AI-Powered Pricing and Net Revenue Management tool:

1. Brand Portfolio Pricing:

A) Sales Analytics:

- This function analyzes past sales data to understand market dynamics, which includes assessing market share, evaluating the impact of discounts on profit margins and revenue streams, and determining regional sales performance and retailer contribution to revenue. the sales dashboard offers a comprehensive and visually intuitive platform for monitoring and analyzing various aspects of sales performance. By combining metrics such as net revenue by quarter, profit vs. discount, product category breakdowns, revenue trends, market share, and key financial indicators, businesses can gain valuable insights into their sales operations. This data-driven approach empowers organizations to make informed decisions, optimize strategies, and ultimately drive sustainable growth in a competitive market landscape.

B) Price Discovery & Strategic Intent:

- Here, statistical modeling is used to calculate the willingness to pay, which informs pricing decisions. The 9 Box matrix helps in understanding how the product's pricing compares to competitors, aiding in the strategic positioning of the brand. Here we are looking into the competitive landscape and how different products are placed int eh market and the perception of price for customers and can help in determining the white spaces and can be used to create a stratetic intent and proceed from the same. The dashboard helps in understanding if there is room to increase the price and if yes what the optimum range of increase w.r.t a particular competitor.

C) Cannibalization:

- This involves calculating own and cross-price elasticity to optimize pricing strategies. It helps in understanding the interaction between products within the portfolio and their collective impact on revenue. Elasticity tells us how sensitive customers are to price changes for our products, while cross-elasticity shows how changes in one product's price might affect the demand for another.it helps businnesses see if their ideas are likely to work well or if they might cause problems like cannibalization, where new products eat into the sales of existing ones. With easy-to-read visuals and simulations, the dashboard guides businesses in making smart decisions about prices and new products, aiming for success without unintentionally hurting sales of their current offerings.

2. Price Pack Architecture:

A) Customer Landscape:

- One of the biggest challenges in pricing is understanding customer behavior. Customers are often unpredictable and can be influenced by a range of factors, including brand loyalty, price sensitivity, and perceived value. Businesses must conduct thorough research to understand customer preferences and tailor their pricing strategies accordingly. Customer segmentation is performed based on demographics to inform targeted pricing strategies. This includes analyzing customer performance metrics such as average revenue per customer, lifetime value, and churn rates.

B) Customer Insights:

- Strategies are developed for different customer profiles to enhance engagement and satisfaction. Market Basket Analysis is utilized to identify opportunities for cross-selling and upselling, aiming to increase the average transaction value.It can be used to understand customer behaviour if we have the data and use that for product placement also. The dashboard also gives insights on the customer profile and their behaviour and also on which groups to target for increasing the revenue.

3. Price Promo Performance Analyses:

- Involves preparing and cleaning data, selecting relevant variables automatically, and employing machine learning models to understand the baseline of sales volumes. It also includes updating promotional performance analyses, integrating them into dashboards, and adding management reporting features for strategic oversight.

4. Revenue Management:

A) Demand Forecasting:

- This function uses predictive analytics to anticipate customer demand and adjust product offerings and inventory accordingly. It includes the analysis of seasonal trends to inform production planning and resource allocation.

B) Price Simulation:

- Game theory is used to simulate various pricing scenarios to determine the most effective pricing strategies to outperform competitors and maximize profitability. It also helps in deciding pricing adjustments for market dominance and identifying effective entry point pricing for new products or markets. A game theory-based price simulation dashboard serves as a powerful tool for businesses seeking to refine their pricing strategies. This dynamic platform allows users to actively manipulate their own and competitors' prices to observe the resulting impact on key metrics, such as quantity demanded, providing a nuanced understanding of price elasticity. At the forefront of this dashboard is a visually intuitive "Market Capture" feature, enabling businesses to identify optimal pricing strategies for gaining market share. The tool goes beyond mere market capture, allowing users to experiment with different price points to achieve revenue maximization. Through thoughtful simulations, the dashboard considers not only the direct impact of price changes on revenue but also the associated costs, providing a comprehensive view of how pricing decisions influence overall profitability. The inclusion of competitor price response analysis offers valuable insights into the dynamic nature of the competitive landscape. Intelligent suggestions for pricing strategies are dynamically generated, considering user objectives such as market capture, revenue maximization, or profit maximization. Additionally, the dashboard incorporates sensitivity analysis, allowing businesses to assess the robustness of their pricing strategies under varying market conditions. In essence, this dashboard empowers businesses to navigate the intricacies of pricing dynamics, offering a real-time, data-driven approach to optimize strategies for market success.

5. Market Mix Modelling:

**1. Ad Vision Planner:**

Net Client Amount & Gross Rating Points (GRP) Prediction-

Plan optimization of prediciting the Client ad rate amount: The tool we are discussing is an application that serves as an interface for a machine learning model. The model predicts the 'Client Rate (Net)' and 'India- GRP' based on data from an Indian TV advertisement dataset. The dataset includes features like 'Channel', 'Week Day', 'Hour', 'Position', and 'Program', and excludes a 'Date' column which was initially part of the dataset.

The app allows users to interact with the model in the following ways:

* Select a TV channel from a dropdown list.
* Choose a date from a calendar input, which automatically converts to a weekday.
* Select a time slot using a slider that snaps to half-hour intervals, from 7:00 AM to 10:30 PM.
* Choose a position and a program from dropdown lists. The program selection is dynamically updated based on the chosen channel to reflect actual associations.
* Input an advertisement's duration in seconds.

Plan Builder: Upon submitting these inputs, the model predicts the net client amount and GRP. Additionally, the app can generate a schedule for all half-hour time slots within the specified time range, providing predicted values for each slot.

The feature importances from the model are also displayed in the app's sidebar, providing insights into which features are most influential in the model's predictions.

Finally, users can download the predicted schedule as an Excel file, which includes a dynamic filename that incorporates the selected date.

**Market Synergy Analytics** is a comprehensive suite designed to amplify and measure the efficacy of marketing efforts across various channels. It is divided into three core components that work in tandem to provide a holistic view of a brand's marketing performance and opportunities for optimization.

1. **Media Impact & Sensitivity** This component focuses on evaluating the effectiveness of different media channels and promotional activities. It employs a range of analytical tools to gauge the impact of each marketing initiative. For instance, waterfall charts are utilized to break down the incremental impact of each campaign element, helping to visualize their individual contributions to the overall result. This is complemented by actual vs. predicted performance comparisons, which serve to highlight discrepancies and forecast accuracy. By analyzing these variances, businesses can fine-tune their predictive models for better accuracy in future campaigns. This part of the suite aims to answer questions such as:
   * How does each media channel contribute to campaign goals, and what is the incremental value added by each promotional activity?
   * Where do the actual results diverge from predictions, and what does this tell us about our market understanding?
   * How sensitive are different customer segments to various media efforts, and how can this inform a more targeted approach?
2. **Synergy Effects** This aspect delves into the cumulative and residual impacts of marketing campaigns, known as adstock, and the response curves that result from varying levels of marketing spend and frequency. It looks to quantify and harness the often-intangible effects of marketing synergy, where the whole impact is greater than the sum of individual parts. This includes understanding how brand recall and customer perception are affected by repeated and integrated marketing messages over time. Key questions addressed include:
   * What is the lasting impact of a campaign after its direct effects have subsided, and how does this influence long-term brand equity?
   * How do different levels of exposure to marketing stimuli affect customer response and at what point do we reach diminishing returns?
   * Can we model the interplay between various campaign elements to optimize the timing and mix of media placements?
3. **Budget Allocator** The Budget Allocator is a strategic tool within the suite that guides the optimal distribution of marketing funds. Leveraging insights from the Media Impact & Sensitivity and Synergy Effects components, it provides recommendations on how to allocate the marketing budget across channels and over time to achieve the desired outcomes. This tool uses data-driven insights to dynamically adjust spending in real-time, adapting to shifting market conditions and performance feedback. The allocator addresses critical considerations such as:
   * Based on the performance data and market conditions, how should the marketing budget be adjusted to maximize ROI?
   * What is the optimal spend to achieve desired market penetration and customer acquisition goals within budget constraints?
   * How can real-time data be leveraged to make immediate budgetary decisions that capitalize on emerging market opportunities?

In essence, Market Synergy Analytics equips marketers with the intelligence to not only execute campaigns but also to understand their intricate effects on consumer behavior and the brand's bottom line. It informs strategic decisions, ensuring that each dollar spent is an investment toward measurable and sustainable growth.

This detailed documentation outlines the scope of the AI-Powered Pricing and Net Revenue Management tool, illustrating how each pillar functions individually and contributes to the overall strategy of optimizing pricing and revenue.