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Creating lift versus building the base: Current trends in marketing dynamics

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ABSTRACT

Markets are dynamic by nature, and marketing efforts can be directed to stimulate, reduce, or to utilize these dynamics. The field of marketing dynamics aims at modeling the effects of marketing actions and policies on short-term performance ("lift") and on long-term performance ("base"). One of the core questions within this field is: "How do marketing efforts affect outcome metrics such as revenues, profits, or shareholder value over time?" Developments in statistical modeling and new data sources allow marketing scientists to provide increasingly comprehensive answers to this question. We present an outlook on developments in modeling marketing dynamics and specify research directions.

This manuscript is a conference feature paper on the 2007 Marketing Dynamics Conference which the authors organized at the University of Groningen, The Netherlands.

1. Introduction

The dynamic nature of markets dictates that marketing measures are often targeted at stimulating, reducing, or utilizing market responsiveness. Firms launch new products and introduce better packaging (stimulating response), retaliate against competitive moves (reducing response), monitor trends in consumer preferences and segment membership (utilizing response), and so on. The effects of marketing efforts do not necessarily end when, for example, an advertising campaign is over. The effect, or part of it, will remain noticeable for some time.

In recent years, the determination of the long-term effects of marketing efforts has received much attention from practitioners and academics. Senior executives are increasingly interested in the long-term impact on sales, profits, but also on relatively new metrics such as shareholder value. They want to create sustainable competitive advantages for their brands and they want to see permanent effects of their investments in marketing efforts. For example, Gerard Kleisterlee, CEO of Royal Philips Electronics, stated that 'in the long-run our values and how we honor them will determine the outcome of what we strive for'.[1] Oswald Grübel, CEO of the Credit Suisse Group, specified his aims in a somewhat different way: 'Our priorities are quite clear: we want to generate long-term added value for our shareholders by offering outstanding service to our clients and by securing a leading position in the industry'.[2] For non-traded companies, firm value instead of shareholder value is an important metric (Gupta, Lehmann, & Stuart, 2004).

Such perspectives imply that marketing resources should be allocated to maximize the long-term impact on the relevant metrics such as shareholder value. This task requires, in turn, that a valid and reliable answer is found to the paramount question:

> How do marketing efforts affect outcome metrics such as revenues, profits and shareholder value over time?

To address this question, the discipline of marketing dynamics studies the short- and long-term effects of marketing actions and policies on relevant metrics. In the past ten years, we have witnessed important improvements in modeling marketing dynamics. These developments have led to the establishment of the annual "Marketing Dynamics Conference". The first conference was held at the Tuck School of Business at Dartmouth, USA in 2004 (Pauwels et al., 2004a), while the fourth conference was hosted by the University of Groningen, the Netherlands, in August 2007.

In this feature article, we discuss the relevance and challenges of modeling marketing dynamics for marketing decision-making. A number of these challenges were summarized in the keynote speech by Dominique Hanssens at the Groningen conference, and they partly overlap with those identified by Pauwels et al. (2004a). Our review of trends is largely based on the 40 presentations at

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[1] Gerard Kleisterlee, December 04, 2007, "Innovation as driver of sustainable growth", Speech at China Central Party School.

[2] Oswald J. Grubel, April 28, 2006, Speech made at Annual General Meeting of Credit Suisse Group, Zurich.

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the Fourth Marketing Dynamics Conference. We specify criteria that dynamic models should satisfy, indicate important developments in relevant research methodologies, and formulate research directions.

2. Challenges and methodologies

To address the core question of "how marketing efforts affect outcome metrics over time," we need to build suitable dynamic marketing models. Ideally, these models and methodologies:

1. use appropriate metrics,
2. disentangle temporary (short-term) from persistent (long-term) effects,
3. account for time-varying parameters, and
4. allow for cross-sectional heterogeneity.

We discuss these requirements in the following subsections.

2.1. Marketing metrics

The core question involves differentiating between marketing efforts that lift sales temporarily (flow) and efforts that build marketing stock, i.e., lead to a permanent shift in the base level. Many sales response models relate current sales to current and past marketing expenditures (see e.g., Leeflang, Wittink, Wedel & Naert, 2000, p.85–99). The demand or revenue metric is a *flow* metric. Ideally, marketing expenditures will also create beneficial changes in *stock* metrics. Examples of stock metrics are cumulative sales, brand equity, customer equity, et cetera. Pauwels and Hanssens (2007) and Hanssens and Dekimpe (2008) extend the 'flow' response models to capture the effects of marketing investments on *stock* metrics and specify the following relations:

$$S_{it} = c_{it} + \sum_k \beta_{ki}(L) M_{kit} + \varepsilon_{it}, \tag{1}$$

$$c_{it} = \delta_i c_{i,t-1} + \sum_k \gamma_{ki}(L) M_{kit} + \eta_{it}, \tag{2}$$

where S_{it} is the outcome metric, such as the sales of brand[3] or firm i, c_{it} the baseline of unit i at time t, β_{ki} (L) represents the effectiveness of marketing efforts on baseline sales with lag L, M_{kit} the marketing efforts with marketing instrument k, and ε_{it} and η_{it} disturbance terms. Most attention in marketing has been given to the determination of optimal marketing expenditures (M), how to improve marketing effectiveness ($\beta(L)$) and how this leads to a larger flow (S_{it}). Relation (2) shows the development of its baseline over time. Changes in the baseline sales are interpreted as building the base. Given that baseline sales can be seen as a measure of brand equity, $\gamma_{ki}(L)>0$ indicates that marketing investments are building the brand (equity). Hence Eqs. (1) and (2) answer the question whether or not marketing efforts create demand (β_{ki}) and/or build the baseline sales (γ_{ki}) of the brand (Table 1).

Ataman, Mela and Van Heerde (2008) use a similar specification to explain how marketing mix activity generates growth and builds market potential for new brands. Their so-called 'observation equation' separates short-term fluctuations from long-term sales:

$$\bar{S}_{it} = c_{it} + \bar{X}_{it}'\beta_i + \gamma_{it}, \tag{3}$$

where $\bar{S}_{it}$ is the (standardized) sales of brand i at time t, $\bar{X}_{it}$ includes variables that may generate *short-term* fluctuations in sales, and γ_{it} is a disturbance term. Ataman et al. (2008) standardize all variables within brands and indicate this with a superscripted bar. The baseline sales c_{it} evolves over time, following the repeat-purchase diffusion process as specified in the 'state equation':

$$c_{it} = \delta_i c_{i,t-1} + \bar{Z}_{it}'\gamma\left(\bar{Z}_{it}'\mu - c_{i,t-1}\right) + w_{it}. \tag{4}$$

$\bar{Z}'_{it}$ is a vector of standardized marketing strategy (marketing policy) variables. Standardization offers the opportunity that one can pool different brands across categories and controls for unobserved fixed effects. The parameter δ_i captures the brand-specific repeat- purchase rate and γ and μ capture growth and market potential due to marketing effort, respectively; w_{it} is a random disturbance term.

Table 1
Creating lift or building the base

	$\gamma(L)=0$	$\gamma(L)>0$
$\beta(L)=0$	Ineffective marketing	Marketing builds the brand
$\beta(L)>0$	Marketing generates sales	Marketing generates sales and builds the brand

Source: adapted from Hanssens & Dekimpe (2008).

The marketing actions that build the brand are called marketing policies. Examples are investments in corporate and brand reputation, strategic entries in new markets (Pauwels & Hanssens, 2007), the introduction of new distribution channels (Deleersnyder, Gielens, Geyskens, & Dekimpe, 2002), new products, and quality improvements (Tellis & Johnson, 2007).

Hanssens and Dekimpe (2008) use four criteria as a guide to choose appropriate metrics. Metrics should:

- have financial relevance,
- be actionable: i.e., it must be possible, at reasonable cost, to collect data on the performance metric, and to relate it analytically to marketing investments,
- exhibit stable behavior, and
- offer reliable long-term guidance.

Highly volatile metrics are less desirable because they are difficult to interpret and manage. The leading indicator aspect of a metric is reflected in the criterion that the metric should have reliable long-term guidance, i.e., movements in the metric should be indicative of improving or deteriorating health for the brand or firm.

We distinguish four core metrics that can be used to specify the dependent variable S_{it} in Eq. (1). First, *sales* is a commonly used metric, for instance, to understand how marketing drives prescription drug sales (Fischer & Albers, 2007) or where the demand for a new product comes from (Albuquerque & Bronnenberg, 2007; Van Heerde, Srinivasan, & Dekimpe, 2008).

Second, a useful long-term metric is customer lifetime value and its firm-level aggregate, *customer equity*. Gupta, Lehmann and Stuart (2004) argue that customer equity can be used to value firms, and thus, to calculate the effect of marketing actions on shareholder value. Rust, Lemon, and Zeithaml (2004) and Donkers, Verhoef, and De Jong (2007) show how customer equity is affected by alternative marketing strategies.

A third metric is *brand equity*, the incremental cash flows that can be expected from carrying branded products instead of unbranded products (Simon & Sullivan, 1993). Pauwels, Nijs, and Srinivasan (2007) look at the effects of product-line decisions on brand equity, whereas Ataman, Van Heerde, and Mela (2007) consider the impact of all relevant marketing instruments.

A fourth metric is *stock market value*, which is frequently analyzed by VAR models. For example, Pauwels, Silva-Risso, Srinivasan and Hanssens (2004b) study the effects of new products and sales promotions, and Joshi and Hanssens (2008) assess the influence of advertising and R&D on the stock return of firms in the PC manufacturing and sporting goods industries. Other methodologies include event-studies for a single marketing initiative and regression-based stock return models. Event studies have looked, for example, at

[3] Instead of sales one can also work with revenues or stock prices.