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Response













First focus on the **simplest** of the model types:

aggregate response to a single marketing instrument in a **static**, **noncompetitive environment**.

Then introduce **additional** marketing instruments, **dynamics**, and **competition**.



- 1. By the number of marketing variables
- 2. By whether they include competition or not
- By the nature of the relationship between input variables and output variables -- a linear response or an S-shape response
- 4. By whether the situation is static or dynamic
- 5. By whether the model reflect **individual** or **aggregate** response
- 6. By the level of demand analyzed (sales versus market share)

Response-8



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Aggregate Response Models: Modified Exponential Model

 $Y = a \left(1 - e^{-bx} \right) + c$

Decreasing returns and

saturation (at a + c) and lower bound (at c).

Response-20

Widely used in marketing.





Objective and Subjective Calibration Objectives to build Response Model calibration task is called To evaluate marketing actions and objective calibration if the data that we use to improve the performance of the firm in the for calibration are <u>actual experimental</u> or <u>market</u> data marketplace, the manager must **specify objectives**. subjective calibration if the data are *subjective* The objectives may have different components (profit, judgments market share, sales goals, etc.), and they must specify the time horizon, deal with future uncertainty, and address the issue objectives to pursue.

Rest

4

Response-24

Advertising Response Model for Blue Mountain Coffee Example

three outputs:

- ·short-term profit (after one year)
- ·long-term profit (after three years)
- ·long-term market share (after three years)

Assumption:

- ·the advertising level that maximizes short-term (annual)
- profit is **\$1 million** per quarter.
- ·the advertising level that maximizes long-term (three
- years)profit is **\$2 million** per quarter.
- •our market share will be maximized **at the end of three years** if we spend **\$3 million** per quarter.
- What should we do?

Response-25

Short-run profit

Profit = (Unit price - Unit variable cost) * Sales volume - Relevant costs = Unit margin * Quantity - Relevant costs

Response-26

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Multiple goals I

Although **profit** of some sort is an overriding goal of many organizations, it is **not the only factor** managers consider in trying to decide among possible courses of action.

Managers may say, "We want to **maximize** our **market share** and our **profitability** in this market!" or

"We want to bring out the **best product** in the **shortest possible time**."

Such statements are attractive rhetoric, but faulty logic.

Response-31

Response-33

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Multiple goals II

For example,

one can almost always increase market share by lowering price;

after some point, however, profit will be decreasing while market share continues to increase.

And when **price becomes lower than cost**, **profit** becomes **negative** even though **market share** is **still increasing** !

Response-32

Multiple goals III

If a firm has two or more objectives that possibly **conflict**, **how can** the **decision maker weight those goals** to rank them unambiguously? A sophisticated branch of analysis called **multi-criteria decision making deals** with this problem.

The simplest and most common approach is

to choose one (the most important) objective

and to make all the others constraints;

then management **optimizes one** (e.g., a profit criterion) while **considering others to be constraints**

(e.g., market share must be at least 14 percent).

Multiple goals IV

A second approach is **goal programming**, in which managers set targets for each objective,

specify a **loss** associated with the difference between the **target** and **actual performance**, and try to **minimize** that **loss**.

Trade-off analysis (Keeney and Raiffa 1976) and the analytic hierarchy process (Chapter 6) are further procedures for handling multiple objectives and trade-offs among objectives.

Multiple goals V Whether you use a simple formal method, such as the approach employing a single goal plus constraints, or a more sophisticated method of dealing with trade-offs among goals, it is critical that you neither ignore nor poorly assess important goals. After you have specified goals or objectives, the ME approach facilitates the process of decision makingsuggesting those values of the independent variables (such as level of advertising, selling effort, or promotional spending) that will best achieve these goals(s) (such as maximize profit, meet target levels of sales, or maximize market share). Resp

6

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Multiple goals VI

Throughout this book we will be exploring ways of finding those values. We will use optimization procedures often in our search for good marketing policies (good values for our independent variables).

The Excel-based software in the book relies on

an add-in module called **Solver for optimization problems** that require **model calibration**

(searching for the best values for the parameters of response models) or model optimization

(looking for the best values for independent variables).

In the appendix to this chapter, we describe how Solver works.

Response-37

7