point and probabilistic vector approaches. Up to now all considerations have been based on evaluation possibilities of perception, preference and price acceptance data. Further important information is given by brand choice data which can be collected during a simulated trial-repeat purchase process. From recent reviews and papers on choice behaviour (see e.g. Corstjens and Gautschi (1983), Mc Fadden (1986) and Wagner and Taubes (1987)) one can, however, conclude that most of these approaches require more than two purchase cycles (more than e.g. the trial and repeat purchase stages as conducted by most PTM-approaches) to perform efficient parameter estimations (see e.g. Zufryden (1982) for a recent NPI-model based on stochastic model components that integrates both brand choice and product class purchase behaviour). TM-approaches such as LITMUS, NEWS/MARKET and TRACKER require three and more purchase cycles for collecting a sufficient data base. If additional model-specific input data such as price, distribution rate, media budget, etc., are available these approaches could be used as brand choice models. In the current SUCCESSOR 1.2 version approaches are implemented which are less pretentious with respect to the required data base as far as purchase cycles are concerned, e.g. logit models and Markov models. Again, besides purchase-explanatory variables (e.g. product-characteristics, price, advertising, distribution and promotional incentives) brand perception and brand preference data can be incorporated into the brand choice/marketing planning data submodel. Although extensions of the brand choice/marketing planning data submodel are just under development final remarks concerning possibilities within the SUCCESSOR-methodology are restricted to a more global assessment of what can be analysed within the current SUCCESSOR 1.2 version depicted in Fig. 2. A variety of different evaluations can be performed by just following the outlined arrows for selected sequences of data/information and submodels, e.g. it is possible to model essential features of ASSESSOR by choosing a onedimensional I2A with respect to the perception & preference submodel and a two-state Markov model in combination with the Parfitt and Collins (1968) approach with respect to the brand choice/ marketing planning data submodel. Of course, similarities with essential features of other NPI-models are possible. It is left to the reader to check how many "similarities" can be found.

APPLICATION

In this section features of the current SUCCESSOR version will be illustrated on the basis of one of the case studies recently conducted in collaboration with a market research

institute. Part of the information as well as of the results concerning this study had to be given different labels and/or to be transformed to preserve confidentiality.

STARTING SITUATION

Suppose, a new product under study has been designed as a high price, high premium food brand for a market known to consist of two submarkets. Suppose, also, that the positioning strategy for the new brand is directed to a niche between the two submarkets. The first submarket can be described as a market of "easy-to-use" - and "in-between" - products. For the second submarket no hints will be given for reasons of confidence. The first submarket consists of five brands numbered bl.1, bl.2, bl.3, bl.4 and bl.5 according to decreasing market shares. With respect to the competition structure of this submarket the new brand as well as three brands of the mentioned five brands belong to the client of the underlying study so that an important question within the study has to be related to cannibalization and draw effects which may be released by the occurrence of the new brand.

Besides other NPI-information essential data collected for the study were

- perceptual data (attribute ratings) collected on the basis of semantic scales for each brand relative to the individual relevant sets of participating consumers both during the awareness-trial and repeat purchase stages,
- paired comparisons based preference data collected for all pairs of brands relative to the individual relevant sets of participating consumers both during the awareness-trial and repeat purchase stages,
- brand choice data recorded at the trial stage and
- brand choice data recorded for each repeat buyer at the repeat purchase stage.

SELECTED RESULTS

Already the current SUCCESSOR version is flexible in being able to support different types of data evaluations depending on the points of view wanted to be stressed in the NPI-analysis.

Here, just as an example of the possibilities of SUCCESSOR (and as a contrast to results known from other NPI-publications) the point of view of those participants of the study who became repeat buyers is emphasized.

In Fig. 3 the structure of the market under consideration is depicted based on repeat buyers' data. The two-dimensional representation was obtained by applying a multidimensional scaling technique to the brand attributes collected from those participating consumers who - after new

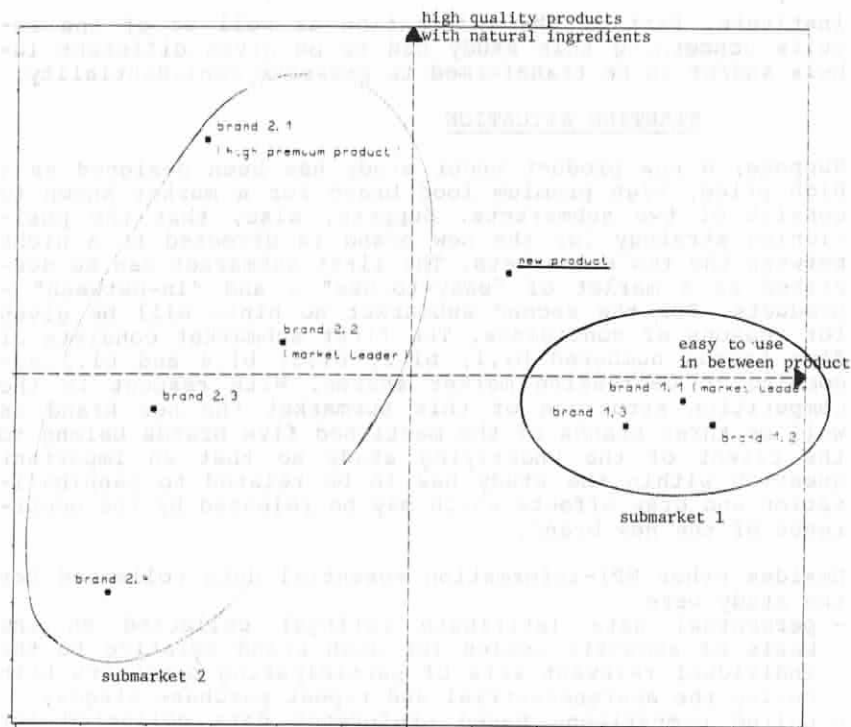


Fig. 3: Two-dimensional Representation of the Market Structure and the New Product Position on the Basis of Repeat Buyers' Data.

product usage - repurchased the brand. The distances between different brand positions can be interpreted as (dis)similarities. The axes legends were yielded by a regression-based interpretation technique applied to selected product attributes. One can see that the market structure with its two submarkets has clearly been recognized and that the intended product positioning concept has successfully been transmitted to the repeat buyers.

The perceptual data based position of the new brand can be described by a combination of characteristics describing a "high quality product with natural ingredients" and an "easy to use" and "in between" product. Two brands of the first submarket (with a joint market share of less than 10%) could not be included in this repeat buyer - repeat purchase stage description of the whole market because too few repeat buyers indicated them to belong to their individual relevant sets.

In the awareness-trial stages, data for all first submarket's brands are available (that means that compositions (and sizes) of relevant sets changed during the NPI-stages the exact alterations of which, however, cannot be reported for reasons of confidence). Fig. 4 presents the joint perceptual map of the first submarket based on simultaneous 11.A1 and 11.A2 analyses.

Some selected perceptual dimensions such as "high quality", "more expensive", "delicacy", "in between product" and "the best product" have been included in the perceptual map of Fig. 4 to provide functional relationships between attributes and product coordinates. From Fig. 4 one can conclude (in accordance with Fig. 3) that within the first submarket the new brand is judged as "high quality" (and "more expensive") product also possessing characteristics of an "in between product". In terms of "delicacy" and "the best product" the new brand also competes favourably with its competitors. As additional information both Fig. 3 and Fig. 4 reveal a remarkable proximity of the new brand to the market leaders of both submarkets. Hence, cannibalization and draw effects have to be studied. Further conclusions may be drawn by taking into account the length and the directions of the perceptual dimension vectors. Here, one can e.g. see that the first submarket's market leader is still rated as "the best product" although the new brand which has higher ratings e.g. on "quality" and "delicacy" dimensions follows closely.

Up to now main conclusions are dependent on positioning research. Additional insights into consumer perceptions of competitive brand choice alternatives can be gained by performing a segmentation based analysis of the preference data the results of which are visualized in Fig. 5. Additionally, segment-specific preference alterations occurring in the time span between trial and repeat purchase stages are depicted in Fig. 5. If we denote by segment i.1 respectively segment i.2 the starting respectively end position of segment i computed on the basis of trial stage respectively repeat purchase stage data, directions and magnitudes of segment movements can help to explain preferences alterations due to the occurrence of the new brand (for reasons of better interpretability the brand positions have been kept fixed). Here, the distance between a segment position and a product position is a segment-specific measure (aggregated with respect to the consumers in the segment) of (dis)liking for the corresponding brand.

The understanding of segment-specific alterations of perceptions and preferences with regard to the product class under study can provide additional information for performing (or "optimizing") effective (re)positioning strategies. Having a first look at the perceptual map positions of the largest segment 2 (see 2.1 with 57% of the repeat buyers) and of the second-largest segment 1 (see 1.1 with 27% of

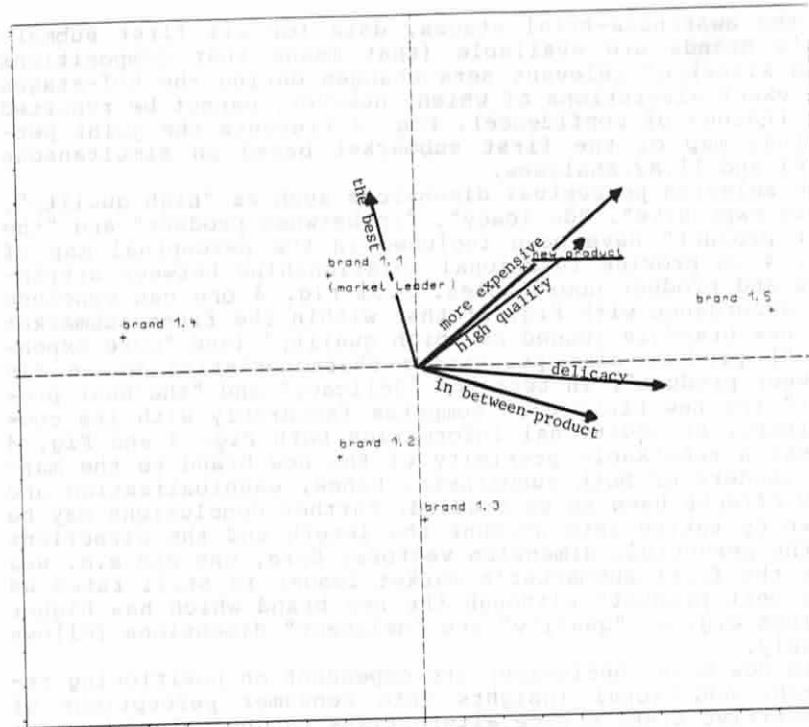


Fig. 4: IIA of the First Submarket

the repeat buyers) and at the corresponding segment-specific movements one can recognize the following:
 The starting point 2.1 of the largest segment 2 is nearest to the market leader as well as to the new brand.
 The movements of the two largest segments are directed away from the market leader and nearer to the new brand.
 Of course, there are superimpositions with the movements of segment 3 (see 3.1 + 3.2 with 5% of the repeat buyers) and segment 4 (see 4.1 + 4.2 with 11% of the repeat buyers) which are both rather directed towards the market leader. However, these segments contain only 16% of the repeat buyers and their end positions are also nearer to the new brand than their starting positions.
 There is a correspondence between the movements of the two largest segments and the estimates of the C & D (Cannibalization and Draw) effects given in Tab. 3, e.g. the end positions of these segments are more distant from bl.1 (C & D of -5.1%), nearer to bl.2 (C & D of +1%), nearer to bl.3 (C & D of +0.9%), more distant from bl.4 (C & D of -1.2%), nearer to bl.5 (C & D of +0.5%) and nearer to the new brand (resulting in a market share estimate of 3.9%) than their corresponding starting positions.

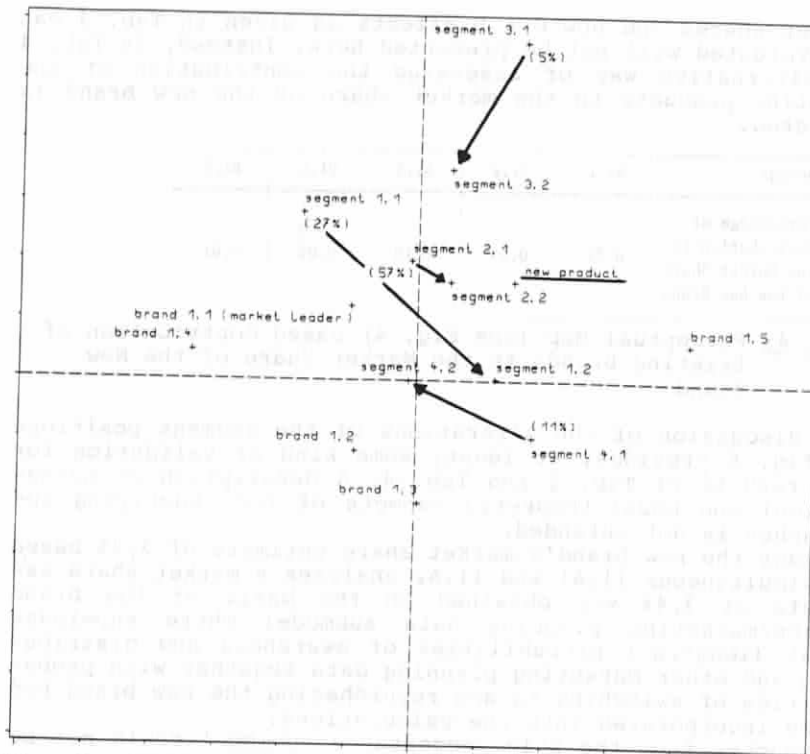


Fig. 5: Preference alterations in the Time-span between Trial and Repeat Purchase Stages with respect to Segments of Repeat Buyers

Brands	b1.1	b1.2	b1.3	b1.4	b1.5	New Brand
Market Shares before Occurrence of the New Brand	More than 40%	More than 10%	More than 10%	Less than 10%	Less than 10%	-
C & D Effects/Market Share after New Brand Usage	C & D -5,1%	C & D +1%	C & D +0,9%	C & D -1,2%	C & D +0,5%	Market Share 3,9%

Tab. 3: Cannibalization and Draw Effects/Market Share after New Brand Usage

The theory how alterations with regard to the perceptual space locations of segments are related to changings in

market shares and how C & D effects as given in Tab. 3 can be evaluated will not be presented here. Instead, in Tab. 4 an alternative way of assessing the contribution of the existing products to the market share of the new brand is depicted.

Brands	bl.1	bl.2	bl.3	bl.4	bl.5
Percentage of Contribution to the Market Share of the New Brand	0.78	0.09	0.10	0.02	0.01

Tab. 4: Perceptual Map (see Fig. 4) based Contribution of Existing Brands to the Market Share of the New Brand

The discussion of the alterations of the segment positions in Fig. 5 provides, at least, some kind of validation for the results of Tab. 3 and Tab. 4. A description of mathematical and model-theoretic aspects of the underlying approaches is not intended.

Besides the new brand's market share estimate of 3,9% based on simultaneous 11.A1 and 11.A2 analyses a market share estimate of 3,4% was obtained on the basis of the brand choice/marketing planning data submodel where knowledge about (long-run) probabilities of awareness and distribution and other marketing planning data together with probabilities of switching to and repurchasing the new brand had to be incorporated into the calculations.

Approaches from the price acceptance submodel could not be applied because data of this kind were not available.

Of course, differences in market share estimates obtained from different approaches give rise to rechecking of assumptions/data/model specifications/etc. of the approaches used. Here, a major reason for this difference is probably due to the fact that the lower market share estimate was yielded from the brand choice/marketing planning data submodel in which the factor "price" plays a more important role than in the perception & preference submodel.

With regard to the first submarket the market leader bl.1 would have to suffer a remarkable cannibalization effect if the NPI-decision concerning the new brand is realized.

If brand bl.1 belongs to a competitor possible defending strategies of this competitor have to be taken into consideration before a final NPI-decision with respect to the new brand is made.

If brand bl.1 belongs to the product palette of the firm which has developed the new product an assessment of compensation possibilities for the market share diminution of bl.1 is needed.

Remember, there is a second submarket and with respect to this market SUCCESSOR can also support such assessments.

CONCLUSIONS

PTM-modelling tries to assist the marketing management in achieving diagnostic informations and predictions with regard to the possible success of a new brand. SUCCESSOR 1.2, the current version of an own development of a PTM-system, has been designed to support NPI-efforts. Some features of SUCCESSOR have been illustrated within the description of its current structure as well as within the application section of this paper.

Of course, for several reasons only a subset of all SUCCESSOR 1.2 features has been shown.

The SUCCESSOR methodology is based on classes of submodels allowing for different possibilities of market share predictions and for a variety of further information about the underlying market and the new brand.

The submodels are designed for the analysis of perception, preference and price acceptance data as well as for the evaluation of brand choice and some kinds of marketing planning data.

Extensions and refinements of the current SUCCESSOR 1.2 version are still under development.

References

- Assmus, B. (1981), New Product Models, in Schultz, R. and Zoltners, A. (eds.), Marketing Decision Models, North-Holland, Amsterdam, 125-146.
- Assmus, B. (1984), New Product Forecasting, Journal of Forecasting, 3, 121-138.
- Best, R. J. (1978), Validity and Reliability of Criterion-Based Preferences, Journal of Marketing Research, 15, 154-160.
- Blackburn, J. D., Clancy, K. J. (1982), LITMUS: A New Product Planning Model, in: Zoltners, A. (ed.), Marketing Planning Models, TIMS/Studies in the Management Sciences, 18, North Holland, Amsterdam, 43-61.
- Blattberg, R., Golanaty, J. (1978), TRACKER: An Early Test Market Forecasting and Diagnostic Model for New Product Planning, Journal of Marketing Research, 15, 192-202.
- Blin, J. B., Dodson, J. A. (1980), The Relationship between Attributes, Brand Preference, and Choice: A Stochastic View, Management Science, 26, 606 - 619.
- Böckenholt, I., Gaul, W. (1984), A Multidimensional Analysis of Consumer Preference Judgements Related to Print Ads, EMAC/ESOMAR Symposium on Methodological Advances in Marketing Research in Theory and Practice, Copenhagen, 83-105.
- Böckenholt, I., Gaul, W. (1986a), Analysis of Choice Behaviour via Probabilistic Ideal Point and Vector Models, Applied Stochastic Models and Data Analysis, 2, 209-226.
- Böckenholt, I., Gaul, W. (1986b), Neue probabilistische Auswahlmodelle im Marketing, Operations Research Proceedings, Springer Verlag, Berlin, 209 - 217.
- Böckenholt, I., Gaul, W. (1987), Probabilistic Multidimensional Scaling of Paired Comparisons Data, Working Paper No. 108, Institute of Decision Theory and Operations Research, University of Karlsruhe (TH).
- Booz, Allen and Hamilton (1982), New Products Management for the 1980s, Booz, Allen and Hamilton, Inc., New York.
- Burger, P. C., Gundee, H., Lavidge, R. (1981), COMP: A Comprehensive System for the Evaluation of New Products, in: Wind, Y., Mahajan, V., Cardozo, R. N. (eds.), New Product Forecasting - Models and Applications, Lexington Books, Toronto, 269-283.
- Carroll, J. D. (1980), Models and Methods for Multidimensional Analysis of Preference Choice (or other Dominance) Data, in: Lantermann, E. D. and Feger, H. (eds.), Similarity and Choice, Huber, Bern, 234-289.
- Corstjens, M. L., Gautschi, D. A. (1983), Formal Choice Models in Marketing, Marketing Science, 2, 19-56.
- De Soete, G., Carroll, J. D. (1983), A Maximum Likelihood Method for Fitting the Wandering Vector Model, Psychometrika, 48, 553-566.
- De Soete, G., Carroll, J. D., De Sarbo, W. (1986), The Wandering Ideal Point Model: A Probabilistic Multidimensional Unfolding Model for Paired Comparison Data, Journal of Mathematical Psychology, 30, 28-41.

- Erichson, B. (1979/1980), Prognose für neue Produkte, Teil 1: Marketing ZFP, 1, 1979, 255-266, Teil 2: Marketing ZFP, 2, 1980, 49-52.
- Factor, S., Sampson, P. (1983), Making Decisions about Launching New Products, Journal of the Market Research Society, 25, 185-201.
- Gaul, W., Böckenholt, I. (1986), Generalized Thurstonian Scaling of Advertising Messages, Working Paper No. 106, Institute of Decision Theory and Operations Research, University of Karlsruhe (TH).
- Gaul, W., Schaer, A. (1987a), A Prolog-Based PC-Implementation for New-Product Introduction, Working Paper No. 110, Institute of Decision Theory and Operations Research, University of Karlsruhe (TH).
- Gaul, W., Schaer, A. (1987b), MEXICO - A Knowledge-Based Prototyp for New-Product Introduction, Working Paper No. 111, Institute of Decision Theory and Operations Research, University of Karlsruhe (TH).
- Hauser, J. R., Gaskin, S. (1984), Application of the "Defender" Consumer Model, Marketing Science, 3, 327-351.
- Hauser, J. R., Koppelman, F. S. (1979), Alternative Perceptual Mapping Techniques: Relative Accuracy and Usefulness, Journal of Marketing Research, 16, 495-506.
- Hauser, J. R., Shugan, S. M. (1983), Defensive Marketing Strategies, Marketing Science, 2, 319-360.
- Kaas, K. P. (1977), Empirische Preisabsatzfunktionen bei Konsumgütern, Springer Verlag, Berlin.
- Lilien, G. L., Kotler, Ph. (1983), Marketing Decision Making: A Model-Building Approach, Harper & Row, New York.
- McFadden, D. (1986), The Choice Theory Approach to Market Research, Marketing Science, 5, 275-297.
- Narasimhan, C., Sen, S. K. (1983), New Product Models for Test Market Data, Journal of Marketing, 47, 11-24.
- Parfitt, J. H., Collins, B. J. K. (1968), Use of Consumer Panel for Brand Share Prediction, Journal of Marketing Research, 5, 131-146.
- Pringle, L. G., Wilson, R. D., Brody, E. I. (1982), NEWS: A Decision-Oriented Model for New Product Analysis and Forecasting, Marketing Science, 1, 1 - 29.
- Robinson, P. J. (1981), Comparison of Pre-Test-Market New-Product Forecasting Models, in: Wind, Y., Mahajan, V., Cardozo, R. N. (eds.), New-Product Forecasting - Models and Applications, Lexington Books, Toronto, 181-204.
- Shocker, A. D., Hall, W. B. (1986), Pretest Market Models: A Critical Evaluation, J. Prod. Innov. Manag., 3, 86-107.
- Shocker, A. D., Srinivasan, V. (1979), Multiattribute Approaches for Product Concept Evaluation and Generation: A Critical Review, Journal of Marketing Research, 16, 159-180.
- Shugan, S. M. (1987), Estimating Brand Positioning Maps Using Supermarket Scanning Data, Journal of Marketing Research, 24, 1-18.

- Silk, A. J., Urban, G. L. (1978), Pre-Test-Market Evaluation of New Product Goods: A Model and Measurement Methodology, *Journal of Marketing Research*, 15, 171-191.
- Urban, G. L. (1969), SPRINTER MOD III: A Model for the Analysis of New Frequently Purchased Consumer Products, *Operations Research*, 17, 805-854.
- Urban, G. L. (1975), PERCEPTOR: A Model for Product Positioning, *Management Science*, 21, 858-871.
- Urban, G. L., Hauser, J. R. (1980), *Design and Marketing of New Products*, Prentice Hall, Inc., Englewood Cliffs, New Jersey.
- Wagner, H., Taubes, A. (1987), Stochastic Models of Consumer Behaviour, *European Journal of Operational Research*, 29, 1-23.
- Wind, Y. (1982), *Product Policy: Concepts, Methods, and Strategy*. Reading, Mass.
- Wind, Y., Mahajan, V., Cardozo, R. N. (eds.) (1981), *New-Product Forecasting - Models and Applications*, Lexington Books, Toronto.
- Yankelovich, Skelly, and White, Inc. (1981), LTM Estimating Procedures, in: Wind, Y., Mahajan, V., Cardozo R. N. (eds.), *New-Product Forecasting - Models and Applications*, Lexington Books, Toronto, 249-267.
- Zufryden, F. S. (1982), A General Model for Assessing New Product Marketing Decisions and Market Performance, in: Zoltners, A. (ed.), *Marketing Planning Models*, TIMS/Studies in the Management Sciences 18, North Holland, Amsterdam, 63-83.