



# Managing the New Product Development Process

## The Changing Nature of Competition

Here's a story from the late 1970's.

"Both the company and the division still saw the need to broaden Vick's product line. Thus, in mid-1978, Project Scorpio was initiated."<sup>1</sup> (Scorpio was the name of the project for Vick's to develop a solid form cold relief product.) Based on a variety of concept tests, and product tests and a test market, "The division president and colds care new products group had decided in 1981 that they wanted to launch Scorpio nationally [and]...would submit the recommendation and plan to corporate management in early April 1981."<sup>2</sup> The Vicks Health Care Division case series describing these events was written in 1981 as an example of the new product development process as typically practiced at consumer packaged goods firms in that day. The series covers the nearly *three years* from project inception to launch recommendation. This process is in sharp contrast to the more contemporary views on the key to success expressed in writings such as: "Fast-Cycle Capability for Competitive Power"<sup>3</sup> and *Competing Against Time: How Time Based Competition is Reshaping Global Markets*<sup>4</sup>, e.g. the latter states: "Today, time is on the cutting edge of competitive advantage. The way leading companies manage time—in production, in sales and distribution, in new product development and introduction—are the most powerful new sources of competitive advantage." (p. 39) These writings and others present compelling evidence on the value of being quick to market with new products. While "pioneering products" no doubt carry with them substantial risks, the empirical evidence is that they on average achieve and retain market share dominance (see e.g., Robinson [1988] and Robinson and Fornell [1985]). Reducing the time-to-market results in having fresher products on the market, more closely fitting the current preferences of consumers. The question is not whether time-to-market is important, but how do we manage the new product development process to achieve the desired result of market satisfying products being there ahead of competition?

---

<sup>1</sup>"Vicks Health Care Division: Project Scorpio (A)" in B.P. Shapiro, R.J. Dolan, and J.A. Quelch, *Marketing Management: Strategy, Planning and Implementation*, R.D. Irwin, 1985, p. 320

<sup>2</sup>"Vicks Health Care Division: Project Scorpio (C)", *ibid*, p. 371.

<sup>3</sup>"Fast-Cycle Capability for Competitive Power" J.L. Bower and T.M. Hout, *Harvard Business Review*, November-December 1988, pp.110-118.

<sup>4</sup>*Competing Against Time: How Time Based Competition Is Reshaping Global Markets*, G. Stalk and T. Hout, Free Press, 1990.

---

*Professor Robert J. Dolan prepared this note for class discussion.*

Copyright © 1991 by the President and Fellows of Harvard College. To order copies or request permission to reproduce materials, call 1-800-545-7685, write Harvard Business School Publishing, Boston, MA 02163, or go to <http://www.hbsp.harvard.edu>. No part of this publication may be reproduced, stored in a retrieval system, used in a spreadsheet, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the permission of Harvard Business School.

## Marketing's Role

The classic symptoms of poor performance by marketing in the new product development task are:

1. market research data arriving too late to have an impact on the decision
2. market research data not being informative on the key decision issues facing management. This happens, for example, when the strategic role of the new product is not understood. A research program which does not allow estimation of cannibalization rates for a new entry closely substituting for an item already in the firm's product line may have high validity and reliability, but would have no relevance.
3. market research data which documents the obvious, e.g. people would like the best performance at the lowest price.
4. market research designed to confirm an already held view rather than to present possibly disconfirming data
5. the market research process being standardized for all new product programs
6. marketing operating autonomously from R&D and engineering during development.

To be a contributor to development of competitive advantage through short development cycles, marketing must:

1. design a research program which is efficient in time and money and effective in the nature of the data collected
2. be integrated with other functions in a team approach to development

We now discuss each of these prerequisites in turn.

## Research Program Design

The research program must fit the conditions of the product situation, especially the product's position on the newness map and the opportunity cost/developmental risk map. (See "Matching the Process of Product Development To Its Context" for details, Note 9-592-009). Whereas the competitive situation of the 1970's allowed firms to adopt policies such as Vicks' requirement that any new product be test marketed before introduction, this is no longer true. The marketer must creatively select, from the broad array of options available, a subset of research projects which can be woven together to create the data fitting the circumstances. The major research options available are shown in **Figure 1** classified by their nature, i.e. qualitative vs. quantitative and required stage of product program (pre-prototype vs. post). The particular advantages and disadvantages of each technique are well-known and set out in most market research text books. The key is thus not so much knowing the individual ingredients but in devising the right mixture.

**Figure 1** Taxonomy of Major Research Options

QUALITATIVE	← Depth ← Focus ← Expert	Interviews → Groups → Judgement → Beta Tests
	Standard Surveys Concept Tests Perceptual Maps Conjoint Analysis	Product Use Test Pre-Test Market Test Market Electronic Test Mkt.
QUANTITATIVE		
	PRE-PROTOTYPE STAGE	POST-PROTOTYPE STAGE

**The Need for Integration**

Marketing, research and development, product engineering and process engineering are all involved in new product development. Their relationship has been studied by many. Takeuchi and Nonaka [1986] term the typical process as a “relay race” in **Figure 2**. Marketing develops the idea and “hands it off” to R&D for feasibility testing and design; it, in turn, hands off to production for process development and manufacture. Others see the same process but are less kind-calling the “hand off” a not quite so intimate “throwing the blueprints over the wall.” (Clark and Fujimoto [1991]). Both of these research teams advocate replacing this sequential model with a process of overlapping and integrated stages, viz. “In a turbulent, competitive environment in which customers are demanding and speed is essential, the underlying source of superior performance is integration...linking problem-solving cycles, bringing functional groups into close working relationships, and achieving a meeting of the minds in concept, strategy, and execution.” (Clark and Fujimoto, p. 340). They support their exhortation with data from the world automobile industry showing that degree of integration positively impacts both speed of development and overall product quality.

**Figure 2** Traditional Process Phases

PHASES OF THE PROCESS

Responsibility

Marketing

R + D Engineers

Production Engineers

Stage

Concept Development

↓  
Feasibility Testing

↓  
Product Design

↓  
Process Development

↓  
Pilot Production

↓  
Final Production

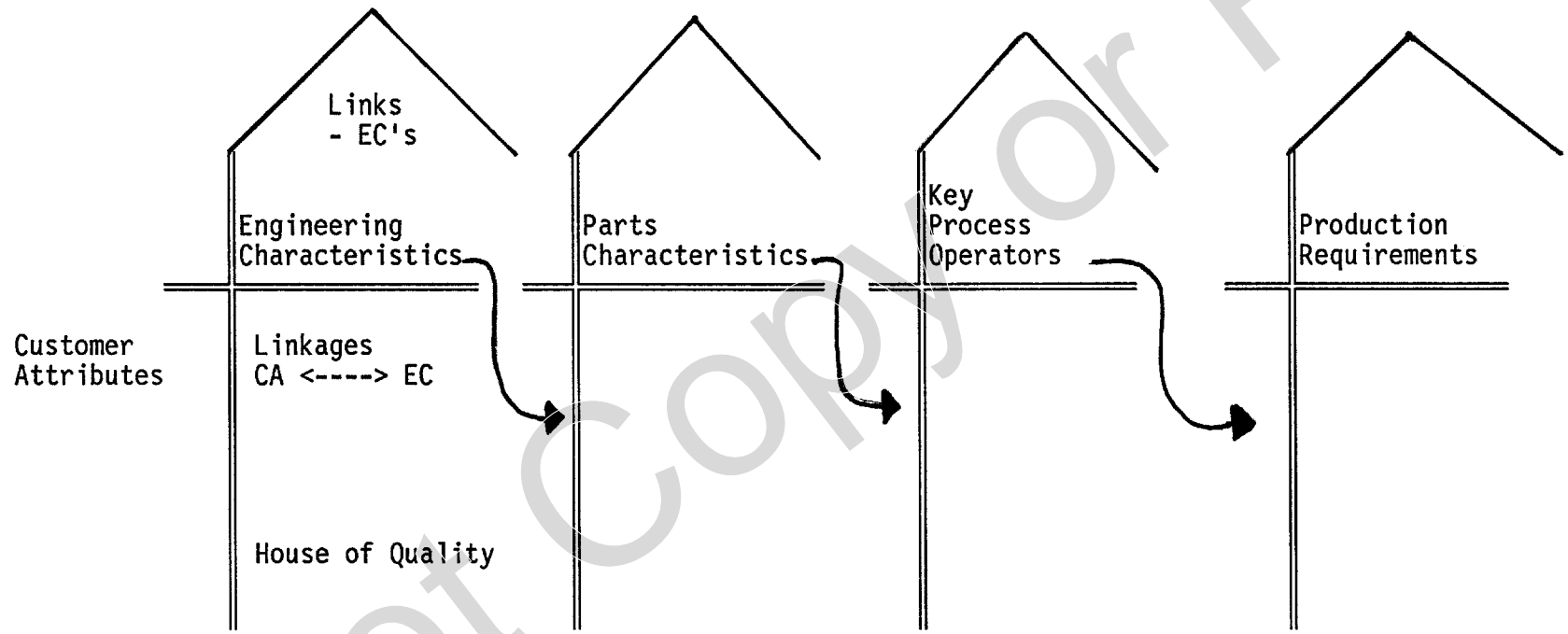
## Achieving Integration

While there is evidence to support the common-sense notion that the process ought to be an integrated one, an issue remains. How do we make it happen? One successful approach advocated by Hauser and Clausing [1988] and Barabba and Zaltman [1991] is Quality Function Deployment (QFD). The latter, reflecting on General Motors experience with QFD, define it as a “framework for effective direct interaction between market researchers, program managers, and engineers....[that] structures the delivery of market information to program teams so that it is clear, readily usable, more complete and less filtered than it has been.” **Figure 3**, taken from Hauser and Clausing, demonstrated the basic QFD process. It begins on the left with the development of a “house of quality” matching desired customer benefits vs. the product’s engineering characteristics capable of delivering these benefits. The rows of the house are developed first by: (i) specifying the benefits impacting consumers’ choice of a product, (ii) assigning them relative degrees of importance and (iii) rating the current competitors’ positions on each. Second, the engineering characteristics which impact delivery of the benefits are developed as the columns. Then two sets of linkages are developed. First, cells of the house are filled in to show the strength and direction of the linkage between the customer benefit and the engineering characteristic. Second, the engineering characteristics are linked to one another to reflect the reality that one may necessitate change in another. This is visually captured in the roof of the house. Then, integrating this with information on costs and technical difficulty, the target values for each customer attribute and the most effective way of achieving that benefit are set. Moving to the right in **Figure 3**, the engineering characteristics are then stepped down to parts characteristics in the parts deployment house. In turn, the next two houses carry parts characteristics to key process operations to product requirements. Sullivan [1986] credits QFD with reducing the time to market at Toyota by 1/3 while improving quality. Similarly, Toyota’s transmission supplier cut its cycle time by 1/2 using QFD. QFD has now been implemented by a large number of U.S. firms.

## Summary

The two deadly sins in new product development are standardized and sequential. These 2 “S’s” inevitably lead to a third—*slow*. The imperative is to develop mechanisms for the interfunctional coordination of efforts and to have marketers custom their research efforts to provide timely, relevant data.

Figure 3 QFD Approach



## References

- Barabba, V. and G. Zaltman, *Hearing the Voice of the Market: Competitive Advantage through Creative Use of Market Information*, Harvard Business School Press, Boston, Mass., 1991.
- Bower, J.L. and T.M. Hout, "Fast-Cycle Capability for Competitive Power," *Harvard Business Review*, November-December 1988, pp. 110-18.
- Clark, K.B. and T. Fujimoto, *Product Development Performance: Strategy, Organization, and Management in the World Auto Industry*, Harvard Business School Press, Boston, Ma., 1991.
- Hauser, J. and D. Clausing, "The House of Quality," *Harvard Business Review*, May-June 1988, pp. 63-73.
- Robinson, W.T., "Sources of Pioneering Advantages: A Replication Applied To Industrial Goods Industries," *Journal of Marketing Research*, 1988, pp.87-94.
- Robinson, W.T. and C. Fornell, "The Sources of Market Pioneer Advantages in Consumer Goods Industries," *Journal of Marketing Research*, pp.297-304.
- Shapiro, B.P., R.J. Dolan, and J.A. Quelch, *Marketing Management: Strategy, Planning and Implementation*, vol II, Irwin, Homewood, Illinois, 1985.
- Stalk, G. and T.M. Hout, *Competing Against Time: How Time Based Competition is Reshaping Global Markets*, Free Press, New York, 1990
- Takeuchi, H. and I. Nonaka, "The New New Product Development Game," *Harvard Business Review*, January-February 1986, pp 137-46