**Contents:**

Let us first look at the Overview of the proposal. Then the contents are divided into sections on:

Opportunity.

Solution.

The Stakeholders.

The Team.

And the Next Steps.

**Overview 1:**

Computer based simulation of a brand's dynamic market environment can illuminate how complex marketing phenomena emerges from individual behaviors of various stakeholders and entities.

Examples of the entities are HCPs, Consumers, Government Policies, Brand efficacy, Managed Care etc.

**Overview 2:**

Our objective here is to develop agent based computer simulation models to address the macro and micro level financial outcomes of various brand marketing strategies.

The learnings help to fine tune the marketing strategies. We propose to apply “Agent Based Simulations (ABM)” as the underlying technique to simulate the market conditions.

The idea here is similar to building Flight Simulators for Pilot Training.

**Opportunity:**

Let us consider an example.

A brand’s sales is impacted by multiple factors. The internal controllable factors include HCP and Consumer Targets and corresponding Promotions Formulary Positions etc. . The external non controllable factors include Brand Efficacy & Prescribing Information Competition etc.

Currently, we study and model the impacts of such factors on resulting sales independently by respective teams of experts. The interactions are not completely captured.

In reality, these factors depend on each other and a complex interaction among them defines the market environment and the resulting sales.

A clear opportunity exists in estimating sales impact by these factors and, more importantly, the interactions between them. This will help in developing effective marketing strategies.

**Solution:**

Agent Based Modeling is a simulation technique that mimic complex market environment.

Marketers could simulate multiple marketing strategies, study the sales outcomes, and select most effective strategy that maximizes the sales.

We start with creating thousands of virtual HCPs and Consumers.

Each HCP is assigned attributes such as Specialty, Group Practice, Location, Plans, Promotions and Targeting status.

Consumer attributes such as age, gender, location, insurance plan, social network and promotions are assigned.

Similarly Brand profiles, Prescription policies, Formularies are defined as entities.

Then behaviors and interactions between them are specified and models are validated against historical data.

We then run the simulation for an year for various user defined marketing strategies.

The output is the brand sales trend at both national as well as defined sub-segments.

**Outcome:**

A marketer runs two scenarios and observes resulting sales.

In Scenario 1: Target top PCPs with a set of HCP promotions. Targeted consumers are Adults 50+.

20% of commercial plans have preferred tier and 40% need prior authorization. Competition is heavy.

In Scenario 2: Target top specialists and PCPs. 35% of commercial plans have preferred tier and 35% need prior authorization.

The marketer runs simulation that outputs estimated sales for one year.

Results show second scenario yields 25% more sales than first. Spend is 40% higher than first scenario.

In conclusion, Considering future growth potential, scenario 2 is preferred even with higher spend.

**Stakeholders:**

Simulation helps the brand team, the primary stakeholders, to adjust various market levers and fine tune their marketing strategy.

Commercial Operations and Analytical teams who are responsible for strategy & implementation are also the target audience for simulation.

**Team:**

A tight integration between brand and simulation team is needed for successful implementation.

The agile pod has Simulation C O E Leader and Brand leader as project owners.

To thoroughly understand and implement brand dynamics, a group of corresponding subject area experts are needed as core team members.

During initial and delivery stages, core team meets twice a week. During implementation phase it would be once a week.

**Next Steps:**

During first half of 2024, supporting V116 US Launch Planning will be our first simulation project. V116 launches in mid 2024. Objective is to test, learn and adapt.

In Q3 of 2024, US Gardasil9 Adult strategic plans will be studied. Selection of a commercial simulation tool will also be considered.

In Q4, Market Simulation for one Ex-US market will be added. Simulation would be particularly useful when such markets have data restrictions. Objective is to test and learn outside US. Usage of commercial tool will be explored in depth.

In 2025 we plan to scale to 10 brands within US and Ex-US markets.

--------------------------------------------------------------------------------------------------------------------------------