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Dynamic Simulations Usher in New Era of Market Modeling

Few marketers command the sort of respect and attention that Procter & Gamble (Cincinnati, OH) does. Considering the current best practices that have been at least partially pioneered by suppliers in collaboration with P&G, when RBR learned P&G has licensed and been testing a new, unique modeling software for several years from DecisionPower (San Jose, CA), we sensed “breakthrough.”

So, imagine having a crystal ball enabling uncanny accuracy as to outcomes different hypothetical actions can produce across the spectrum of constantly changing marketplace variables. And further imagine a scenario in which companies’ oceans of data get put to use—and produce unparalleled strategic and tactical insights.

Both days may be dawning.

DecisionPower’s MarketSim—the “agent-based” modeling platform P&G has taken a shine to—is now available commercially as a turn-key solution. Billed as the world’s first simulator of consumer behavior in competitive markets, it could forever change how marketers make strategic and tactical decisions about new products, competitive activity and lagging product performance. It will take on (with the hope of supplanting) market mix modeling and test marketing.

Agent-based simulation modeling isn’t new, but applying it in the marketing arena is quite novel, according to marketing consultant Guy Powell, who holds a seat on DecisionPower’s Board of Advisors. “This technique surpasses traditional market mix modeling (which relies on econometrics or statistical regression analysis to develop a correlation between a manufacturer’s market levers and market responses),” Powell told RBR. “MarketSim focuses on the ‘agent’ or individual level—how the consumer goes shopping, reacts to information in the marketplace and builds preferences.”

MarketSim’s feasibility is linked to technological advances. “Simulation represents the real world digitally through a computer program,” observed DecisionPower EVP- Sales & Marketing Jack Koch. “This once required massive scientific supercomputers manned by teams of technicians,” he related. “We’re harnessing an enormous amount of power—in hardware and software—on the desktop.”

Yet, MarketSim’s potential impact amazes him. “It’s astonishing that simulation (agent-based modeling) hasn’t been used in a business sense until now,” he added. “When I was VP-Marketing at 3Com, had we known what we know today, we would’ve been much more aggressive in developing this application. Three years ago, no Fortune 500 company used agent-based modeling for marketing. By 2009, they all will be using it,” Koch predicted.

Agent-based modeling is a “bottom-up” simulation technique that looks at the individual component objects (or “agents”) in a system—

the rules defining said objects’ behaviors and interactions among them, explained DecisionPower CEO Ken Karakotsios (who, with CTO Vicki DeMey, co-founded the company in 1994). “This perspective, in an economic framework, might model individuals via a simple set of rules, like 1) you work to earn money; 2) you spend money on education to increase earning potential; 3) you invest money, depending on the stock market and interest rates and 4) you buy stuff, depending on the money you have left, need and want.”

In a marketing framework, companies, channel, marketing plans and products can be figured in. “You put a simple set of fundamental rules in play and let the system run like the real world runs,” Karakotsios summed. “We undertake a calibration process for each client at the beginning, which uses historical data to define characteristics about how consumers behave within a particular product category. The system is unusual in that you get more out of the model than you put in and the more variables you input the better the dynamic output. Outcomes are realistic, not pre-programmed and often very surprising. It almost always uncovers things about the market that weren’t known to the brand team. Things come out of the simula-



Guy Powell



tion that weren’t part of the formula, like responses to media flights. People’s eyes light up, sparking new discussions. I never expected so much revelation in the early steps of model calibration.”

Powell interjected that “with a good model of the consumer, you can add factors like the environment, weather, market factors like PR, advertising or consumer-to-consumer factors like ‘buzz’ and so forth that give a very accurate forecast about what’s going to happen in the marketplace when you take a particular course of action. You have answers to all sorts of ‘what if’ questions.”

Asserted Koch, “Simulation and agent-based modeling operate extremely well in complex arenas with complex environments. We’re building digital behavior in consumer markets where tomorrow can look very different from today. These models wouldn’t be necessary if you knew automatically that raising your price makes your sales drop and lots of promotion pushes sales up, but the real world doesn’t operate with such predictable, simplistic correlations. Consumers, the competition and myriad other factors inter-dependently affect outcomes.”

MarketSim is the latest incarnation of the DecisionPower agent-

based modeling architecture that Karakotsios and DeMey have been developing for over a decade for a variety of different applications:

- CASim--a scientific tool developed for non-scientists to study emergent behavior (1991);
- SimLife -- an agent-based computer game modeling evolution and ecosystems (1993);
- ActivChemistry--the world's first open-environment computer-integrated simulator for students (1995);
- ProjectSim--a best practices project management software built for PriceWaterhouseCoopers (1997);
- SmartGains--an automated online tool for creating individual investor portfolio strategies (1999);
- Decision support systems for the international space station, in partnership with NASA (2000).

Charting the future is MarketSim's ideal application. But Karakotsios says as soon as brand executives get wind of it, they become very enthusiastic about applying it to other marketing situations. Of competitive threats and MarketSim, Koch said: "Someone could be coming after you, or you could be the new competitor. In either case, there's bound to be some action being considered on both your part and the competitor's. If and when the chips fall, you've already run scenarios to know what your next move will be," he continued. "MarketSim provides a portfolio of alternatives based on competitive response for an existing product that isn't living up to expectations in the market place and where historical data and market mix modeling isn't generating expected returns."

MarketSim's underlying worth isn't confined to manufacturers. DecisionPower is in discussions with several interested non-grocery retailers. "Modeling categories and assortment mixes on the shelf are valued capabilities," remarked Powell. "A Wal-Mart has a ton

of existing data it uses to characterize its shoppers, which can be plugged right in during the calibration process."

MarketSim's calibration process, added Koch, manages huge amounts of data and evaluates them in terms of usefulness. "Historical data, store data, hour-by-hour data, cash register receipts, quantitative and qualitative research data--all of this can be input and the calibration helps us identify which data to focus on. Sometimes the qual-

itative stuff turns out to be more valuable than reams and reams of quantitative data," he shared. A simulation can take a few minutes, up to a few hours.

"But this model, unlike traditional market models, isn't only as good as data inputs. The marketing people are equally important," Koch emphasized. "The more possible actions your marketing team can imagine, the more robust the tool becomes. When you introduce a line extension to the marketplace, for example, you know because you're a good marketer that your competitors are going to react in any number of ways--whether it means they lower their prices, beef up promotion, counter with a new product of their own or any combination thereof. MarketSim can tell you when you do 'A' and they hit back with 'B', what the likely outcomes are and what your best response should be.

"We have a significant advantage versus market mix modeling," he elaborated. "The minute something changes dramatically in the marketplace, you have to rebuild the market mix model from

scratch; market mix modeling doesn't possess an option for emergent behavior. However, with agent-based modeling, as soon as something changes, you load that new data into the existing model and it's dynamically updated. It doesn't become obsolete; it becomes a smarter, more effective tool over time. It's continually evolving."

"The difference," supported Karakotsios, "isn't about how little or how much data you plug in--though the more complete you get, the better--but the dynamic interaction among objects in the simulation model. Unlike 'static' simulations such as spreadsheets, data mining and traditional forecasting, 'dynamic' simulations (as they are called) incorporate some concept of time and the objects represented by the simulation interact over time.

"Market mix modeling isn't necessarily our biggest competition," he volunteered. "More often, we're competing with a test market. In fact, the work done with market mix modeling is often valuable to simulations. We don't throw that stuff away."

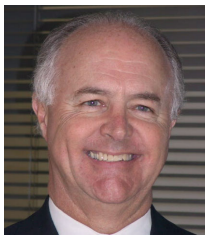
Karakotsios insists MarketSim isn't in a "black box" like other proprietary modeling techniques. "Our customers have a clear window into the process--how we simulate what goes on in a consumer's head when they gather awareness, choose a channel, choose a product, consume. Those basic rules are relatively simple and straightforward. After using MarketSim, our customers often decide to measure information in a new way because they shift their focus to consumers, instead of a brand or product focus."

Koch added, "It really changes your perspective. Even traditionally consumer-centric companies are going out and buying more data to plug into the system because this capability raises new questions about how the consumer reacts to or feels about some stimulus that they don't currently have the data to calibrate."

DecisionPower issues licenses per brand per category and geography. MarketSim is "inexpensive" relative to current modeling techniques, but "that's almost an apples to oranges comparison. It's not an insignificant investment to get the system up and running, but afterwards it's relatively modest to maintain on an ongoing basis," Karakotsios disclosed. DecisionPower consulting helps calibrate the engine and gets users up to speed operationally. Its desktop presence makes infrastructure and IT involvement limited concerns. A typical calibration takes two to four weeks if the client has historical data available.

DecisionPower works mostly with clients' MRD, marketing and brand people. Besides P&G, several other CPGs and a consumer electronics company currently use MarketSim. Powell says firms in consumer financial services, beverages, insurance and entertainment (music, movies, publishing) are in the pipeline. "Several additional major brand and marketing companies with large statistical analysis and MR functions are considering us," Powell revealed even as this issue went to press. **RBR**

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