

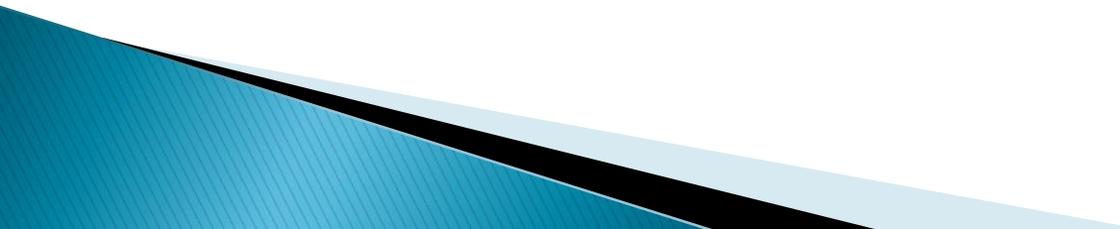
Beyond Market Mix Models– Enhancing Market Analytics Through ABM: A Pharmaceutical Case Study



Strategic Vision Through Simulation



Outline

- ▶ Executive Summary
 - ▶ Business Challenge
 - ▶ Approach
 - ▶ Model Framework
 - ▶ Results
 - ▶ Impact
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Executive Summary

- ▶ Sterling Simulation was engaged to provide an ABM Marketing model for a Pharmaceutical company.
- ▶ The model was designed to answer a question of DTC Marketing Spend.
- ▶ The provided answer, if followed, could save the Pharmaceutical company tens of millions of dollars (\$M).
 - Whether the technically-best answer could be followed for other reasons is an ongoing question.

Business Challenge – Overview

- ▶ We have two (2) competing non-generic drugs by the same company in the same market.
 - There are several other drugs, both generic and non-generic, in this market.
- ▶ One drug is well-established, and the other has been recently introduced.
- ▶ There are several concerns about how to obtain a useful market share for the newer drug, while maintaining or increasing market share for the company's drugs as a whole.



Business Challenge – Question

- ▶ When should the company ‘turn off’ DTC marketing for the newer drug to maximize total prescription sales?
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Approach – Overview

- ▶ Traditionally, marketing analytics have relied on different spend scenarios along with direct market data (e.g., Nielsen and Ipsos data) to determine impact of marketing spends.
- ▶ However, this approach does not provide articulated understanding of *why* the spend changes impact the results.

Approach – Alternatives

- ▶ To obtain a better understanding of the mechanics *behind* market mix models (e.g., why does DTC marketing give diminishing returns vs. sales rep visits), one alternative is **agent-based modeling**.
- ▶ ABM provides the secondary benefit of removing assumptions from the model, which again allows for a more complete understanding.

Approach – Caveat of ABM

- ▶ One thing to note about ABM approaches in general and this model in particular is that the data requirements are different and, in general, higher.
- ▶ In this case, the pharmaceutical company had these data and thus were able to take full advantage of the ABM approach.

Approach – ABM Platform

- ▶ Once the approach of ABM was selected, a platform was then selected. That platform was **AnyLogic®**.
- ▶ There were a few reasons why AnyLogic was selected for this project.
 - The company was familiar with the software and its capabilities.
 - AnyLogic allows for the greatest flexibility in modeling frameworks.
 - AnyLogic has the best visualization possibilities for the model.

Model Framework – Overview

- ▶ The model framework differed substantially from traditional market mix models.
- ▶ Specifically, the model considered the *entire patient/doctor interaction* in order to determine the impact of market spends.
- ▶ Additionally, the impacts of other drugs was integral to obtain correct market share information.

Model Framework – Main Components

- ▶ The model consists of the following elements.
 - Patients
 - Doctors
 - Drugs
 - Payers
 - Sales Reps
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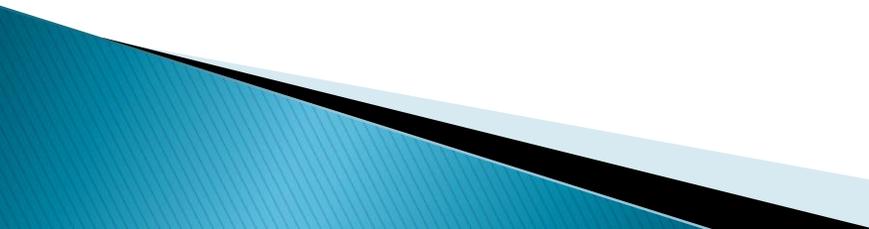
Model Framework – Patients

- ▶ The patients in the model are all *diagnosed* with the specific illness that the drug market handles.
- ▶ The primary behavior of the patient includes:
 - Meeting with their physician every three (3) months.
 - Determining whether or not they desire a specific drug.
 - Primary DTC market impact
 - Whether they fill their prescription or not.
 - Whether they stay on a drug or not.

Model Framework – Doctors

- ▶ The doctors in the model have different specializations related to the illness, and have differing numbers of patients depending on specialization.
- ▶ The primary behavior of the doctor includes:
 - Handling patient appointments.
 - Determining their satisfaction level with each drug
 - Determining what drug to prescribe to a patient.
 - Whether to provide samples to new patients.
 - Interacting with Sales Reps from any company.

Model Framework – Drugs

- ▶ The drugs in the model were the two company drugs, another specific non-generic drug, and generics as a group.
 - ▶ The drugs have very little behavior, but show the following:
 - Difference in clinical action.
 - Presence/Absence in Payer Formularies.
 - Tier in Formularies
 - Cost
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Model Framework – Payers / Sales Reps

- ▶ Payers had little behavior, but still had a great potential impact on the model due to formulary changes.
- ▶ Sales reps visit doctors, and can influence their base preference for the various drugs.

Calibration

- ▶ The model did take a while to calibrate properly. This was due to the fact that the data was more than a little sparse in areas with regards to the desired information.
 - Overall, there was almost too much data, resulting in a 'needle in a haystack' issue.
- ▶ The model was calibrated primarily to each drug's (or drug family's, in the case of the generics) market share in terms of both patients and prescriptions per month.

Results – DTC Marketing

- ▶ Once calibrated, the model showed that the ideal time to stop DTC marketing for the new drug would have been six (6) months before the current date.
 - That is, they ‘should have’ stopped DTC marketing six months ago.
 - This was established by noticing that there was no difference in the calibrated metrics over the same time frame.
- ▶ Since this was unfeasible, the given answer was to stop DTC marketing ‘as soon as possible’.

Results – Sales Rep Visits

- ▶ The money spent on Sales Rep Visits, in contrast to DTC marketing, did not show any diminishing returns and always impacted market share.
- ▶ This was expected, given that the availability of samples is directly tied to the Visits and has a broad impact on the willingness of Patients to try the drug.



Impact

- ▶ The amount of money being spent on DTC advertising is, naturally, not subject to public disclosure.
 - ▶ It is safe to say, however, that should the pharmaceutical company follow the results of the model and eliminate DTC marketing, they would save at least \$10M a year.
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Thank you!

- ▶ Any questions?





Questions

- ▶ If you have any further questions about this approach, please contact Scott Hebert at

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