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## Integrating strategic thinking and simulation in marketing strategy: Seeing the whole system<sup>☆</sup>

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### ABSTRACT

In contexts where competition is intense, growth is rapid, innovation is abundant, local conditions are idiosyncratic, and technological options are increasingly complex, the marketing manager needs to understand the dynamic forces that influence the structure of the industry in order to assess the market strategic value. The problems are made even more difficult when much of the information available is qualitative, not quantitative. In order to reduce endless complexities and produce manageable simplicities, the study proposes a workable systems methodology and a holistic frame of reference that allows managers to focus on relevant issues and avoid the endless search for more details, while drowning in proliferating useless information. This paper presents two cases illustrating systems approaches to marketing strategy and decision-making. The purposes are to contrast a qualitative mapping theory building approach and a quantitative group model building approach to help client groups think systemically about marketing dynamics, and to draw out implications for research and practice in marketing strategy.

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### 1. Introduction

In a complex environment both the system itself, considered as a subset of the environment, and the agents within the system influence the industry dynamics (Lane, 1995). Furthermore, time pressure, incomplete information, unknown feedback loops, organizational contexts, and selfish motivations strongly influence managerial decisions. Inadequate decisions and subsequent actions might lead to undesired results. The problems are made even more difficult when much of the information available is qualitative, not quantitative.

Computer-based system modeling offers managers an alternative tool for decision support inquiry. A growing body of research evidence from cognitive science suggests that cognitive feedback (Eden, Jones, & Sims, 1983) can be used to enhance the quality of decision processes as well as decision outcomes (Balzer, Doherty, & O'Connor, 1989; Paich & Sterman, 1993; Sengupta & Abdel-Hamid, 1993). In the decision-making literature, cognitive feedback refers to giving subjects in a decision-making experiment information about the true implications of a decision they made, in order to teach decision-makers how to do

better. In this context, the term cognitive feedback refers to information about the relations between variables rather than performance outcomes (Balzer et al., 1989).

Model-aided inquiry can help decision-makers comprehend the dynamics of the market and the potential shortcomings of existing or potential management actions. Modeling thus holds the potential to reduce an organization's risk of propagating or perpetuating flawed decisions (Kleinmuntz & Thomas, 1987). Modeling projects also hold the potential to clarify areas where additional research is most likely to help managers improve their understanding of system behavior. Thus, modeling projects can provide input useful in setting research priorities within an organization.

This paper presents two cases illustrating systems approaches to marketing strategy and decision-making. The purposes are to contrast a quantitative group model building approach and a qualitative, cognitive mapping, approach to help client groups think systemically about market dynamics, and to draw out implications for research and practice in marketing strategy. The approaches draw on two generic systems methodologies, quantitative system dynamics modeling (Forrester, 1994; Richardson & Pugh, 1981; Sterman, 2000) and qualitative systems thinking (Checkland, 1981; Flood & Ulrich, 1989; Senge, 1994; Wolstenholme, 1982, 1983, 1985, 1990, 1999). One case uses a group modeling approach from the system dynamics consulting tradition (Andersen & Richardson, 1997; Otto & Struben, 2004; Richardson & Andersen, 1995; Vennix, 1994, 1996) and the other employs the strategic value assessment model from marketing (Fine, Vardan, Pethick, & El Hout, 2002).

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## 2. Quantitative group model building approach

### 2.1. The managerial problem

In the past decade pharmaceutical companies invested hundreds of millions of dollars in developing new medicines and increasingly allocating funds to marketing. Most new drugs are improvements on their predecessors, so selling the product is relatively simple – have your sales force tell doctors about the new product, refer to the merits of its predecessor, and the doctors will prescribe it. In fact, almost proportionally, the more sales representatives' contact doctors, the more doctors prescribe. Via frequent visits to virtually every doctor in the country, the sales force becomes, not surprisingly, the main communication tool for the industry. Recently, however, this marketing approach has changed, due to increasing pressure from government to lower healthcare costs. Like any other service provider, doctors must find ways to improve the services they offer to their patients or risk losing them (and the income) to some competitor. At the same time, pharmaceutical companies have become an easy target for politics in a bid to cut overall healthcare costs.

The increasing cost pressure, the increase in better-informed patients demanding quality service, and the rising competition among doctors has changed the way pharmaceutical companies approach the market with a new drug. Some pharmaceutical companies have begun to approach patients directly via marketing campaigns similar to those of fast moving consumer goods companies. The assumption underlying a direct-to-consumer approach (within the legal boundaries as they apply to advertising of prescription drugs) is to establish brand preference. Patients with a brand preference then persuade the doctor to write the brand name of choice on their prescription.

Other companies, including the company this case refers to, have adopted a single, pan-European, strategy to take advantage of economies of scale. The market launch strategy proposed by the client's head office is basically a direct-to-consumer approach, although funds to support marketing to local doctors are not budgeted. Thus the local agent is faced with the challenge of convincing the Company's head office that the proposed global strategy will not yield the desired results and should be replaced by a localized strategy. This situation provides the focus of the present study; to assist corporate management with their market-entry decision by formulating a decision support tool that enables tests of a wide range of policy options, and explores the interactions among various factors that influence market success.

### 2.2. Modeling processes

The main objective of the group-modeling project is to build a system dynamics model that represents the dynamic nature of a coupled social-economical system. A differential equation-based simulation method, system dynamics, is based on the fundamental tenet that the structure of causal relationships among variables in a system gives rise to its dynamics (Stermann, 2000).

As the modeling-simulation package adopted for this study, it offers a number of advantages over other modeling approaches. First, it enables the researcher to maintain a one-to-one correspondence between verbal description of the real world system of cause and effect and the flow diagram representing this causal chain, and between the flow diagram and the set of equations in the computer program to simulate this model of causality. Second, the flow diagram provides an excellent vehicle for communicating with managers in various parts of the system in order to solicit their perceptions of how the system works. The iterative nature of conceptualizing a system dynamics model using cognitive feedback maps should help the management team to understand interactions among various factors that influence systems behavior.

While many more things happen in the real world than we have models for (Little, 1984) it is the process to make the decision environment explicit that helps management to gain confidence in the decision-making process. Lane (1995) asserts that clients' ideas must not just be in a model; they must be seen to be in a model, which means that involving the client throughout all stages of the model building process creates ownership. The modeling intervention for the local client team in this study follows an approach similar to Richardson and Pugh (1981) in conceptualizing a simulation model. However, the team was not able to get people from the client's head office involved in the process in order to foster ownership of the model there.

### 2.3. Conceptualization

Often it is senior management who calls in consultants to help solve a particular problem. However, in this case, a line-manager took the initiative to call for external help. The manager was faced with the task to execute a global market strategy, imposed by his headquarters, to launch a new pharmaceutical drug in his local market. Rather than subjectively debating the pros and cons of the global market strategy with headquarters, the line-manager sought scientific evidence to challenge the effectiveness of the global strategy. Thus, in this bottom-up approach, the first task was to convince the country manager that system dynamics is the right tool to solve his problem. Managers introduced system dynamics in broad terms during a workshop with the project team and country manager was organized to introduce and illustrate this method with some practical examples. In the discussions with the management team, the researchers stressed the fact that his role in the project team was not that of a "teacher" but facilitator, and that the simulation model would not be built behind closed doors but together with the team. The author also emphasized that the result of this project may only help the team to know better what they know already, but in all likelihood would help reveal the underlying dynamics of what they do not know.

In following the established framework to build a model with a client team the first part of the intervention was to discuss problem definition and boundary issues for the model. After a set of two workshops with the project team and independent working sessions by the author, the following policy (or management action) questions were defined, to answer through a system dynamics modeling process.

- What is the likely percentage of customers that will switch to the new product?
- How does the sales force affect prescription behavior of doctors and ordering cycle times?
- How do pre-marketing activities enhance word-of-mouth with opinion leaders?
- How do marketing activities influence diffusion of the new product among the target audience?
- What is the market value of the new product over time?

These are practical management questions that are embedded in a complex set of social and economic relationships containing uncertainty, unrecognized parameters, and nonlinear feedback structures. The project team viewed the group model building intervention as a means to understand (and later communicate with management stakeholders about) the dynamic complexity of managing the launch of a new pharmaceutical product.

### 2.4. Formulation and testing

During the first meeting the team listed variables and parameters, which influence the diffusion of the new product. After synthesizing information and knowledge elicited from the client team, the researcher constructed the first causal feedback map. The causal loop diagram was used to discuss the model boundaries and scope of the project with the project team. After a few iterations, the project

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