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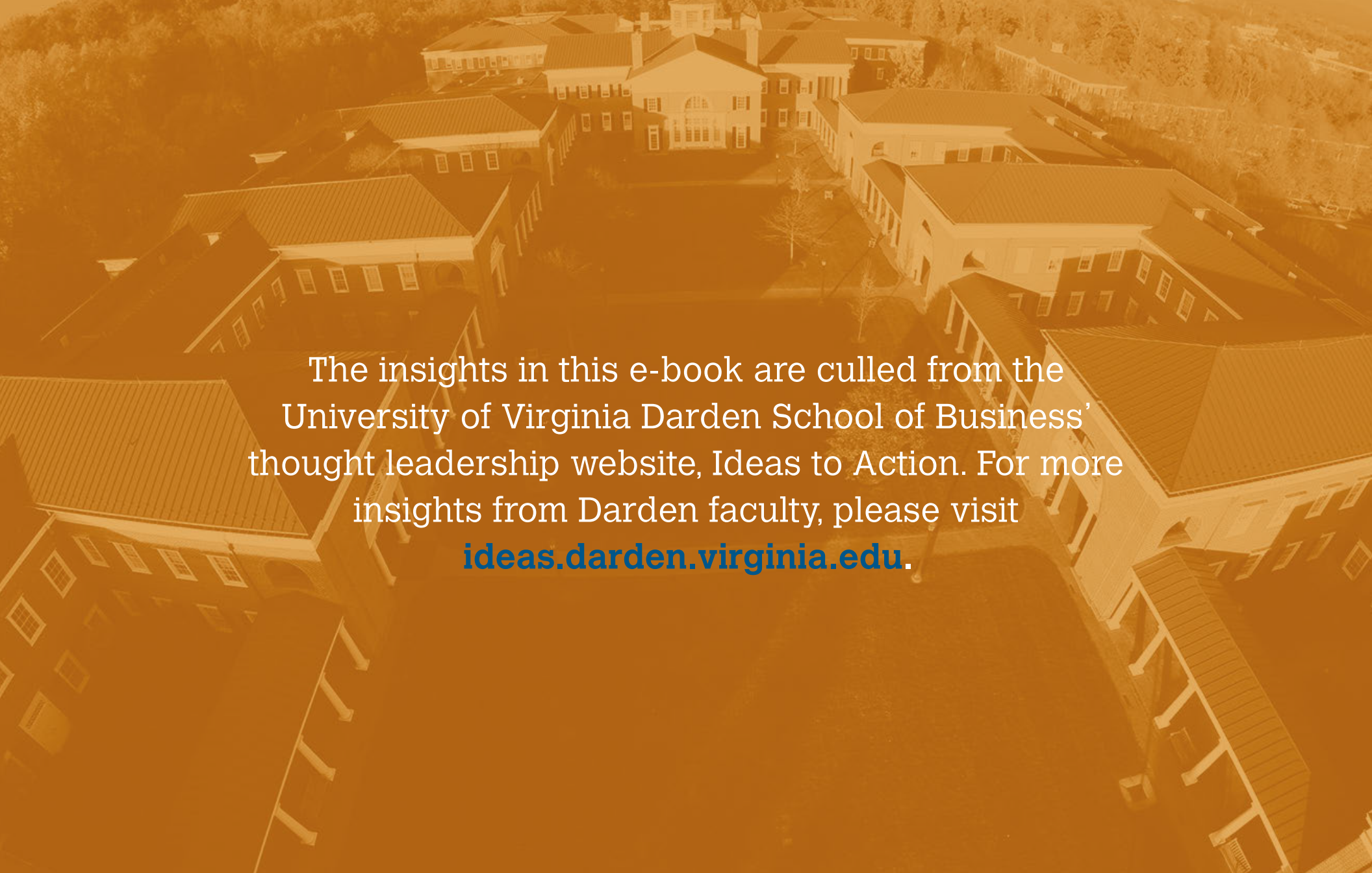
FACULTY RESEARCH FROM THE UNIVERSITY OF VIRGINIA DARDEN SCHOOL OF BUSINESS

DARDEN IDEAS TO ACTION

marketing analytics



The insights in this e-book are culled from the University of Virginia Darden School of Business' thought leadership website, Ideas to Action. For more insights from Darden faculty, please visit **ideas.darden.virginia.edu**.

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TRANSLATE BIG DATA INTO ACTION

Ultimately, what each organization needs is its own analytics system that is focused on customer behavior.

The question of how to leverage big data has inspired conferences, university courses and degrees — and CMOs in sore need of guidance on how to get smarter about what all those numbers are saying.

Ultimately, what each organization needs is its own analytics system that is focused on customer behavior. The system should be actionable, future-facing and support the organization's broader strategy.

To make better business decisions, managers should be able to answer marketing questions by taking the following steps:

- Determine which data are relevant.
- Select the appropriate technique for analysis.
- Perform the analysis to gain insights on the relationship between marketing activities and customer behavior.
- Use predictive models based on experiments or historic information to simulate hypothetical situations, in order to identify the ideal combination of marketing activities — the "marketing mix."
- Link insights and the optimal marketing mix to wise marketing decisions.

Darden Professors Venkatesan and Farris are co-authors of the book *Cutting-Edge Marketing Analytics: Real World Cases and Data Sets for Hands-On Learning* with Darden Professor Ronald T. Wilcox.

THE ENDGAME OF MARKETING ANALYTICS: FROM DATA TO SPEND TO PROFIT

Resource allocation is the endgame of analytics for any company.

Using marketing analytics properly, any firm should be able to determine the optimal level of spending it should make on each of its marketing channels to maximize success.

Resource allocation is a four-step process.


Professor Rajkumar Venkatesan

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Step 1

The first step is to determine the objective function. What is the metric the company wants to set as its goal for optimization? This may be one of any number of methods of assessing business success, including conversion rates to sales, incremental margins and profits, customer lifetime value (CLV), near-term sales lift, new buyers, repeat sales, market share, retention rates, cross-sell rates, future growth potential, balance sheet equity and business valuation.

2

Step 2

The second step is to connect the marketing inputs of a firm to the objective of resource allocation. Business managers' intuition is of paramount importance in this step, as it allows the marketer to correctly decompose a metric. For example, if a company is examining gross profits, what are the attributes of the business that contribute to those profits, and are the relationships between the various components accounting identities or empirical?

An accounting identity can be computed without any unknowns. For example, net profit is gross profit minus marketing costs. If both gross profit and marketing costs are known, net profit can be computed easily.

On the other hand, the relationship between marketing costs and unit sales is more complex and driven by numerous unknowns. You cannot directly sum the investments in marketing (for example, price, advertising, sales force and trade promotion) to obtain sales. The relationship is termed empirical because the manager must analyze historical data to develop a formula that transforms the marketing inputs into sales (for example, a function that describes the relationship between price and sales).

This formula ideally will provide a "weight" that translates a product's price into sales. These weights do not provide a perfect transformation, but rather a best guess based on historical data, wherein several factors in addition to price also affect sales. This is the main difference between an identity relationship and an empirical relationship: Empirical implies a best guess or prediction; identities are certain.

3

Step 3

The third step in the resource-allocation process is to estimate the best weights for the empirical relationships identified in the second step. A common method for identifying these weights is to build an econometric (regression) model. Which marketing inputs of interest (for example, price, advertising, sales calls) should be considered as having an effect on the dependent variable? Once this regression model is obtained, the marketing manager can predict the outcome metrics for different marketing input levels. This is the mathematical model that describes the relationship between the independent variables (for example, price, advertising, sales calls) and the dependent variable (for example, market share, profits, CLV).

Professor Paul W. Farris

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Step 4

In the last step of the resource-allocation process, a firm can reverse the process to identify the optimal value of the marketing inputs to maximize the objective function. This gives a detailed picture of what the company's precise marketing spend should be on each channel it uses to market its product.

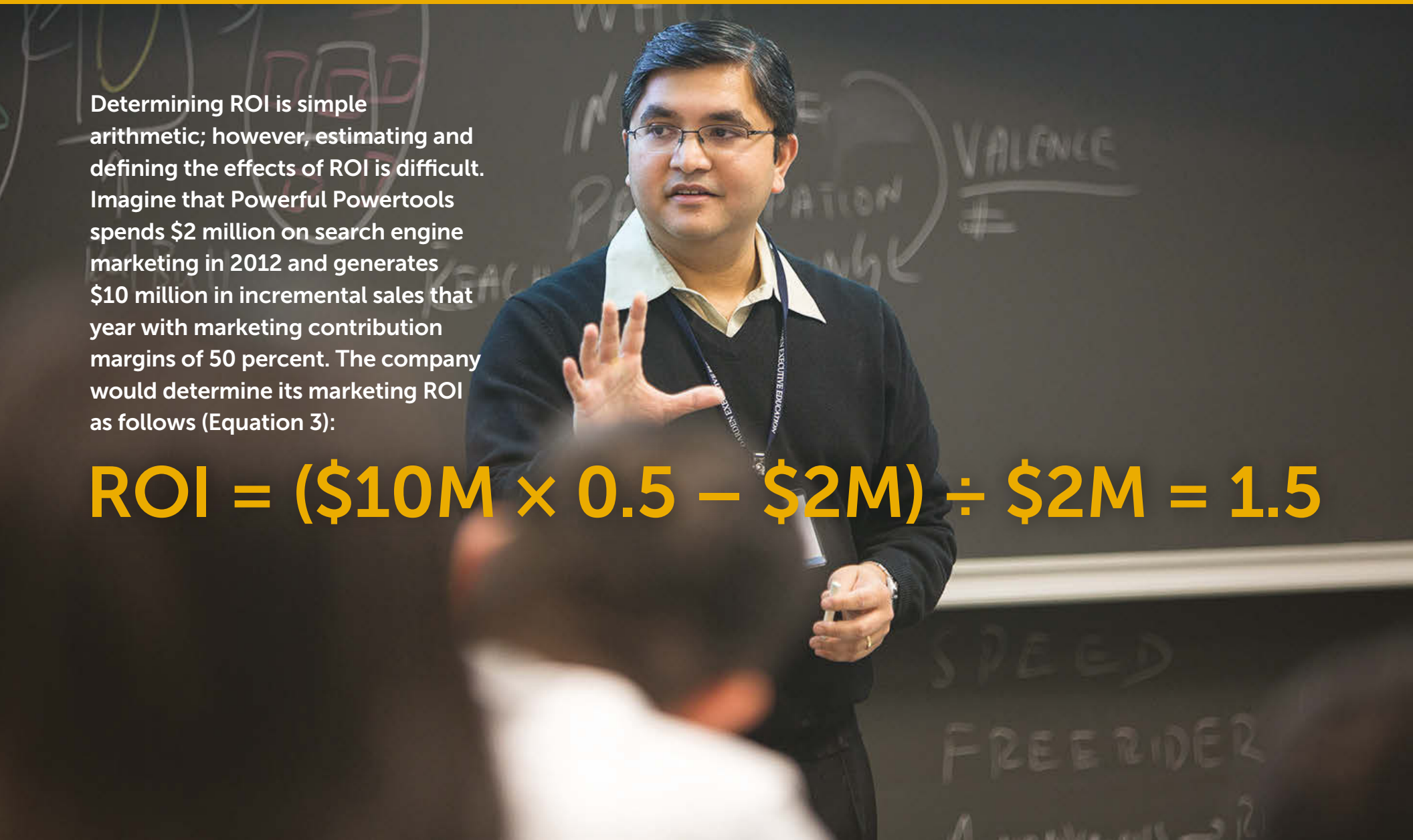
Marketing analytics relies on three pillars: econometrics, experimentation and decision calculus.

Managers can use econometrics when they need to make hypotheses about their businesses and test them by using experiments. Where the decision calculus comes down to individual companies introducing their own intuition into the equation, marketing analytics as a whole allows firms to identify best estimates for how to weigh the effects of marketing activities. Intuitively, these weights should provide the best relationship between marketing inputs and consumer response. Looking at past cases wherein a firm has tried different levels of marketing inputs and observed consumer response reveals this relationship.

The goal of marketing analytics is to determine the effectiveness of a company's various marketing strategies (such as its marketing mix). For each strategy, the company is looking to assess its return on investment (ROI).

Financial ROI is equal to profit over investment value. This is a yearly rate that is comparable to rate of return. Marketing ROI, on the other hand, is equal to profits related to marketing measures divided by the value of the marketing investment — which is actually money risked, not invested:

$$\text{Marketing ROI} = [\text{Incremental Sales} \times \text{Gross Margin} - \text{Marketing Investment}] \div \text{Marketing Investment}$$



Determining ROI is simple arithmetic; however, estimating and defining the effects of ROI is difficult. Imagine that Powerful Powertools spends $2 million on search engine marketing in 2012 and generates $10 million in incremental sales that year with marketing contribution margins of 50 percent. The company would determine its marketing ROI as follows (Equation 3):

$$ROI = (\$10M \times 0.5 - \$2M) \div \$2M = 1.5$$

A marketing manager or chief financial officer would have therefore determined that his or her return is 150 percent on the marketing investment. But the manager will likely still have questions. Will the investment in 2012 also pay dividends in 2013 (for example, should some new customer acquisitions in 2013 be attributed to the investment in 2012)? How was incremental gross margin determined? What is the baseline without the search engine marketing? Will doubling the investment to $4 million double the returns to $20 million in incremental sales, or are there diminishing returns to marketing? What are the longer-term effects, and what is the CLV of the customers acquired through this campaign? The goal of analytics is to accommodate these nuances of marketing's influence on sales so that the estimate of incremental sales is an accurate reflection of reality.

Of course, maximizing long-term profits is often not simply a matter of shifting funds from low ROI to high ROI activities, because there may well be strategic considerations not fully captured in the ROI measures themselves. Examples are brand building and new customer acquisition versus the need for short-term sales, balancing push and pull efforts to support distribution channels, and targeting market segments that are of strategic importance.

To improve marketing success, companies must consistently make good decisions about which customers to select for targeting, the level of resources to be allocated to the selected customers, and nurturing the selected customers to increase future profitability. One example of a company that has successfully used CLV as an indicator of customer profitability and allocated marketing resources accordingly is IBM. In 2005, the computer and technology company used CLV as a criterion for determining the optimal number of times a customer would be contacted through direct mail, telesales, email and catalogs.

In a pilot study implemented for approximately 35,000 customers, this approach led to reallocation of resources for about 14 percent of the customers as compared with allocation based on past spending history, the metric IBM had previously used to target customers and allocate resources. The CLV-based resource reallocation led to a tenfold increase in revenue (amounting to about $20 million) without any changes in the level of marketing investment.

Managers must understand their marketing efforts as precisely as possible to determine how much to spend on each marketing channel. If paid search advertising is the most effective way of getting a firm's message in front of the right customer, why would the company spend more on print advertising? If sales calls are profitable only up to a point, the marketing manager must know at which point the calls start costing his or her company money instead of making it.

The only way to measure the effects of marketing efforts on profitability is through the best-guess relationships revealed through marketing analytics. By using statistical analysis techniques, firms can use past customer behaviors to predict how customers will react to different marketing channels; managers can then optimize spending on each channel.

This material is excerpted from Darden Professors Venkatesan and Farris' technical note *A Resource-Allocation Perspective for Marketing Analytics* (Darden Business Publishing).

ATTITUDE MATTERS: MARKETING TO WOO CUSTOMERS

 | by Rajkumar Venkatesan

Would you like to find profitable customers and influence their behaviors?

A new model I have formulated through my research can help you develop customer-centric marketing strategies that will lead to better, measurable financial results.

This model will help you, like a treasure hunter, see in the data some clues to the map of how customers behave. These clues can help you answer several questions about your target customers:

What do they buy?

What are their attitudes?

What might they buy in the future?

Through this model, you can develop a picture of customer behavior and motivation, and project what the customer profit would be, given what is known about how customers react and what their preferences are.

Seeing Customers Across All Dimensions

Marketing used to be more art than science. But with the advent of point-of-sale scanners and the use of loyalty cards and credit cards, data started pouring in. Firms began using Customer Relationship Management (CRM) tools and technologies to capture what customers bought and when.

The data provides us with greater insights into how our customers are reached — by phone, email, direct mail, television ads or print ads. We look at everything a marketer does to link to a customer. My model answers two critical questions:

Which customers should be targeted?

How should they be targeted?

A three-year study my colleagues and I conducted with a big pharmaceutical company — pertaining to sales calls directed toward physicians — showed that firms obtain better predictions of customers' future profit potential if their marketing strategies include:

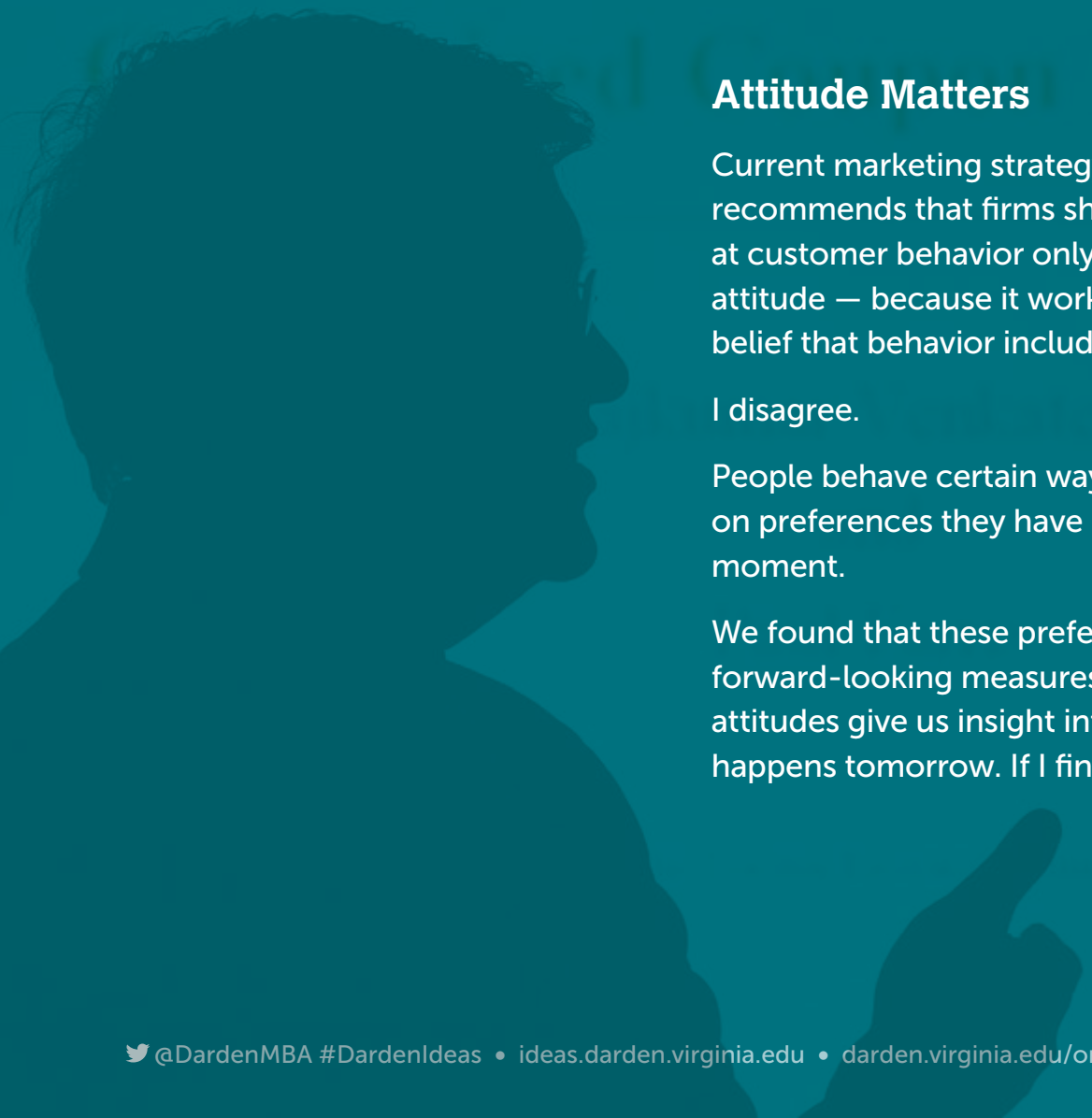
Information on customer attitudes

Information about past customer behaviors

Conceptually, I have built a framework through which one can do this. I use historical data on customer interactions to spot trends and to project the customer value — the profits.

To determine your target market, you must measure the value of a customer. If the customer will spend $100, you shouldn't spend more than that to attract him or her. To determine how to target, you must measure customer preferences.

This is how you can build your company strategy.



Attitude Matters

Current marketing strategy recommends that firms should look at customer behavior only — not attitude — because it works on the belief that behavior includes attitude.

I disagree.

People behave certain ways based on preferences they have in a given moment.

We found that these preferences are forward-looking measures; people's attitudes give us insight into what happens tomorrow. If I find what someone's preference is today, I can do something about it tomorrow.

Think of it as an early warning indicator.

The attitudes of the "top" customers — on whom companies traditionally focus — and the attitudes of the "bottom," or less profitable customers, are pretty self-evident. The question is which of the customers in the middle will become top customers and which will become bottom ones.

Finding out attitude lets you know what those middle customers are going to do because behavior is noisy. It's up, it's down. That's why they're in the middle. If you merge attitude and behavior, you become better at knowing who to target and how to target. It's a better approach than one or the other.

For example, Jane and Sara both buy Apollo Greek yogurt once every two months. Just looking at this information would suggest that Jane and Sara are equally valuable for Apollo Greek yogurt. But it turns out that one of them is more valuable.

Upon closer inspection, we find that Jane really loves Apollo Greek yogurt. However, she just started eating yogurt and is slowly building her consumption rate. Sometimes a discount may motivate Jane to buy the Apollo. On the other hand, Sara is indifferent among the different Greek yogurt brands and only buys Apollo Greek yogurt when it is on sale.

It is more likely that Jane will continue to buy Apollo Greek yogurt longer than Sara.

This scenario shows how firms like Apollo can use knowledge of consumer attitudes to predict the most profitable consumers.

Until now, all the visualization-software companies were, in a sense, reporting tools that tell you what happened, not what could happen. My model allows firms to target those mid-tier and lower-tier customers who have the potential to grow in the future. Knowledge of customer attitudes makes this action possible.

This methodology improves firms' performance. In fact, managers can actually increase revenue while contacting customers less because, as we've discovered, too many sales calls or emails can backfire.

Each customer has his or her threshold.

The bottom line: Pay attention to customer attitude as well as behavior.

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