Case Study

Biopharmaceutical company gains a comprehensive competitive analysis for their oncology products

IQVIA's Asset Intelligence tool and data science experts provide AI-augmented insights, enabling faster, informed decisions

Situation

A research-based biopharmaceutical company wanted to develop indication-specific insights on pricing and reimbursement outcomes for oncology drugs by country. Key markets they were interested in included the United States, Canada, Japan, France, Germany, Italy, Spain and the UK.

IQVIA was engaged to conduct a health technology assessment (HTA), to provide a landscape assessment and deliver tailored insights for two of the company's oncology drugs. Utilizing a list of customer-provided key competitors by indication, IQVIA was tasked with providing the probability of technical and regulatory success (PTRS) for the drugs. In addition, IQVIA provided estimated dates of approval and phase transition so the customer could better understand the future timeline of competitive commercial and regulatory events.

In addition to uncovering competitive insights, the global company's long-term goal was to collaborate with IQVIA to develop an artificial intelligence (AI)-powered platform to support evidence-based decision making on pipeline assets to optimize access, price and commercial outcomes.

Challenge

The clinical trial landscape has become increasingly more competitive. Pharmaceutical companies are turning to data science and artificial intelligence to augment the expertise of their teams; however, many are learning they don't have the right data, enough data or the in-house capabilities necessary.

This global healthcare company is seeking a competitive edge and engaged with IQVIA to capitalize on the data, expertise and tools that could address their challenges.

Building a machine learning application is an iterative process involving the following steps

Identify relevant datasets and AI/ML methodologies to solve the problem

Define and prioritize features and variables within the dataset

Design the models based on selected data and required results presentation

Train the model to generate connections and test for accuracy

Refine by feeding new data back into the ML cycle to improve the model

Solution

COMPETITIVE PIPELINE ANALYSIS

After understanding the company's business objectives and how an AI-augmented approach could help achieve these objectives, IQVIA proposed the Asset Intelligence tool. Asset Intelligence is an AI solution that provides an assessment of the market using machine learning models paired with an enriched database of clinical trial information and regulatory approval outcomes to predict the percentage probability of obtaining FDA approval for a given pathway.

This tool, combined with IQVIA's domain expertise, provided insight into timelines and prediction drivers relevant to the pharmaceutical company's products, allowing them to understand how and when competitive assets would be approved.

CUSTOM PLATFORM DEVELOPMENT

In addition to utilizing the Asset Intelligence tool, the biopharmaceutical company, with IQVIA, developed a joint vision of an AI-augmented platform to support specific access, pricing and evidence planning decisions related to ventures and acquisitions (V&A). The V&A platform complemented IQVIA's expertise and could be embedded within current workflows and processes.

Machine learning simulations

The machine learning (ML) cycle is continuous, and choosing the correct machine learning algorithm is just one of many steps. Several ML models were built and tested for the V&A platform. Scenarios were run on the biopharmaceutical company's key products, and a simulation was conducted to show results, pressure test and validate the model.

Structuring data with NLP

Natural language processing (NLP) was leveraged for data processing, which included structuring, normalization, quality and targeted bias assessment.

Leveraging data sources

The company's pipeline competitors were analyzed to predict their probability of technical and regulatory success (PTRS) using available data. The data regarding each competitor was collected from various sources, including IQVIA databases and publicly available information.

MODELS PREDICTED THE INFLUENCE OF THE INPUT FEATURES BY:

- Scenario testing evidence generation and outcomes
- Conducting analysis of different order of market entry scenarios
- Determining HTA success in the various indications for company's oncology products
- Analyzing competitor launch scenarios (e.g., order of entry) and their impact on likelihood of reimbursement
- Identifying the likelihood of reimbursement in the company's oncology indications

IQVIA data utilized:

- HTA accelerator data
- Claims and prescription data
- Pricing insights
- Dosing database

Publicly available data sources included, but were not limited to:

- HTA Reports
- AACT database (Clinical Trials Transformation Initiative)
- Clinical trial data (e.g., ClinicalTrials.gov)

Once the data were gathered, experiments were run with single markets and different levels of aggregation to determine which provided the best insights. HTA outcomes could be aggregated or displayed individually by country and allowed for scenario testing on evidence generation and outcomes.

Analytics-based outputs

Outputs were validated and analyzed to extract insights for each asset and indication. General trends were identified by performing additional data analytics and by leveraging IQVIA's data science expertise to validate initial findings. Outputs were also synthesized across models to strengthen or identify additional outcomes and trends.

IQVIA's expertise was provided to assess and leverage findings and deliver recommendations to support decision-making.

Results

IQVIA's Asset Intelligence tool and data science expertise provided AI-augmented insights that saved months of research for the biopharmaceutical company. An understanding of time-to-market in the initial oncology indications and the factors the company could impact was determined. Competitors' PTRS scores were predicted in order to assess the future competitive landscape for this company's oncology products.

This solution offered a complete analysis of the requested competitive assets, as well as additional assets not initially identified as potential risks. Key dates were outlined within the competitive pipeline to allow the client to make fully-informed roadmap decisions for the future of their oncology products.

> *"We are extremely impressed with the speed and quality of the output. We didn't expect to see so much detail in such a short amount of time."*
>
> *– Head of Global Pricing and Analytics*

With the completed prototype of the AI-powered V&A platform, IQVIA was able to simulate evidence to support the company's decision making on selected V&A assets. Next, the two companies plan to establish a partnership for ongoing collaboration with the newly-developed platform as its foundation.

About the IQVIA Asset Intelligence tool

The IQVIA Asset Intelligence tool is an AI/ML-powered solution for determining the probability of technical and regulatory success for a given therapeutic pathway. Delivered in a full-service capacity, the solution provides insights that help identify patient populations more accurately, rapidly delivers relevant information on products in the development pipeline and generates an objective overview of the competitive landscape. The Asset Intelligence tool is part of IQVIA's Drug Discovery & Development Services offering, leading pharmaceutical development with data-driven solutions that accelerate pharmaceutical R&D to bring much-needed therapies to patients faster.

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