AI & Experimentation in Retail Marketing: Driving Business Growth Through Data & Insights

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SPEAKER BIO

10+ years experience implementing AI & Data Science solutions in marketing analytics and media measurement at **3 fortune 500 companies in US**

Earned the **ANA Genius Award** in **Marketing Analytics Excellence** for integrating RCTs with ML uplift models to drive precision marketing

Lead growth initiatives for a t**op 10 retail media** business, focusing on **ad product testing, ML-driven targeting, LTV measurement,** and **clean rooms**

As a member of **IAB's Measurement, Addressability & Data Committee**, contributed to **retail media measurement standards**

Built platforms such as **Multi-Touch Attribution** and **Holistic Experimentation** for comprehensive business optimization

Jury member for the **I-COM Data Creativity Awards** for groundbreaking achievements in **Smart Data Marketing**

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Senior AI & Data Science Leader
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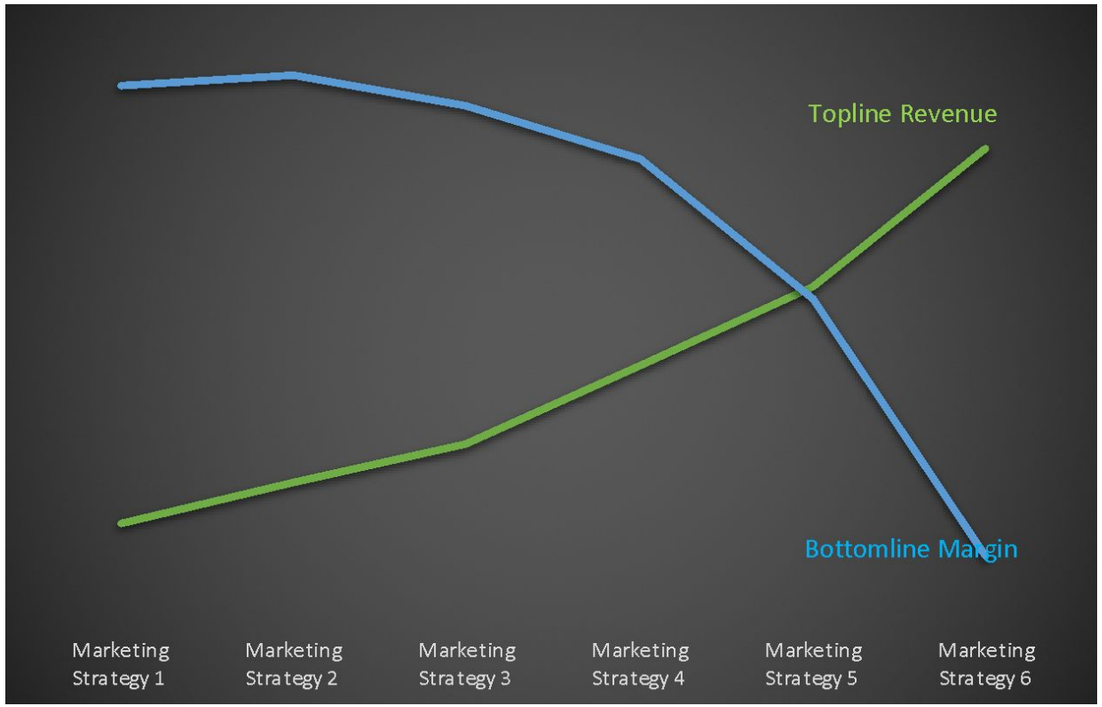
The Limitations of Traditional Experimentation

The Evolution of Experimentation

For over 20 years, traditional experimentation platforms have enabled **A/B and multivariate testing at scale**, providing real-time insights to optimize website design, content, and customer journeys.

Limitations of Traditional A/B Testing

- Focuses on **single-objective tests**
- Leads to **unexpected trade-offs**
- **Fails** to account for **cross-functional impact**



Examples

- **Website change** increases online sales but **cannibalizes in-store revenue**
- **Lower acquisition costs** may limit **long-term market expansion**

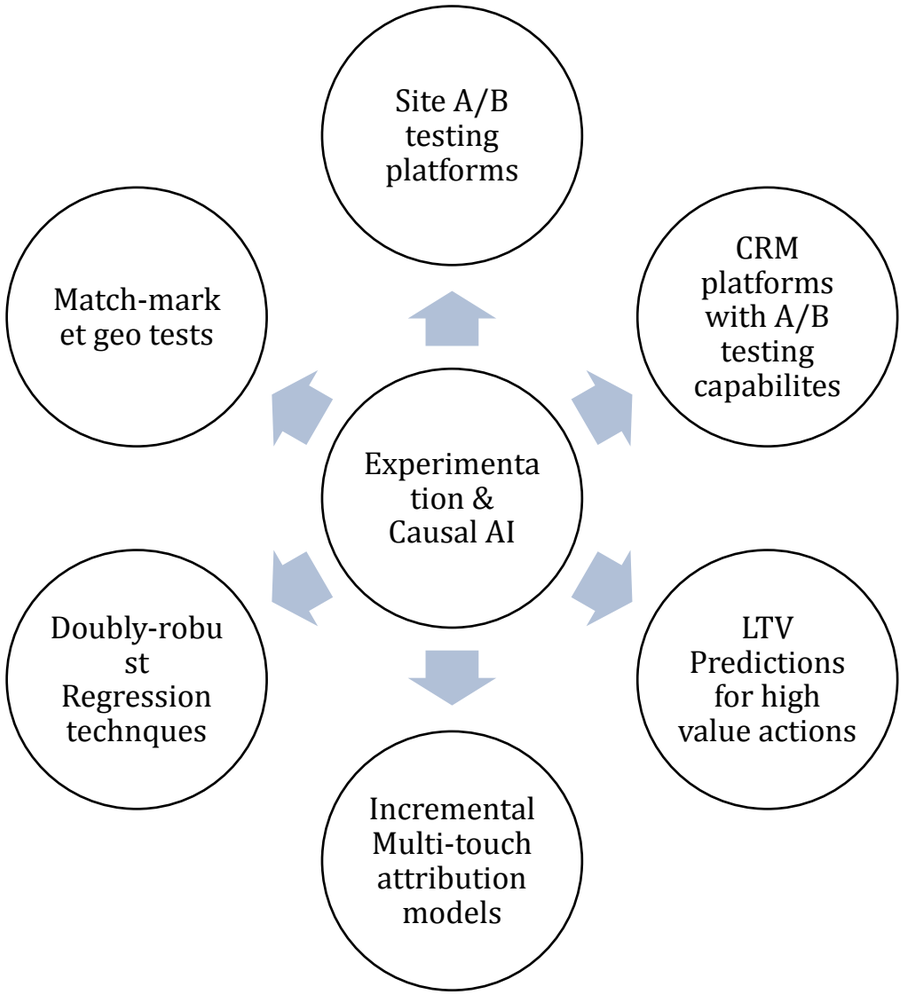
A/B testing alone is not enough for holistic business transformation.

The Promise of Holistic Experimentation Platforms (HEPs)

HEPs use **AI, real-time data, and predictive analytics** to optimize multiple business objectives simultaneously.

Key Advantage:

- **Maximize revenue growth** while protecting profit margins
- **Balance customer acquisition** with long-term retention
- **Optimize ad spend** without sacrificing brand perception

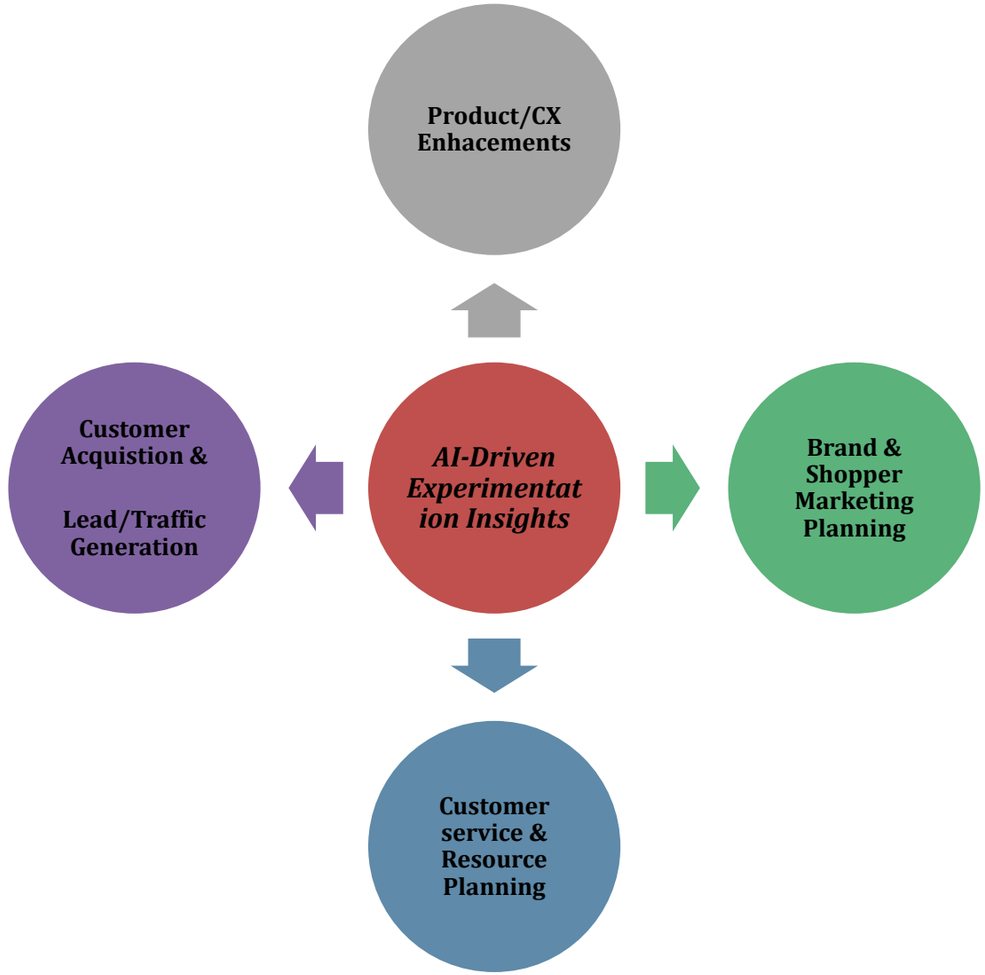


Beyond Traditional SaaS: Why HEPs Require a Custom Approach

HEPs are **not off-the-shelf SaaS solutions** but **custom decision-support frameworks** built around existing experimentation and analytics infrastructure.

Key Investment Areas:

- **Data Integration** – Unifying siloed data across departments
- **Cross-Functional Collaboration** – Aligning marketing, finance, and product teams
- **AI-Driven Optimization** – Using causal inference, regression, and multi-arm bandits
- **Continuous Testing Culture** – Driving ongoing hypothesis generation and strategy refinement



Successful HEPs enable smarter, data-driven decision-making across the organization.

Key Benefits of HEPs for Business Leaders

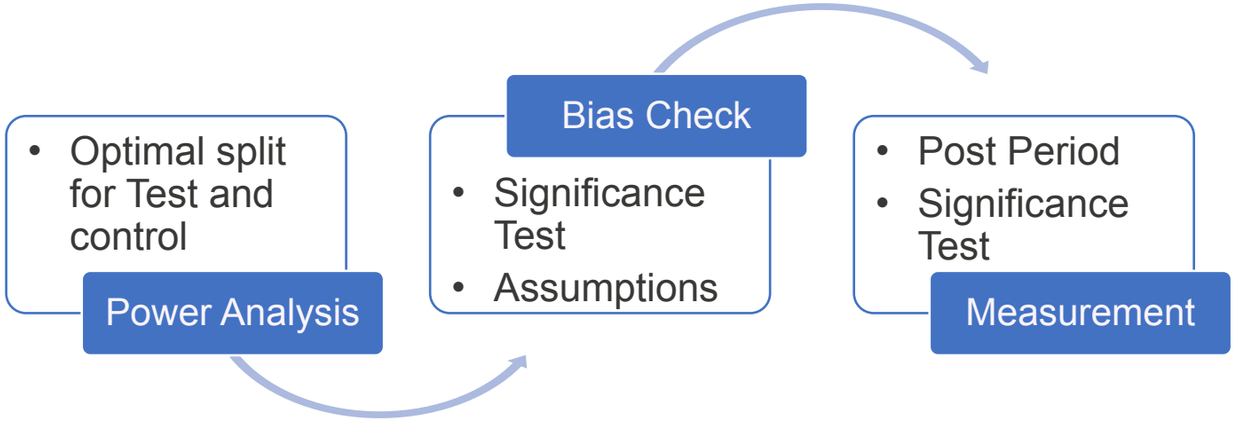
Optimize Conflicting Objectives – Balance revenue, costs, and customer experience dynamically. Predictive models adjust ad spend and messaging in real time.

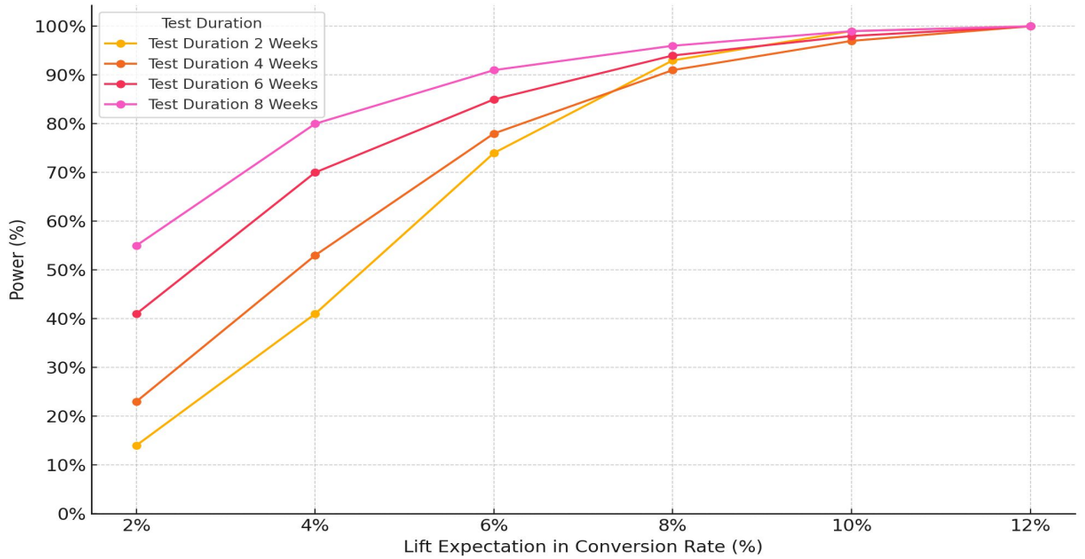
Real-Time Decision-Making – Process vast data sets instantly to identify and scale winning strategies.

Cross-Functional Alignment – Ensure marketing, finance, and product teams work toward unified goals for smarter decisions.

Single Objective: A Simple A/B Test: Driving Topline Growth

- A/B testing is a randomized experiment that compares a treatment (B) against a control (A) to measure its impact.
- Power analysis ensures a large enough sample size to detect real effects and reduce errors.
- Statistical tests (e.g., t-test, chi-square) determine if differences in key metrics, like conversion rate, are significant or just random variation.





Multi-objective: Using HEPs for Long Term Growth & Profitability

Unlocking High-value actions (HVAs) and their business impact

- **Identify HVAs:** Key actions like app installs & subscriptions
- **Track Behavior:** Use AI to predict actions leading to HVAs
- **Amplify HVAs**: Drive incremental HVAs using paid media
- **Measure Impact:** Link HVAs to revenue (short term) & retention (long term)
- **Optimize Continuously:** Refine campaigns based on insights

Accurate High Value Action Measurement using Synthetic Control Matching

- The best way to measure the impact of a High-Value Action (Premium Signups) is through a randomized A/B test.
- However, since users cannot be prevented from organic premium signups, a synthetic control group of non-premium signups serves as an effective alternative.
- This approach creates a statistically comparable baseline, enabling a robust and unbiased impact assessment.

Premium Signups

Which group to use as baseline?

General Population

Will produce biased results

Non-Premium Signups Synthetic Control

Will produce valid baseline to compare

Another Example of **Holistic Planning** to Balance Topline & Bottomline

An e-commerce company aims to **grow revenue** while **maintaining profit margins**. Their primary goal is **market share expansion**, but they also seek to **limit marketing spend** to improve efficiency and maximize ROI.

HEPs in Action:

- By leveraging **AI-powered Holistic Experimentation Platforms (HEPs)**, the company:
- Tests multiple business scenarios to **predict diminishing returns**
- Optimizes marketing spend to balance **growth and efficiency**

Results:

- **+8% Marketing ROI**
- **-2% Revenue Impact**
- **40% Cost Savings**

Illustrative data

Optimal

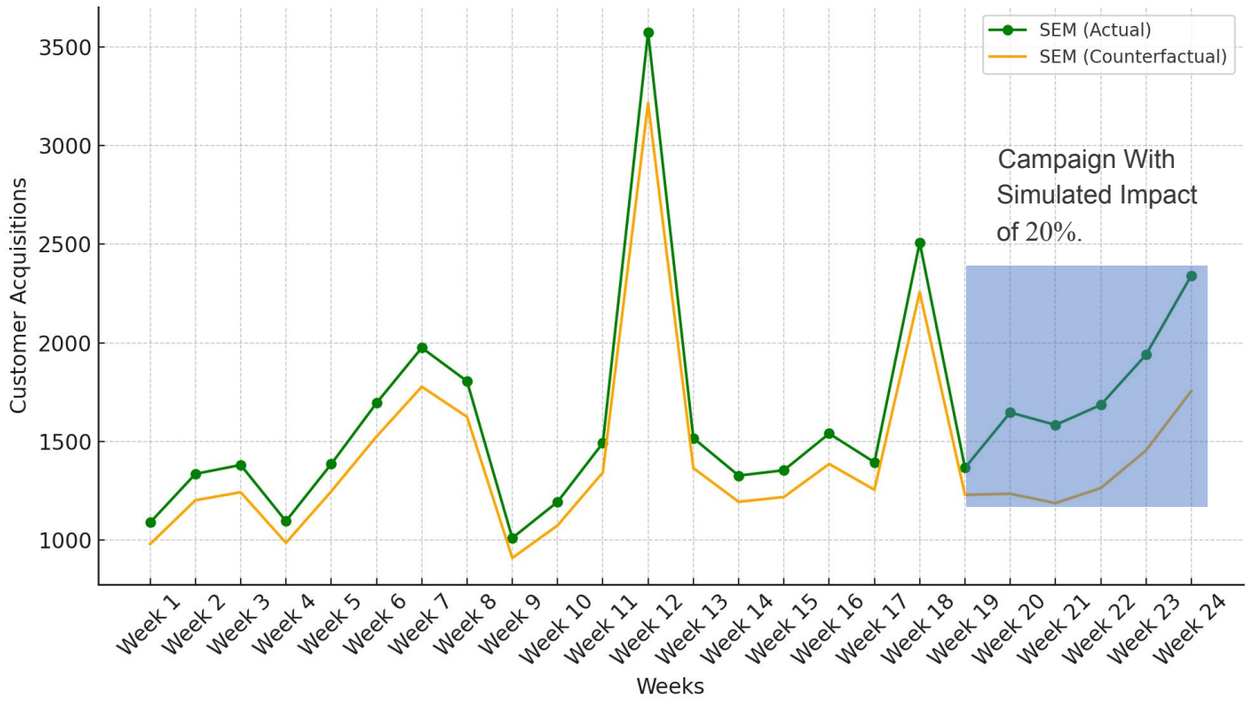
Advertising to customer base	Marketing Cost	Predicted Revenue	Marketing ROI (Revenue - Cost)
Top 10%	*200*	*3000*	*2800*
Top 20%	*400*	*5200*	*4800*
Top 30%	*600*	*7000*	*6400*
Top 40%	*800*	*8200*	*7400*
Top 50%	*1000*	*8800*	*7800*
Top 60%	*1200*	*9200*	*8000*
Top 70%	*1400*	*9300*	*7900*
Top 80%	*1600*	*9360*	*7760*
Top 90%	*1800*	*9400*	*7600*
100%	*2000*	*9400*	*7400*

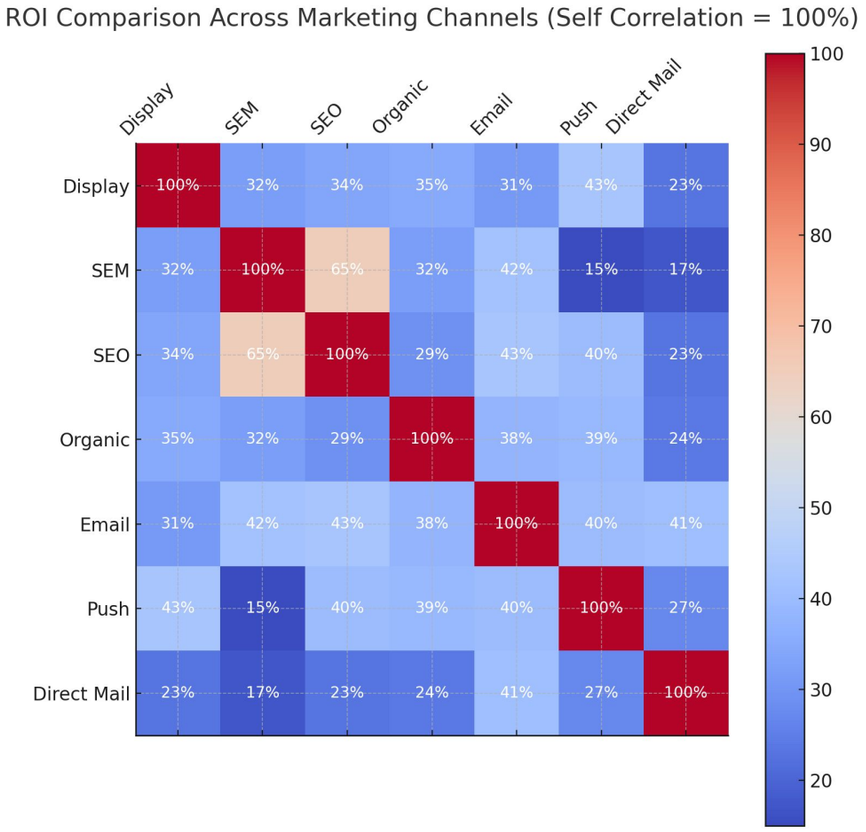
	AI-Driven Experimentation		
	Before	After	Lift
Marketing Cost	$2,000	$1,200	-40%
Revenue	$9,400	$9,200	-2%
Marketing ROI (Revenue - Cost)	$7,400	$8,000	8%

HEPs enable smarter decision-making by optimizing multiple objectives

Causal Inference in Deciding Buy vs. Build Decisions

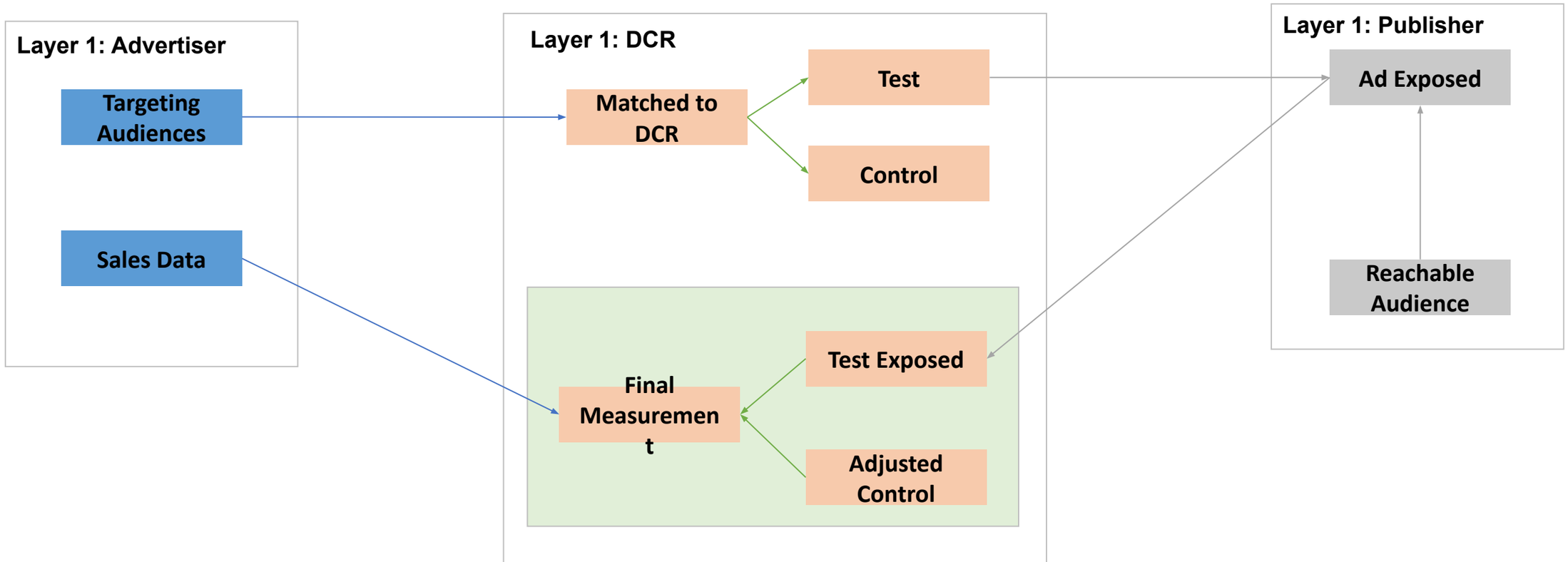
- We can use Bayesian Structural Time Series (BSTS) to estimate the causal impact of SEM conversions by creating a counterfactual using correlated non-SEM channels.
- The model accounts for seasonality, trends, and external influences, predicting expected signups without SEM.
- The difference between actual SEM signups and the BSTS-predicted baseline quantifies the true causal effect with statistical significance ($p < 0.05$).





Enhancing Offsite Experimentation with Clean Rooms

- Clean room experimentation enhances offsite measurement by securely integrating data across platforms while maintaining user privacy.
- It enables better control group matching and adjustments, accounting for differences in audience exposure and engagement.
- This leads to more accurate attribution and causal measurement, reducing bias and improving offsite campaign effectiveness.



Challenges in Implementing HEPs (And How to Overcome Them)

- **Data Silos & Quality Issues** – Require integrated data lakes and high-fidelity data for accurate AI-driven experimentation.
- **Cultural Resistance** – Leadership must drive cross-functional collaboration and incentivize holistic decision-making.
- **AI Talent & Infrastructure** – Companies need specialized expertise or partnerships to build and scale HEPs effectively.

Final Thoughts: Experiment Smarter Now

- HEPs enable smarter decision-making by optimizing multiple strategic priorities simultaneously.
- Moving beyond traditional testing drives sustainable growth and competitive advantage.
- Successful adoption requires planning, leadership support, and tech investment.
- Businesses that embrace holistic experimentation today will lead in the AI-driven future.