SaaSberry Innovation Laboratories

Vancouver Canada

AI in retail case study October 2018

(Price optimization, Dynamic pricing)

The rationale behind AI success in retail

AI-driven innovations have an immense disruptive impact for the retail industry. An exponential increase in raising VC funds and other investments in AI solutions for both eCommerce and brick-and-mortar sectors speak volumes.

72% of retail execs spell confidence that Artificial Intelligence will drive competitive benefits on the retail market. There are several touchpoints where AI can revolutionize the retailing landscape:

- Improvement of human-aided tasks performance
- Automation of sophisticated business processes
- Personalization of customer experience
- Predictive analytics: Demand forecasting and Price optimization
- Customer service enhancement: Chatbots implementation

Unlocking AI potential for retail

Oftentimes retailers have fears of uncertainty before implementing AI solutions. Without any hands-on expertise in AI, business owners strive to mitigate their risks and ensure security. Their concerns about AI deployment usually boil down to the following:
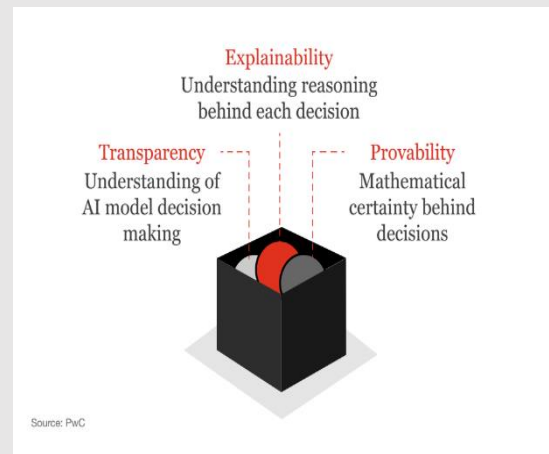
- Explainability
- Transparency
- Provability

Unlike many vendors, SaaSberry provides its customers with comprehensive and clear reasoning at every single step of the development and integration process of AI-backed solutions. All workflow actions are documented in an easy-to-understand way and

shared with all the stakeholders. Such a transparent and auditable approach enables us to establish a robust strategic collaboration based on trust and mutual respect.

How SaaSberry can augment retail businesses

In recent years SaaSberry BI has gained significant ground in providing actionable AI-related solutions for the retail sector. We take a holistic approach to addressing various business issues in retail by utilizing the synergy of advanced Data Science, ML, Big Data, NLP and DevOps competencies.

Explainability
Understanding reasoning behind each decision

Transparency
Understanding of AI model decision making

Provability
Mathematical certainty behind decisions

Source: PwC

SaaSberry BI as a proficient AI vendor is ready to offer tailored solutions to its customers that best align with their retail businesses, which include:

- Non-intrusive embedment of AI algorithms into customers' current environments.

- Repetitive tasks automation to enhance human-aided productivity.

- Big data processing to improve human decision making.

- Predictive analytics to anticipate further customer demand, set in optimal pricing policy and price elasticity.

- Prescriptive analytics to gauge unsupervised historical and current datasets and provide time- and cost-efficient business optimization insights.

How SaaSberry BI turns AI potential into results

Case Study

Challenge

A leading US grocery and pharmacy company that runs a national network of supermarkets faces performance inefficiencies and data breach issues leading to rising business costs and high customer churn. The company plans to create additional business value and

improve customer experience by getting AI-powered solutions implemented in its business workflow. To achieve the given goals SaaSberry BI has defined the following objectives:

- to orchestrate disparate retail data;

- automate knowledge intensive tasks;

- increase gross profit margins;

- minimize the risk of human error and biases;

- measure historical data for better demand forecast accuracy.

Our solution

To tackle the challenge our experts has conducted a thorough research to identify key drivers influencing the company's business performance and effectiveness. It's been revealed that the retailer has a pressing need for a robust AI-fueled price optimization solution that will enable profit generation and CX improvement. The price optimization strategy deployed by SaaSberry presupposes the following steps:

- to leverage professional skills and flair of in-house AI experts

- to specify price optimization main criteria

- to visualize product and price architecture flow charts

- to build and verify a proof-of-concept pricing model

Project team

To provide pitch-perfect results the project involves the following seasoned AI specialists: PM, Account Manager, Data Architect, BA, DevOPS, Data Science Engineer, and two ML Engineers

Price optimization explained.

This strategy comprises a sequence of AI-based algorithms and other pricing activities aimed at defining optimal retail prices and forecasting demand across various buyer segments and channels. Price optimization helps retail businesses set up a dynamic pricing strategy that maximizes profit margins as well as resonates with customer purchase drivers.

Visualizing a price optimization process

Adhering to the abovementioned rule of thumb (explain ability, transparency, provability) that stipulates further development roadmap, two architecture flowcharts have been built to provide a clear picture to all the stakeholders.
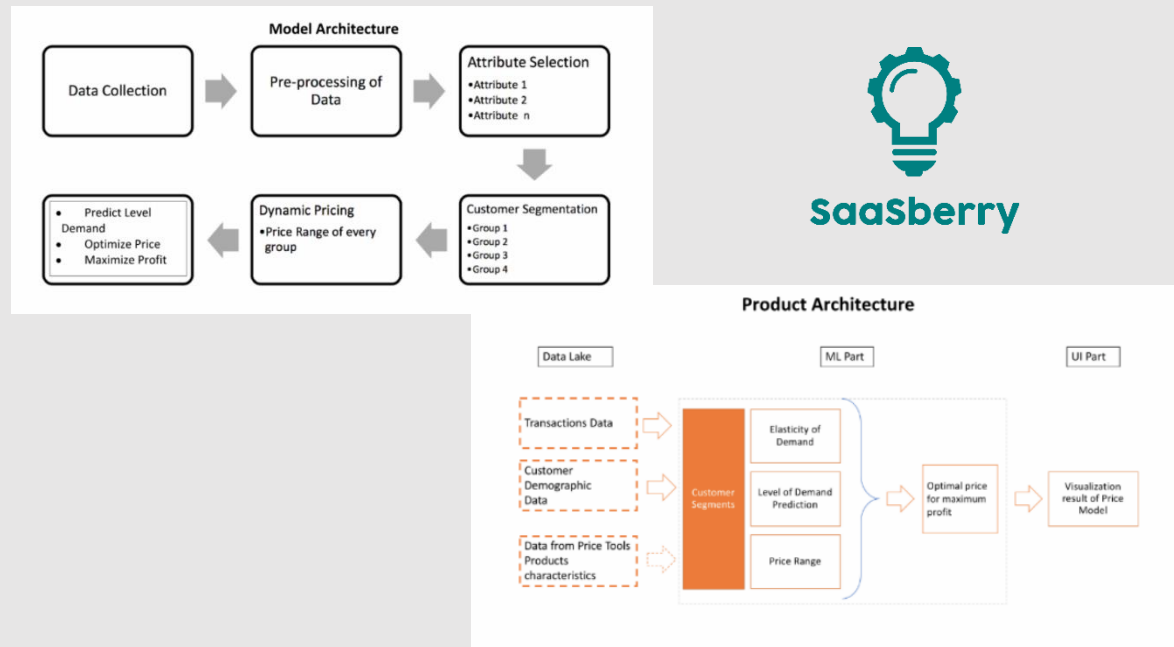
Testing a price model: a Proof of Concept

To prove feasibility of the suggested price optimization strategy a following PoC model has been generated. The model factors in a comprehensive list of business data entities like seasonal cost fluctuations, in-stock products, estimated in-stock product availability, the level of customer demand, the efficiency of a certain retail channel, etc.

We cluster retail products in accordance with customer shopping behavior by attributing them to separate customer and market groups and estimate the optimal product prices for each group.

Process specification

✓ Measuring the ItemStoreSales data (WeekEnding, SaleQuantity), the level of demand (DemandLevel – low, medium or high, based on historical data) for the next week period has been predicted and the optimal price has been determined.

- ✓ Based on ItemStoreSales data (WeekEnding as index in data, RetailPrice, SalePrice, TPR, BOGO, CompetitorRetailPrice (fill NA in CompetitorRetailPrice column by 0)) and DemandLevel as fuzzy predictor we predict customer demand using Linear Regression, BLUP or similar linear model.

- ✓ The function of gross profit is defined by Demand * (Price - UnitCost) and the optimal price for maximizing this function has been found.

Results: we have come up with the optimal SalePrice for next week, which includes a regular price (TPR=N, BOGO=N), a promotion price (TPR=Y, BOGO=N) and a BOGO price (TPR=N, BOGO=Y). Thus we succeed in estimating customer demand and gross profit for each price for each product.

Value delivered

We managed to provide the customer with a smooth non-intrusive integration of our Artificial Intelligence solutions and the current tech environment. Reaping the AI-backed optimization benefits, the retailer now can enjoy the following competitive advantages:

- Digitalization and automation of complex routine processes

- Considerable reduction in human workforce involved in business tasks

- Minimization of labor and maintenance costs

- Gross profit evaluation and optimization

- Mitigation of human error rates

- Improved clustering and segmentation based on customer shopping behavior

- Enhanced customer demand forecasting and dynamic pricing capabilities

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