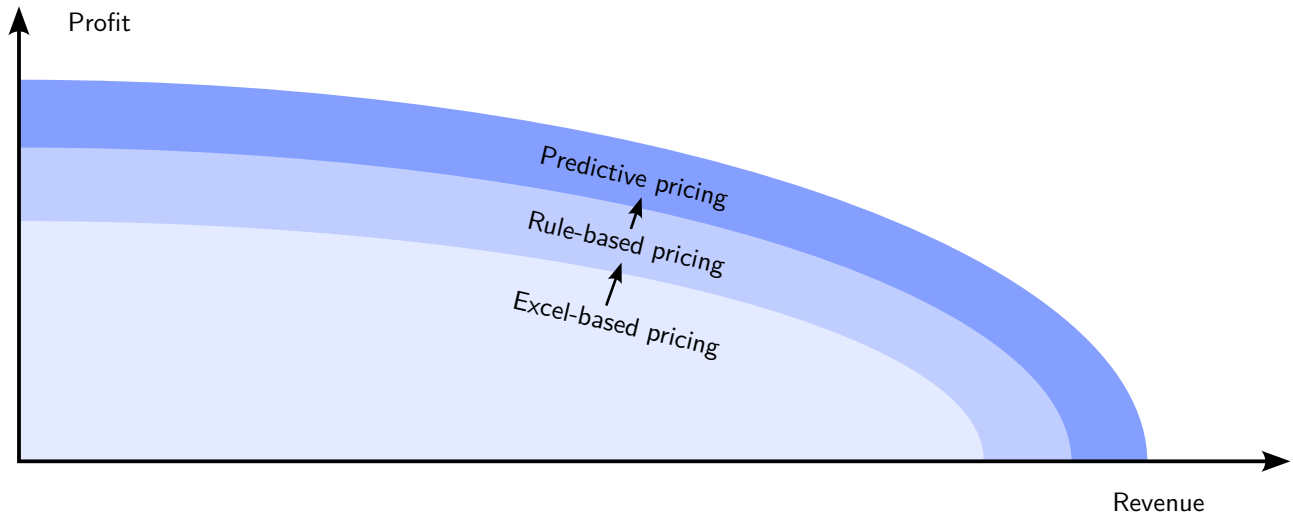# 7Learnings Documentation

1 Introduction

Thank you for your interest in the most advanced optimization service for retailers. This document introduces you to our predictive pricing service and provides you with initial information on data transport and data definitions:

Before we get to the details of data format and API, we show how we optimize your pricing and marketing decisions:
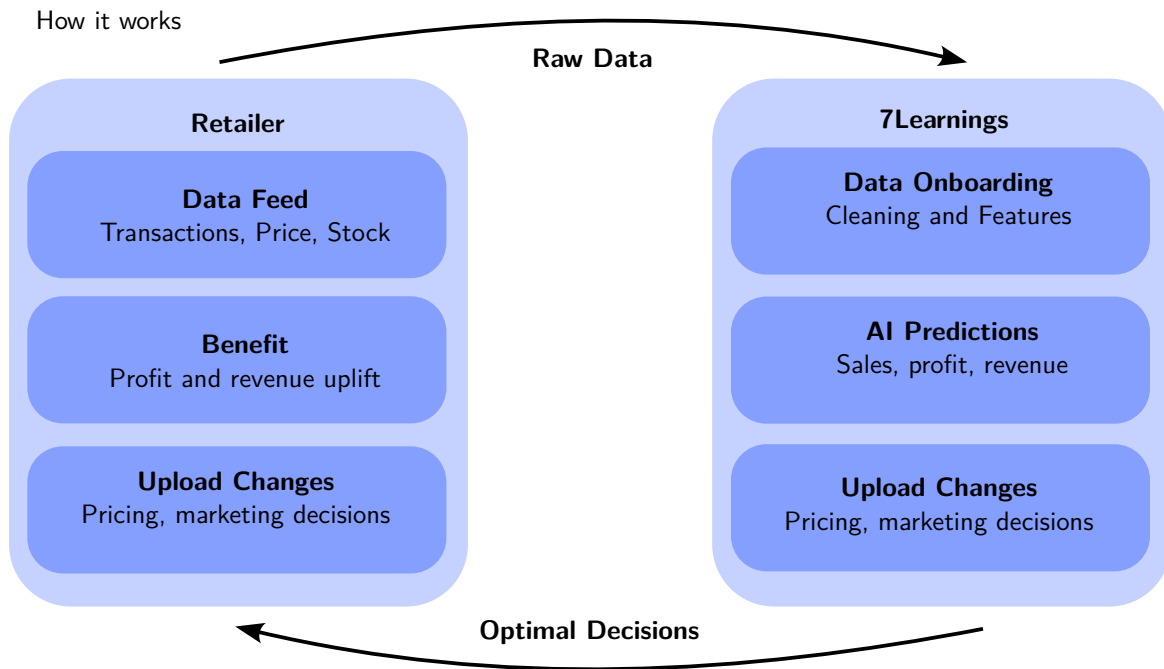
More specifically, we provide the Input Data Specification (description of the data we consume, next section 2) and the Output Data Specification (description of the data we produce, section 3).

2 Input Data Specification

Our input data comprises the following tables:

Table 1: Input Data Tables

Table name	Short description
Channels	Channels
Transactions	Historical product sales
Price Periods	Historical prices of products
Product Attributes	Product information for each product
Stock	Historical stock information
Traffic	Historical customer activity & marketing cost on website
Competitor Prices	Historical competitor prices

Info: Tables colored blue are required . Tables colored gray are optional .

The following table lists which input APIs we support:

Table 2: Supported Data Integration APIs

No.	Source	Tables	Format
1	BigQuery	All	BigQuery table
2	Snowflake	All	Snowflake table
3	Azure Blob Storage	All	CSV/parquet files
4	SFTP	All	CSV/parquet files
5	HTTPS	All	CSV/parquet files
6	FTPS	All	CSV/parquet files
7	Amazon	Transactions	Amazon API query
8	Google Analytics	Traffic	Google API query
9	Amazon Ads	Traffic	Amazon Ads query

2.1 Channels

Table containing information about the sales channels

Table 3: Channels

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
channel_currency	text	Three letter code for local channel specific currency according to ISO 4217 (e.g. EUR for Euro currency)
conv_fkt_to_main_currency	decimal, integer	Factor the foreign currency has to be multiplied with in order to get to values in the main currency (e.g. 1.2 to get from GBP to EUR)

Column	Possible Data Types	Description
upload_market	text	The country code according to ISO 3166 format (e.g., DE for Germany). This is used to differentiate the market ISO code from any additional sub-channel definitions.
upload_currency	text	The currency code according to ISO 4217 format (e.g., EUR for Euro). This is used to differentiate the channel currency from any additional sub-channel definitions.
upload_channel	text	The sales domain where prices will be uploaded (e.g., amazon.de for Amazon sales channel). This is used to distinguish the primary channel in the optimization process from any additional sub-channel where prices are uploaded (e.g., zafr for Zalando France if optimized prices should be sent via an API call to tradebyte).
upload_conv_fkt_to_main_currency	decimal, integer	The factor by which the foreign currency has to be multiplied to convert to values in the main currency (e.g., 1.2 to convert from GBP to EUR). This is used to differentiate conversion factors from any additional sub-channel definitions.

Info: Columns colored `blue` are `required`, `gray` are `optional`, and `red` are `recommended`.

2.2 Transactions

Table of historical sales. It should ideally have two to three years of history.

Table 4: Transactions

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
product_id	text, integer	Unique identifier of the product or SKU
time	time stamp	Date and time when the items were ordered as an ISO 8601 UTC timestamp (e.g. 2024-02-06 22:54:51+00:00)
order_id	text, integer	Unique identifier for the order to which the product belongs
sales_before_returns	integer	Quantity of non-cancelled items that were purchased of a product (e.g. 4 if 4 items were purchased)
revenue	decimal, integer	Sum of net product revenue in main currency after returns (if available) without customer payments for the delivery/return of the product
profit	decimal, integer	Sum of net profit in main currency
conv_fkt_to_main_currency	decimal, integer	Factor the foreign currency has to be multiplied with in order to get to values in the main currency (e.g. 1.2 to get from GBP to EUR)
tax_rate	decimal, integer	Rate of sales tax used to calculate net revenue from gross price (e.g. 19% for most products in Germany)

Column	Possible Data Types	Description
basket_position	integer, decimal	Rank that SKU has in the basket
returns	integer	Number of items of SKU that were returned
voucher_spending	decimal, integer	Sum of net voucher spending after returns in main currency (e.g. 5 EUR voucher for newsletter)
red_price_discount_spending	decimal, integer	Sum of additional discount spending in main currency on top of vouchers and discounts (e.g. 4 EUR customer specific rebate)
outbound_cost	decimal, integer	Costs in main currency of sending these products from the warehouse to the customer. You can add logistic cost, shipment cost, call center cost, and payment cost. And you can subtract shipping revenue payed by the customer.
inbound_cost	decimal, integer	Logistic and discard costs in main currency linked to handling these returns.
commission_cost	decimal, integer	Net commission costs in main currency paid for selling these products on a third party platform (e.g. Zalando, or Amazon)
marketing_cost	decimal, integer	Net marketing costs (SEA, price comparison commission, other advertising) linked to these sales after return.
other_cost	decimal, integer	Other costs in main currency you consider in your profit calculation for these sales
customer_lifetime_value	decimal, integer	Incremental future profit increase driven by the transaction in main currency. Is typically higher for new customers and customers with higher repurchase rates.
purchase_cost	decimal, integer	Sum of net cost (after tax) the products were bought for in main currency including shipping cost to the warehouse (e.g. landed cost)

Info: Columns colored blue are required , gray are optional , and red are recommended .

2.3   Price Periods

Table of historical prices of products. Ok if the history starts on the project start date.

Table 5: Price Periods

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
product_id	text, integer	Unique identifier of the product or SKU
active_since	time stamp	Timestamp from which a period was active (ISO 8601 UTC 2022-04-24T22:54:51Z)
gross_red_price	decimal, integer	Gross price for the product before vouchers and after discounts in local currency (you can use the net price for non-VAT countries)
gross_black_price	decimal, integer	Gross price for the product before vouchers and discounts in local market currency including sales taxes

Column	Possible Data Types	Description
gross_recom_price	decimal, integer	Recommended Retail Price (RRP) provided by the supplier of the product in local market currency including sales taxes
is_active	truth value	True if the product is online in the webshop and could be bought by the end customer in that period

Info: Columns colored blue are required , gray are optional , and red are recommended .

2.4 Product Attributes

Table of product information for each product ID. It contains descriptions and properties of the products.

Table 6: Product Attributes

Column	Possible Data Types	Description
product_id	text, integer	Unique identifier of the product or SKU
product_group_id	text, integer	Marks products belonging together (e.g. across sizes) - can be used for prices to move in the same direction
purchase_price	decimal, integer	Average net price (after tax) the product costs including shipping cost to the warehouse (e.g. landed cost)
name	text	Name of the product
brand	text, integer	Name of the brand of the product
is_own_brand	truth value	True if retailer owns the brand
product_category_1	text	Top-level category the product belongs to (ideally less than 20 distinct category values)
product_category_2	text	Product sub-category the products belongs to
product_category_3	text	Product sub-sub-category the products belongs to
product_url	text	URL where the product can be found
color	text	Main color of the product
size	decimal, integer, text	Size of the product
producer	text, integer	Manufacturer of the product
season	text	Main sales period of the product (e.g. summer 1984)
start_liquidation_date	date	Date from which the Sell Through Rate of the product is calculated (e.g. Season Start Date)
end_liquidation_date	date	Date until which the product should reach the Target Sell Through Rate (e.g. Season End Date)
end_liquidation_value	decimal	Value of 1 item of the product at the liquidation end date. This KPI will be used to calculate the write-off for the seasonal profit calculation. The purchase price is the default value if not specified.
sell_through_rate_target	decimal	Share of Stock that should be sold out at Liquidation End Date

Info: Columns colored blue are required , gray are optional , and red are recommended .

2.5 Stock

Table of stock and availability information. Ok if the history starts on the project start date.

7Learnings

Table 7: Stock

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
product_id	text, integer	Unique identifier of the product or SKU
active_since	time stamp	Timestamp from which a period was active (ISO 8601 UTC 2022-04-24T22:54:51Z)
stock_start_of_day	integer	Number of items available for sale in the beginning of the day

Info: Columns colored `blue` are `required`, `gray` are `optional`, and `red` are `recommended`.

2.6 Traffic

Table of marketing information for the traffic/clicks per product (one entry for each marketing period).

Table 8: Traffic

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
product_id	text, integer	Unique identifier of the product or SKU
active_since	time stamp	Timestamp from which a period was active (ISO 8601 UTC 2022-04-24T22:54:51Z)
total_clicks	decimal, integer	Total number of visitors per product from paid and unpaid sources (decimal in case several products share traffic)
paid_clicks	decimal, integer	Number of visits from paid sources
marketing_cost	decimal, integer	Net marketing costs (SEA, price comparison commission, other advertising) linked to these sales after return.
marketing_option_float	decimal	Marketing steering that led to the clicks/traffic in the period
marketing_option_explanation	text	Description of the marketing steering strategy

Info: Columns colored `blue` are `required`, `gray` are `optional`, and `red` are `recommended`.

2.7 Competitor Prices

Table historical competitor prices. Ok if the history starts on the project start date.

Table 9: Competitor Prices

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)

Table 9: Competitor Prices (Continued)

Column	Possible Data Types	Description
product_id	text, integer	Unique identifier of the product or SKU
active_since	time stamp	Timestamp from which a period was active (ISO 8601 UTC 2022-04-24T22:54:51Z)
comp_red_price_competitor_1	decimal, integer	Gross red price (after discount) by date and competitor in local currency excluding shipping
comp_red_price_competitor_2	decimal, integer	Gross red price (after discount) by date and competitor in local currency excluding shipping
comp_red_price_competitor_3	decimal, integer	Gross red price (after discount) by date and competitor in local currency excluding shipping

Info: Columns colored blue are required , gray are optional , and red are recommended .

3   Output Data Specification

For delivering optimized prices and marketing decisions, we can connect to the following APIs and provide the data in the following formats:

3.1   Data APIs

Optimizations and predictions can be shared in multiple ways.

Table 10: Supported Data Output format

No.	Tables	Format	Target
1	Price/Marketing Changes	BigQuery table	BigQuery project
2	Price/Marketing Changes	Snowflake table	Snowflake project
3	Price/Marketing Changes	CSV file	User computer
6	Price/Marketing Changes	CSV/parquet files	Google Cloud/AWS bucket
7	Price/Marketing Changes	CSV/parquet files	SFTP server
8	Price/Marketing Changes	CSV/parquet files	HTTPS server
9	Price/Marketing Changes	API Call	Custom API
10	Price Changes	API Call	Commercetools
11	Price Changes	API Call	Salesforce
12	Price Changes	API Call	Tradebyte

We output price/marketing changes as well as customized tables. The following tables show how this output data looks like:

3.2   Price Changes

Table of optimized prices changes by market, channel, and product ID. We can fully customize this table to the need of the retailer.

Table 11: Price Changes

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
product_id	text, integer	Unique identifier of the product or SKU
opt_gross_red_price	decimal, integer	Optimal Gross Price in local currency for the given rules and targets

3.3   Marketing Changes

Table of optimized marketing changes by market, channel, and product ID. We can fully customize this table to the need of the retailer.

Table 12: Marketing Changes

Column	Possible Data Types	Description
market	text	Country where the product was sold using ISO 3166 format (e.g. DE for Germany)
channel	text	Sales domain where the product was sold (e.g. amazon.de for Amazon sales channel)
product_id	text, integer	Unique identifier of the product or SKU
opt_marketing_option	decimal, integer, text	The recommended marketing steering to be used

4 7Learnings Optimization Rules

These are the rules we support by default in our frontend:

Table 13: Default Rules

Name	Purpose	Example
Discount = value (in %)	Limit discount to a particular value relative to gross black price	Discount = 20%
Profit Margin ≥ value (in %)	Limit minimum profit margin	Profit margin ≥ 50%
Profit Margin ≤ value (in %)	Limit maximum profit margin	Profit Margin ≤ 20%
Net Optimal Price ≥ Purchase Price * value (in %)	Avoid falling below the purchase price in case of revenue maximizing optimizations	Purchase price = 40 EUR, Value = 1 ⇒ Optimal Price ≥ 40 EUR
Net Optimal Price ≤ Purchase Price * value (in %)	Avoid very high margins	Purchase price = 40 EUR, Value = 3 ⇒ Optimal Price ≤ 120 EUR
|Price Change| ≤ value (in %)	Limit maximum price change	Value = 0.1 ⇒ Price Change ≤ 10%
Current Price OR |Price Change| ≥ value (in %)	Change prices by at least a certain percent or keep the current price	Value = 0.1 ⇒ Price Change ≤ 10%
Optimal Price ≥ value	Set minimum current price	Value = 20.00 ⇒ Optimal Price ≥ 20.00
Optimal Price ≤ value	Set maximum current price	Value = 50.00 ⇒ Optimal Price ≤ 50.00
|Marketing Option Change| ≤ value	Limit change of marketing steering	Value = 0.1 ⇒ |Marketing Option Change| ≤ 0.1
Marketing Option ≥ value	Set minimum marketing option	Value = 0.3 ⇒ Marketing Option ≥ 0.3
Marketing Option ≤ value	Set maximum marketing option	Value = 0.5. Rule ⇒ Marketing Option ≤ 0.5
Optimal Price ≥ Current Price * value (in %)	Set minimum price to current price multiple	Current Price = 60.00, Value = 1 ⇒ Optimal Price ≥ 60.00

Table 13: Default Rules (Continued)

Name	Purpose	Example
Optimal Price ≤ Current Price * value (in %)	Set maximum price to current price multiple	Current Price = 60.00, Value = 1 ⇒ Optimal Price ≤ 60.00
Optimal Price = Current Price * value (in %)	Set optimal price to specific price	Current Price = 60.00, Value = 1 ⇒ Optimal Price = 60.00
Optimal Price ≥ Min Comp Price * value (in %)	Set minimum optimal price to minimum competitor price multiple	Min Comp Price = 20.00, Value = 1 ⇒ Optimal Price ≥ 20.00
Optimal Price ≤ Min Comp Price * value (in %)	Set maximum price to not price too far away from competition	Min Comp Price = 100.00, Value = 1.2 ⇒ Optimal Price ≤ 120.00
Optimal Price = Min Comp Price * value (in %)	Set optimal price to minimum competitor price multiple	Min Comp Price = 20.00, Value = 1 ⇒ Optimal Price = 20.00
Predicted Sales ≤ Target Sales * value (in %)	Avoid overselling a product	Target Sales = 10.00, Value = 1.2 ⇒ Select price where predicted sales ≤ 12
Predicted Sales ≥ Target Sales * value (in %)	Avoid high overstock at season-end	Target Sales = 10.00, Value = 0.8 ⇒ Predicted Sales ≥ 8
|Price Distance to Min Comp Price| ≤ value (in %)	Limit maximum price distance to competitor price	Min Comp Price = 20.00, Value = 0.1 ⇒ 18.00 < Optimal Price < 22.00
Discount ≥ value (in %)	Set minimum discount relative to the gross black price	Value = 0.4 ⇒ Discount ≥ 40%
Discount ≤ value (in %)	Set maximum discount relative to the gross black price	Value = 0.5 ⇒ Discount ≤ 50%
Stock Reach in Weeks ≤ value	Reduce the price to sell-off a product after a defined number of weeks	value = 2, current stock + expected stock from returns = 20 ⇒ Select Optimal Price where predicted sales/week > 10 items
Stock Reach in Weeks ≥ value	Increase the price, so that there still is stock available after a specified number of weeks	value = 2, current stock + expected stock from returns = 20 ⇒ Select Optimal Price where predicted sales/week < 10 items
Min days after last price change = value	Wait a specified number of days after the last price change	Value = 7, Last Price Change 3 days ago ⇒ Price Change = 0%
Optimal Price ≥ Seasonal Profit Max Price * value (in %)	Avoid discounts that reduce seasonal profitability	Value 100%, Seasonal Profit Max Price 16.99 ⇒ Optimal Price > 16.99
Optimal Price ≤ Seasonal Profit Max Price * value (in %)	Avoid large write-offs for products that don't sell well at Liquidation End	Value 150%, Seasonal Profit Max Price 19.99 ⇒ Optimal Price < 29.99

7Learnings

Name	Purpose	Example
Seasonal Profit ≥ Highest Seasonal Profit * value (in %)	Avoid moving too far away from price that maximizes your seasonal profitability	Value 70%, Highest Seasonal Profit 100€ ⇒ Optimal Price Seasonal Profit > 70€
Min Salvage Value > value (in %)	Set a product specific lower price boundary as share of purchase price after inbound/outbound cost consideration	Value 50%, Inbound/Outbound cost 3, Purchase Cost 12 ⇒ Net red price > 9

5 Frontend Outlook

The images below highlight the many features of our Frontend Tool and what you can do with it to achieve full control over your pricing strategy.

Figure 1: Optimizations summary

Keep an overview of your optimizations by quickly looking at the steering strategy and a summary of basic KPIs like profit, revenue and sales (see Figure 1).

Figure 2: Scope definition

You can easily create scopes containing products with specific attributes that you want to optimize (see Figure 2).

Figure 3: Rule creation

Assign custom rules that you want to apply for the desired group of products (see Figure 3).

7Learnings

Figure 4: Optimization preview curve

Choose a pricing strategy for the group of products (scope) you want, apply the corresponding rules and create an optimization (see Figure 4).
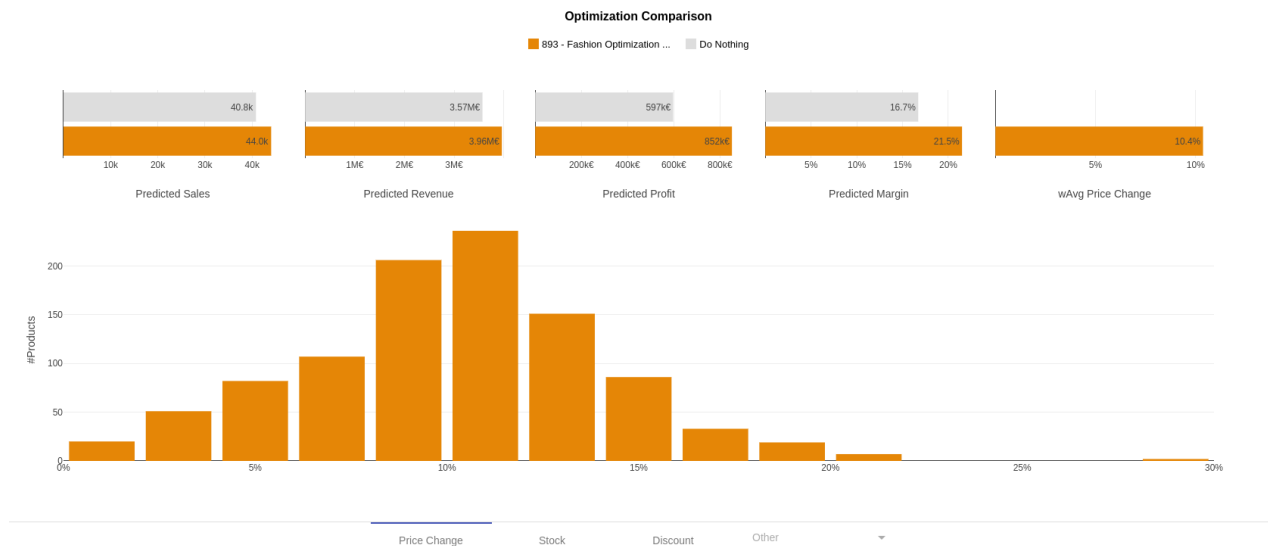
Figure 5: Optimization comparison view

Get a more detailed insight on the overall impact of your strategy by comparing the optimization to a "Do nothing" scenario (see Figure 5).

You can even compare two or more optimizations with each-other and see which pricing strategy is more suitable for your purposes (see Figure 6).

Go into product-level predictions and perform an in-depth inspection by looking at wide range of pricing, inventory or marketing KPIs (see Figure 7).

Figure 6: Comparing two optimizations

Figure 7: Product level prediction summary

Know the reason behind our optimizer's decisions by observing the explain curve and rule applications from the current price to the optimal price (see Figure 8).
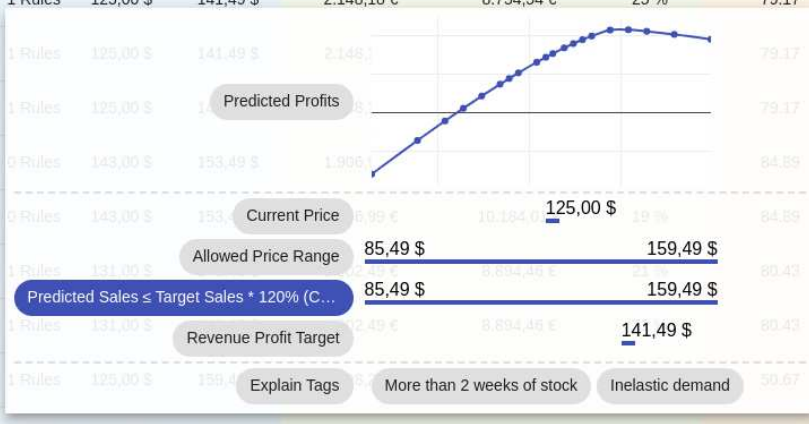
Figure 8: Product level decision explanation