



JOURNAL OF THE INSTITUTE FOR OPERATIONS RESEARCH AND THE MANAGEMENT SCIENCES

# MARKETING SCIENCE

Volume:

Number:

Year:

Title:

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Marketing Science Homepage

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# Development and Implementation of a Segment Selection Procedure for Industrial Product Markets

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## Abstract

The purpose of this paper is to develop and illustrate a systematic segment selection procedure that models the tradeoffs among evaluation criteria and organizational resource constraints. The target audience for this paper is both managers and academic researchers. For managers, our segment selection procedure provides assistance in formulating new product strategy by creating a common structured framework for understanding and resolving tradeoffs among segment evaluation criteria. For researchers, the procedure addresses an important gap in past segmentation research. The state-of-the-art in segmentation methods provides sophisticated analytic techniques for identifying homogenous groups of customers based on their preferences and optimally allocating resources to any subset of these segments. However, the intermediate decisions, involving how to evaluate the attractiveness of each segment and how to select the appropriate segments to serve such that long-run profitability is maximized subject to firm constraints, continue to be treated in an ad hoc manner. Segment selection is the critical link between the segment formation and resource allocation processes.

Organizations are made up of people who represent different functional areas that are measured against different goals and performance requirements. Thus, the real challenge in segment selection is developing a model that coordinates resource competitive goals across the functional areas of an organization. Effective segment selection requires integration of the various decision criteria that play interrelated roles in determining product profitability, marketability, and manufacturability. Our research objective is to develop and illustrate a structured segment selection procedure that balances multiple decision criteria, thereby managing organizational diversity of views among key decision makers. The segment selection procedure provides a more structured approach to eliciting and explicitly modeling the tradeoffs among the multiple decision criteria.

The segment selection procedure is a system of methodologies that identifies and selects market segments and product portfolios such that customer preferences, organizational objectives, and resource constraints are simultaneously satisfied. We employ a multistage research methodology incorporating conjoint analysis, cluster analysis, a product design optimization simulation, and a multiobjective integer programming (MOIP) model. Development of the MOIP model requires balancing the science of mathematical optimization against the art of problem definition and the reality of the implementation context. Our procedure facilitates management involvement in model development and blends managerial intuition with the model solution so that the final solution is optimal for the organization's situation. The segment selection procedure provides a structured method for balancing divergent performance metrics and normatively allocating resources to serve selected segments. Overall, the segment selection procedure combines mathematical modeling methods and managerial wisdom to design a total marketing plan for segmentation.

Through an illustration in the automotive supply industry, we show that our procedure is an effective approach for integrating marketing, manufacturing, and financial performance information in the segment selection decision process. The segment selection procedure provides a framework for extensive sensitivity analysis of tradeoffs among alternative decision criteria so management can resolve how best to balance its short and long-term goals. This procedure is a generalizable process for systematic planning and winnowing down market opportunities according to carefully defined criteria. Successful implementation of the procedure requires managerial involvement and a blend of science and art. In our illustration, the final solution was a blend that leveraged the structure of the modeling process against the subtlety of the implementation context.

*(Segment Selection; Multiobjective Integer Programming Model; Industrial Product Planning)*