



## Considering Uncertainty When Managing Marketing Investments

**M**arketers have come under increasing pressure to manage their spending more carefully and to account for its effects. This has spurred the development of new advertising measurement tools and prompted a newfound regard for statistical analysis.

However, while these efforts are to be applauded, and more is now known about how marketing affects business results, marketers could achieve greater impact if they explicitly considered the role of uncertainty in their choices. To see how this may be done, consider this view of the marketer's dilemma.

### The Marketer's Dilemma

The marketer is often faced with a difficult decision — how to allocate his marketing dollars across a set of alternative marketing activities (such as mass media, direct response and online advertising) in order to achieve a prescribed set of goals. While the marketer generally knows how much he wants to spend in each media category, based on what was spent historically, the problem is that the outcome of those investments will depend, at least in part, on the prevailing market conditions around the time the advertising runs. And these conditions may be fraught with uncertainty.

Will the economy continue at its current pace? Will the stock market deviate from its current path? How will consumer confidence trend? What will competitors do?

In Table 1, we see that the marketer devised three alternative marketing actions ( $A_1$ ,  $A_2$  and  $A_3$ ), which are under consideration. These actions could represent alternative marketing mixes, emphasizing different ratios of mass media to direct response advertising or different ratios of offline to online spending. The outcomes of these actions — the business results — are partially dependent on the future state of the market.

In this example, three potential market states ( $S_1$ ,  $S_2$  and  $S_3$ ) were designated, maybe reflecting high, medium and low scenarios. The consequence of each marketing action ( $A_i$ ) and marketing state ( $S_j$ ), defined as dollar sales, profit or some other business measurement, are shown in the first three rows and columns of the table.

As you can see, the marketer would choose a different marketing action with each of the three marketing states to achieve the highest results. In the case of  $S_1$ ,  $A_3$  is the best choice; for

$S_2$ , it is  $A_2$ ; and for  $S_3$ ,  $A_1$  is optimal. Unfortunately, the marketer doesn't know in advance which marketing state will prevail. So, how should the marketer choose?

There are several strategies the marketer could follow to make his choice, depending on his attitude toward risk. For instance, if he is conservative he could choose  $A_1$  because it provides a relatively consistent outcome across all marketing states. This choice also maximizes his minimum gain (at worst he would generate \$10 million in profit, whereas he could get only \$8 million or actually lose \$10 million with his other choices). If he is a risk taker, he could choose  $A_3$  because that action offers a chance to achieve the highest possible gain (in this case, \$30 million).

Yet another way for the marketer to choose is by calculating the "expected value" associated with each choice and selecting the action with the highest likely return. That is, he chooses that action which would, on average, produce the best outcome if this particular choice was made many times. To do this, however, the marketer needs to know (or estimate) the probability distribution associated with the future marketing states. The expected value of each action is merely the weighted sum of each set of outcomes.

The far right column of Table 1 also shows the probability distribution for the possible marketing states. These probabilities may be derived from historical data or may be based on the subjective judgment of the marketer himself. Using this information, he could calculate the expected value for each action, as shown in the bottom row of Table 1. Thus, if the marketer wishes to maximize expected value, he would choose  $A_2$ .

Marketers will never be 100-percent certain of the consequences of their proposed marketing plans. However, they can increase the likelihood of generating better results if they use a decision-making framework that enables them to consider marketplace uncertainties explicitly. By using an expected value criterion to choose what action to take, they will not only be guided to the best solution, but also understand better the likely return on their marketing investments. ■

TABLE 1

Consequence Matrix (\$ Millions)

States ( $S_i$ )	Actions ( $A_j$ )			$P(S_i)$
	$A_1$	$A_2$	$A_3$	
$S_1$	10	20	30	.2
$S_2$	11	15	12	.6
$S_3$	12	8	-10	.2
$EV_i$	11	14.6	11.2	

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