

Meridian Playbook Ver.1.0

October 2026 Hakuodo Inc. / Hakuodo DY ONE Inc.

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CHAPTER

1

MMM and Meridian's Positioning Within It

1.1. What is MMM

MMM is a method for statistically estimating the business contribution of media and marketing initiatives without relying on cookies.

Conceptual Diagram of a Marketing Mix Model



Benefits of Using a Marketing Mix Model

A method for statistically estimating marketing effects **without relying on cookies**

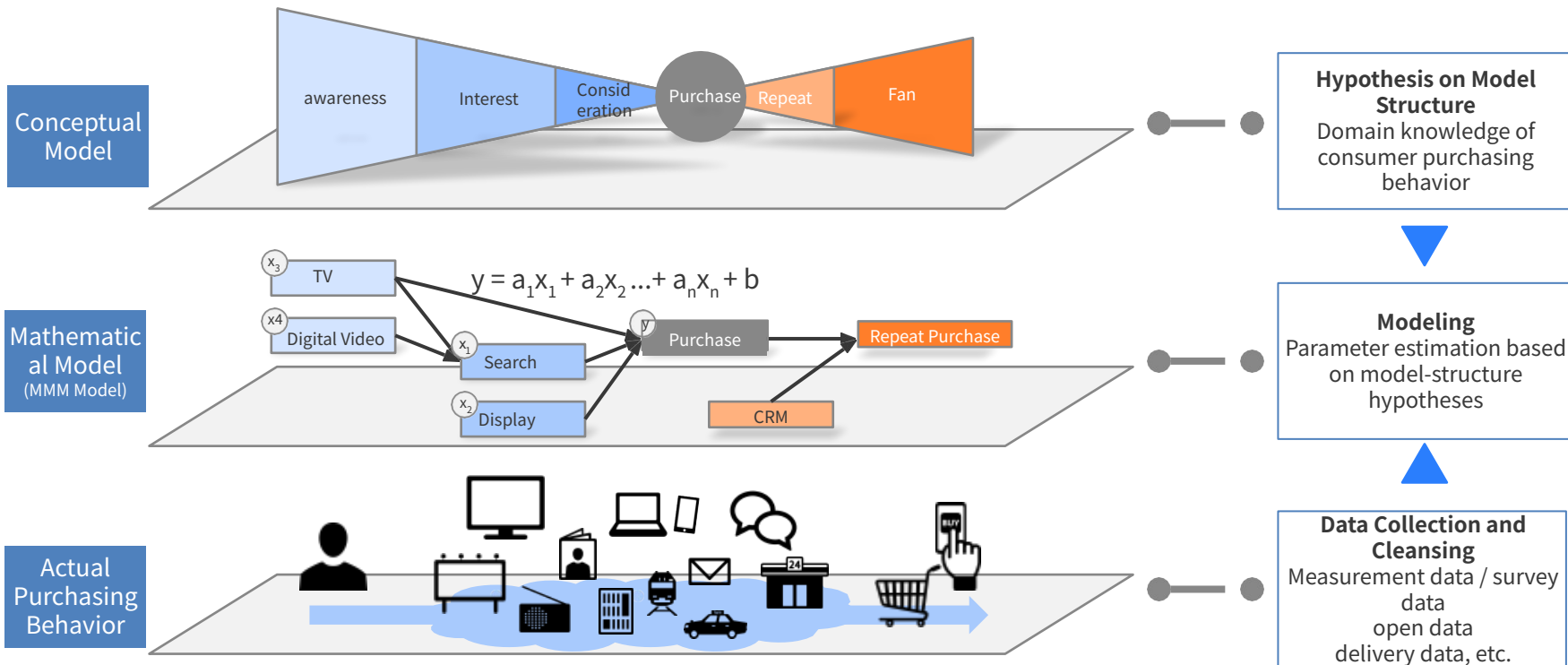
Can estimate marketing effects on business outcomes such as acquisitions, units sold, and sales

Can estimate the effects of various media, **marketing initiatives, and external factors—not only digital ads**

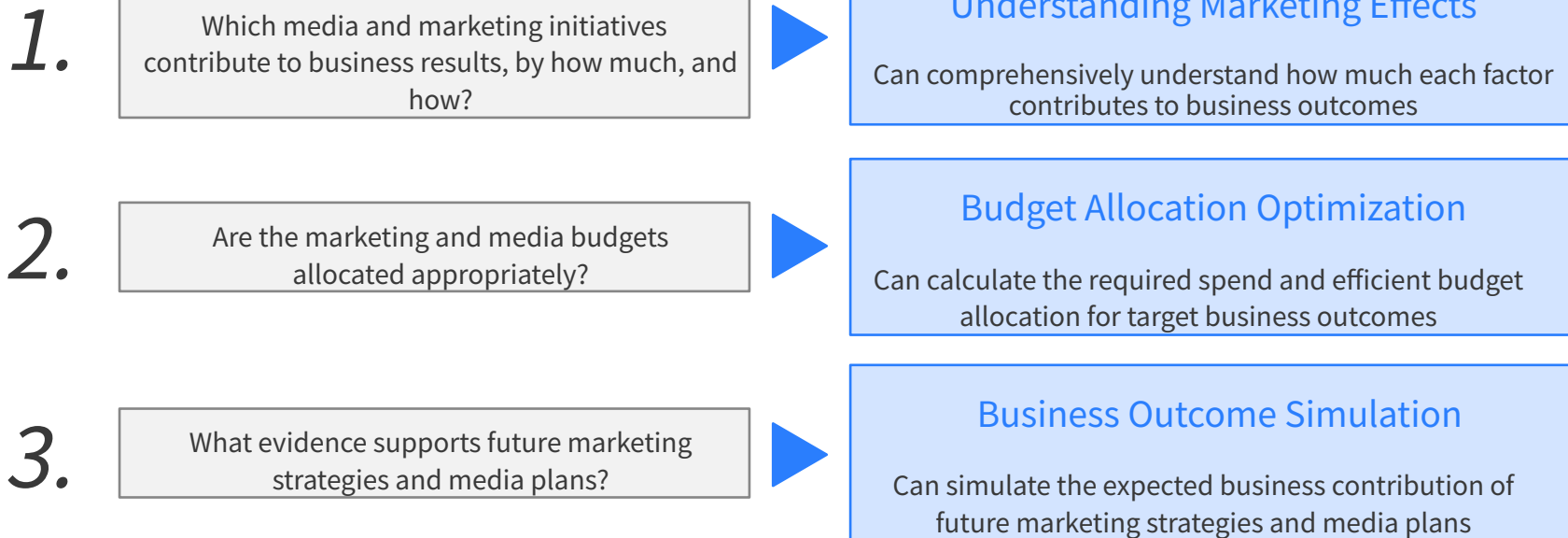
There are two PDCA cycles: a small PDCA cycle that runs quickly using intermediate indicators, and a large PDCA cycle that runs less frequently but closer to KGI. MMM sits in the large PDCA cycle, closer to KGI, where it helps understand the marketing structure and drive the cycle.

	Purpose	Metrics	Frequency	Measurement methods (examples)
Large PDCA	Broader, strategic marketing investment decisions	Final outcomes (Sales / contracts, etc.)	least	MMM Experiments, etc.
Small PDCA	Faster, more detailed campaign-level optimization	Intermediate metrics (awareness / search, etc.)	high	Brand Lift R&F Analysis, etc.

In MMM, data measuring consumer behavior and psychology is collected and processed, and the relationship between media/marketing initiatives and business outcomes is expressed as a mathematical formula.



By using MMM, it becomes possible to diagnose, forecast, and prescribe media and marketing initiatives based on business contribution.



1.2. What is Meridian

An open-source MMM provided by Google.

Hakuhodo DY Group is a certified partner in Japan and the region, and can receive technical support from Google.

2025



Meridian

An open-source MMM product released by Google in 2025

Hakuhodo DY Group is a certified partner in APAC

Google and the Hakuhodo DY Group have built a strong partnership over many years. Together, we have conducted analyses across a wide range of industries in Japan and overseas, establishing a proven and trusted partnership.

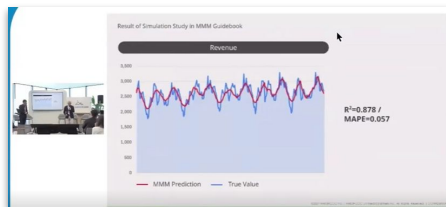
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2024

2025



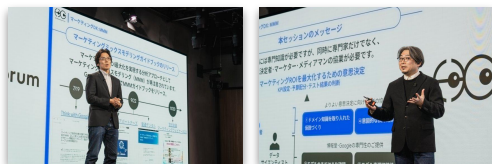
MMM Guidebook | Joint Release



Google APAC Measurement Summit



Certified Meridian Partner



Hakuhodo | Google Forum Joint Presentation



APAC Summit'25 Joint Presentation

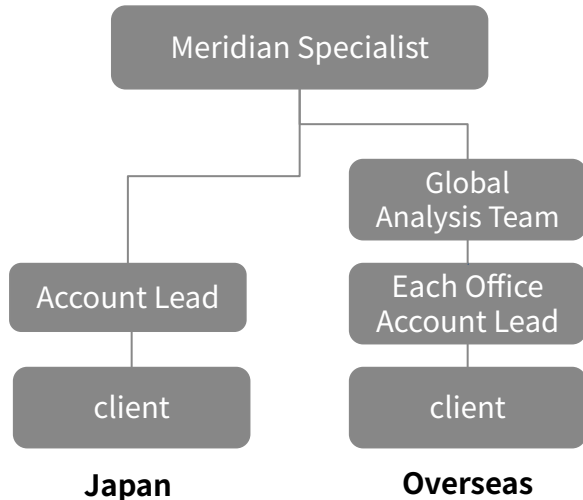


Implemented 6 projects including overseas projects (automotive, auto insurance, real estate, beverages, etc.)

After several years of promoting Meridian, Hakuhodo DY Group offers the following three strengths.

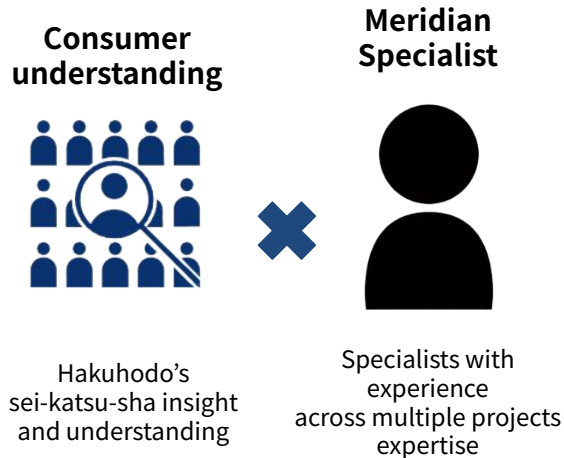
Deployment Capabilities in Japan and Overseas

Build an organization centered on Hakuhodo DY Group Meridian specialists that can support projects in Japan and overseas.



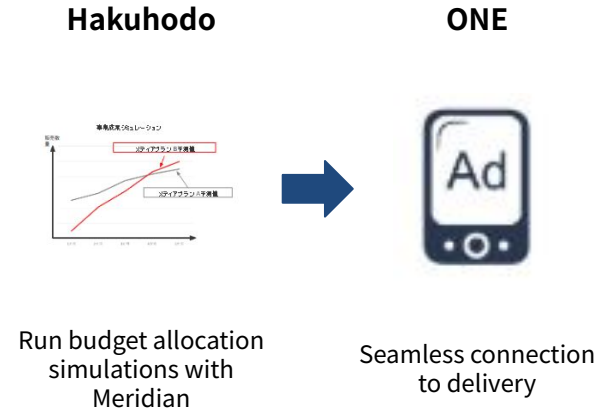
Integration of Consumer Understanding and Expertise

Combine Hakuhodo DY Group's long-cultivated sei-katsu-sha insight with Meridian specialist expertise to provide high-quality analysis.



Seamless Connection to Execution

Based on simulation results, collaborate with Hakuhodo DY ONE to connect seamlessly to media activation.



While MMM generally helps understand marketing structures,
Meridian is an MMM specialized in visualizing the effects of media investment



WHAT
What it targets

Media-effect visualization

Cross-TV/digital media-effect estimation
Optimal frequency calculation
Area-level effect estimation

WHERE
Where the value lies
(client benefits)

Media (esp. YouTube)

Enables media allocation based on
actionable insights

WHY
Why Hakuodo DY
Group

Based on ad-effect visualization

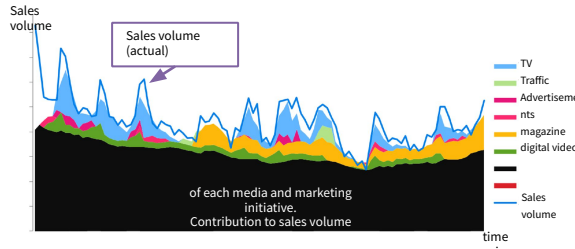
a catalyst for YouTube (video) sales

After visualizing marketing effects, Meridian can optimize budget allocation and run future media simulations. Example outputs are shown below.

Understanding Marketing Effects

Can comprehensively understand the contribution of each factor to business outcomes

▼ Estimated contribution of each media and marketing actions

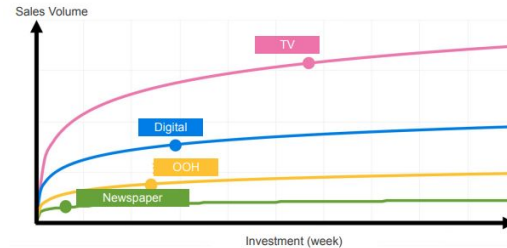


Cost-effectiveness (ROI) of each media and marketing initiative

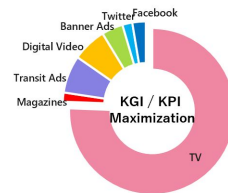
Budget Allocation Optimization

Can calculate required costs and efficient budget allocation for target business outcomes

▼ Resilience of each media to investment



▼ Optimal budget allocation for goals



※Figures are sample data

[Optimal Budget Allocation]

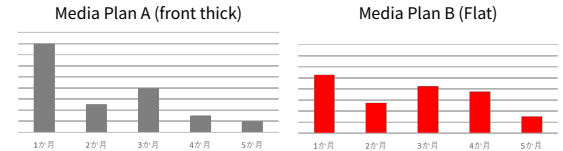
TV	151.2 million yen (75.6%)
Magazines	3.55 million yen (1.8%)
Transit Ads	14.55 million yen (7.3%)
Digital Video	13.28 million yen (6.6%)
Banner Ads	8.32 million yen (4.2%)
Twitter	3.86 million yen (1.9%)
Facebook	5.24 million yen (2.6%)

TTL: 200 million yen

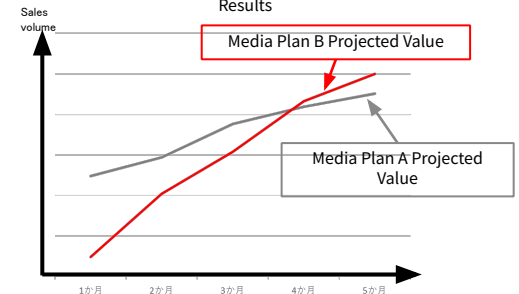
Business Outcome Simulation

Can simulate the expected business contribution of future marketing strategies and media plans

▼ Media Plan and Business Outcome Simulation

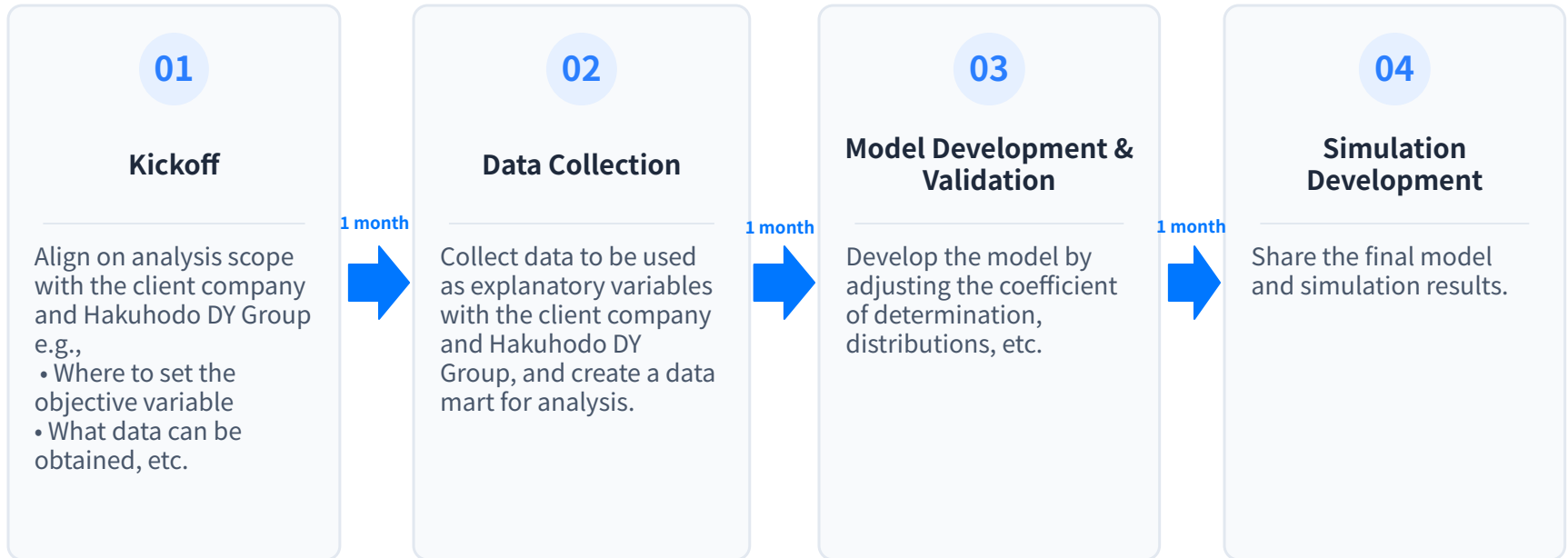


Simulation of Project Results



From kickoff to actual simulation, implementation is possible in about 2–3 months.

Overall schedule (start to delivery): 3 months



Meridian has the following three key features.

Reduced Data-Collection Burden

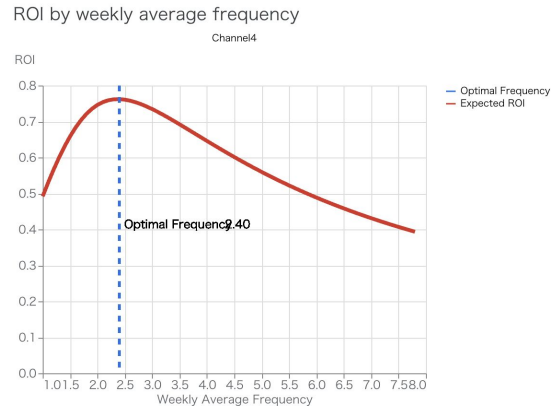
Data collection for analysis can be costly, but as a certified Meridian partner, Hakuhodo DY Group can automatically extract Google Ads and DV360 data, reducing the data-collection burden.

Campaigns / Ad groups					
Product	Campaign Type	Bid Strategy	Device	Geography	Metrics
YouTube	Search	Manual CPM	Mobile	210 DMAs	Impressions Clicks Views Cost
	Marhead	Manual CPC	Desktop		
	Bumper	Manual CPV	TV Screens		
	Non-skip	ICPA	Other		
Display	Shopping	Smart			
	In-feed	Discovery			
	TV for Reach	ICPC			
	TV for Action	ICPM			
Video Action	Lightbox	IRDAS			
	Video Action	Max Clicks			
	Video Reach	Max Convs			
		MaxConvValue			
	PMAX				
	Local				
	App Promo				
	Demand Gen/Discovery				

Time | Daily or weekly level with up to three years of history*

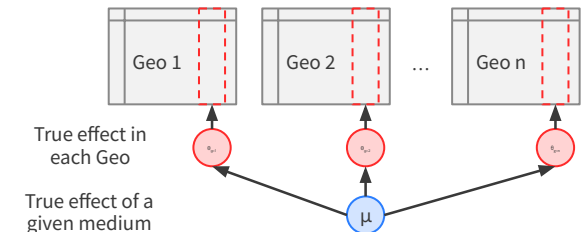
Frequency Optimization

Because YouTube and TV reach & frequency data can be used, optimal frequency can be calculated.



Consideration of Area Characteristics

Because Meridian can account for area characteristics, if the objective variable is provided by area: (1) more data points enable accurate model building even with fewer time points; and (2) ROI analysis and simulations can be performed by area.



As a certified Meridian partner, Hakuhood DY Group enables automated extraction of Google data, including regional-level media delivery data and YouTube reach and frequency data. This significantly reduces the burden of data collection. Google Query Volume (GQV), an indexed measure of brand-related Google search volume, can also be incorporated as an input to help identify demand seasonality.

MMM Data Platform | Standard Projects | Recurring Projects

Hakuhood

Y Add a filter

Requested projects

Case ID	Project name	Advertiser	Brands	Country	Date range	Status	Requested date ↓
						Data Validation in Progress	12/11/25
						Data Validation in Progress	06/19/25
						Request Received	06/19/25
						Request Received	06/19/25
						Data Validation in Progress	05/16/25

Items per page: 5 1 - 5 of 6 < >

Data available or collected projects

Case ID	Project name	Advertiser	Brands	Country	Date range	Status	Requested date ↓
						Data Delivered to Data Lake on 09/10/25	09/09/25
						Data Delivered to Data Lake on 09/02/25	09/01/25
						Data Delivered to Data Lake on 09/02/25	09/01/25
						Data Delivered to Data Lake on 08/11/25	08/08/25
						Data Shared with Owner	08/07/25

MMM Data Platform

Geo-level Data

Can retrieve Google media delivery data by region (prefecture level in Japan) all at once

GQV (Google Query Volume)

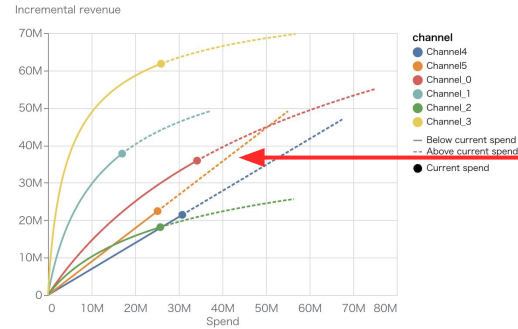
Can retrieve indexed Google search volume for a specified brand

Meridian can analyze not only media allocation but also optimization at the R&FQ level for TV/YouTube. As noted earlier, YouTube data can be acquired automatically, and Hakuhodo DY Group can also extract TV data at FQ granularity.

$$\begin{aligned}
 y_{g,t} = & \mu_t + \tau_g + \sum_{i=1}^{N_C} \gamma_{g,i}^{[C]} z_{g,t,i} \\
 & + \sum_{i=1}^{N_N} \gamma_{g,i}^{[N]} x_{g,t,i}^{[N]} \\
 & + \sum_{i=1}^{N_M} \beta_{g,i}^{[M]} \text{HillAdstock} \left(\{x_{g,t-s,i}^{[M]}\}_{s=0}^L; \alpha_i^{[M]}, ec_i^{[M]}, slope_i^{[M]} \right) \\
 & + \sum_{i=1}^{N_{OM}} \beta_{g,i}^{[OM]} \text{HillAdstock} \left(\{x_{g,t-s,i}^{[OM]}\}_{s=0}^L; \alpha_i^{[OM]}, ec_i^{[OM]}, slope_i^{[OM]} \right) \\
 & + \sum_{i=1}^{N_{RF}} \beta_{g,i}^{[RF]} \text{Adstock} \left(\{r_{g,t-s,i}^{[RF]} \cdot \text{Hill}(f_{g,t-s,i}^{[RF]}; ec_i^{[RF]}, slope_i^{[RF]})\}_{s=0}^L; \alpha_i^{[RF]} \right) \\
 & + \sum_{i=1}^{N_{ORF}} \beta_{g,i}^{[ORF]} \text{Adstock} \left(\{r_{g,t-s,i}^{[ORF]} \cdot \text{Hill}(f_{g,t-s,i}^{[ORF]}; ec_i^{[ORF]}, slope_i^{[ORF]})\}_{s=0}^L; \alpha_i^{[ORF]} \right) \\
 & + \epsilon_{g,t}
 \end{aligned}$$

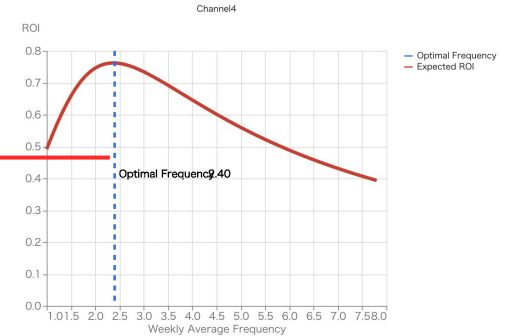
When R&F data is available, this function estimates the effects of reach and frequency.

Response curves by marketing channel (top 6)



Note: The response curves are constructed based on the historical flying pattern and present the cumulative incremental revenue from the total media spend over the selected time period.

ROI by weekly average frequency

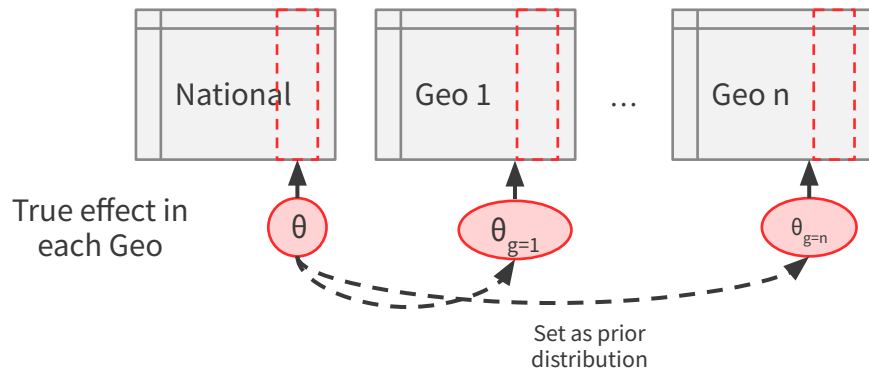


Note: Optimal frequency is the recommended average weekly impressions per user (# impressions / # reached users) that maximizes ROI. When multiple channels have reach and frequency data, only the channel with the highest spend will be displayed. The same chart can be viewed for all other channels as described in "Optimize frequency" in the User Guide.

However, when solving for optimal F, y increases linearly with R.

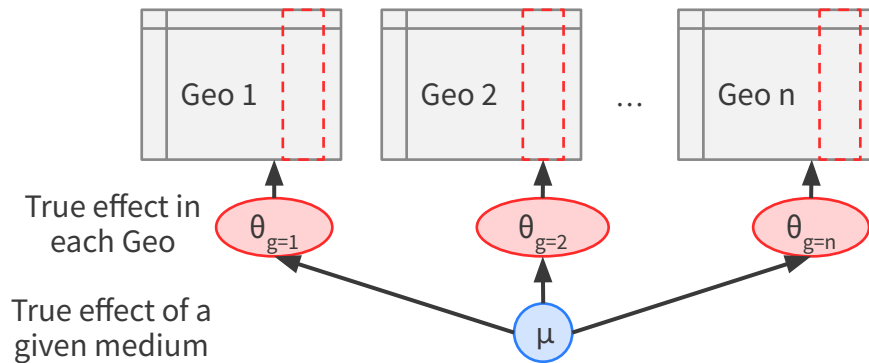
By adopting a hierarchical Bayesian model and using area-level data, high-quality models can be built even with limited data (at least two years of data recommended).

Geo support in Analytics AaaS



- At least 3 years of data is required
- If models are built by Geo, effects are estimated separately and commonality may not be observed
- It is possible to reflect the posterior distribution of the national-level model in Geo-level models

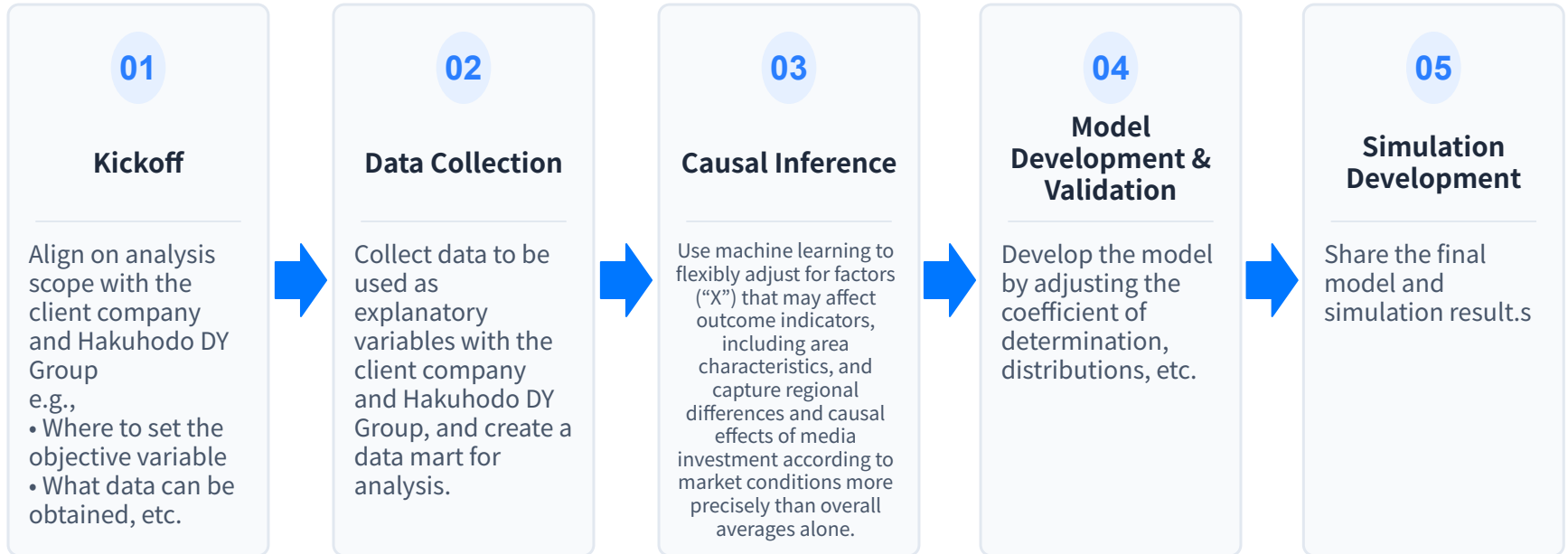
Geo support in Meridian (hierarchical Bayes)



- Required data period: at least 2 years
- Variance in media effects becomes smaller
- Outlier Geos are adjusted

From kickoff to actual simulation, implementation is possible in about 2–3 months.

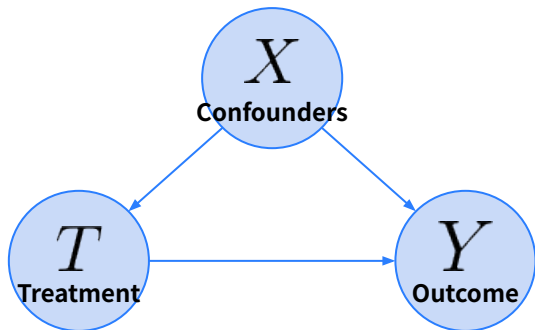
Overall schedule (start to delivery): 3 months



Causal Inference × Regional Optimization

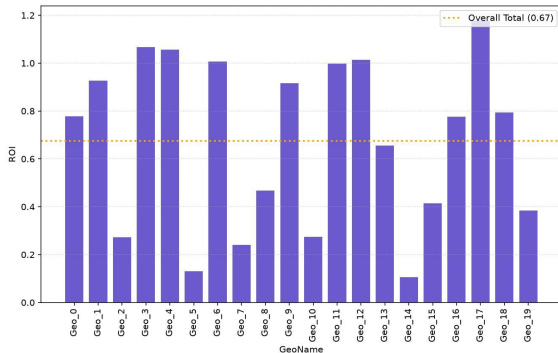
Use Causal Machine Learning (Causal ML) to calculate ROI by area and reflect it in MMM priors, enabling a high-accuracy model.

Organize causal relationships



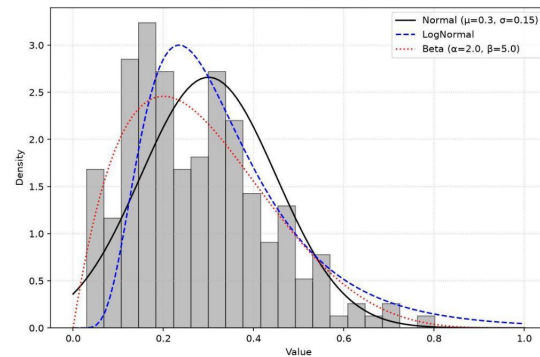
Classify each variable as an outcome metric such as a KPI, a treatment variable such as ad spend, or a confounder that affects both the outcome and treatment. Properly controlling confounders is essential.

Estimate causal effects with Causal ML



Using Causal ML makes it possible to calculate area-level ROI while flexibly adjusting for observable confounders such as external factors. Effects under specific conditions such as regional characteristics or market environment are called Conditional Average Treatment Effects (CATE).

Calculate ROI and reflect it in MMM



Reflect ROI calculated by Causal ML in MMM priors. Using informative priors helps prevent estimated contributions and ROI from deviating significantly from actual ranges and enables a high-accuracy model.

Note: The graphs on this slide were created using dummy data. Graph rendering references the doubleml-pipeline published on Google's official GitHub.

1.3. Suitable clients

Visualize the value of video investment for clients strong in performance marketing, visualize area-level consumer understanding and optimal allocation, and optimize integrated advertising and promotional spend beyond advertising alone. Flexible analysis can be conducted for various client challenges.

Acquisition-focused projects
in
Expanding video investment

Visualize ad effects of currently limited video investment in projects focused on acquisition.

Consumer characteristics by area
captured for
Media-effect optimization

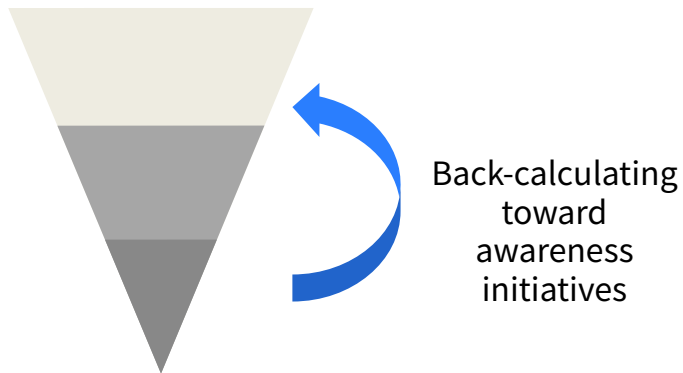
Visualize the media effects of video ads in projects focused on awareness.

Integrating promotion and advertising spend
Media-effect optimization

Optimize budgets across promotional areas as well, including whether flyers are needed in the first place—not only media effects.

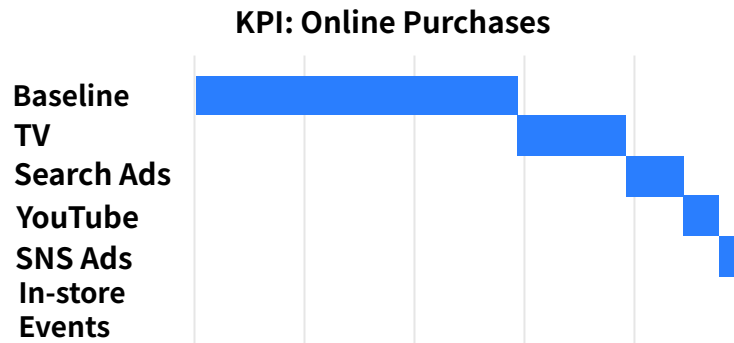
In many direct-response projects, once demand harvesting is exhausted, teams work backward and invest in awareness delivery. By visualizing the true contribution of awareness initiatives to acquisition, communication quality can be improved.

Challenges in direct-response projects



When direct-response initiatives are exhausted, shift upstream to awareness initiatives and focus on video.

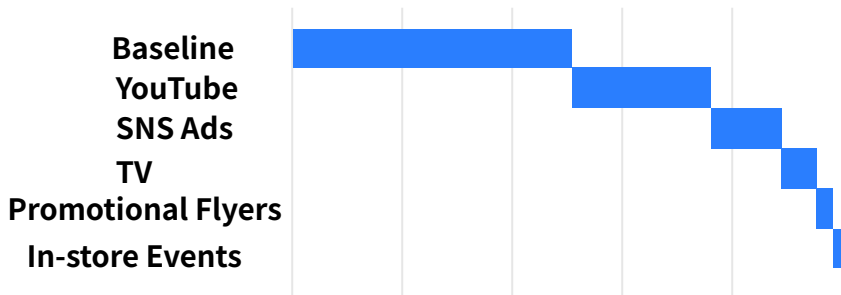
CV contribution of video (awareness) initiatives



Visualize contribution to acquisition across awareness-to-acquisition initiatives and optimize awareness initiatives in a CV-driven way.

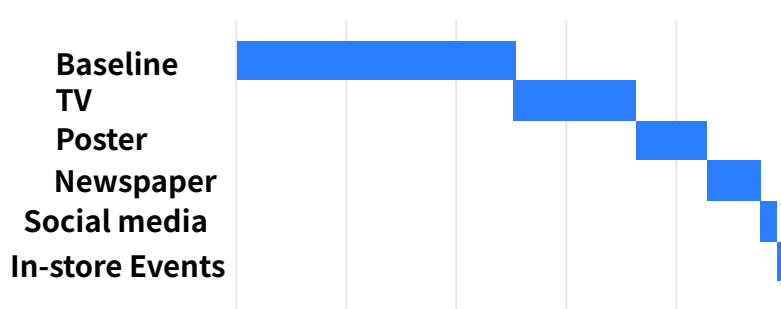
In many industries, the media emphasized differ between major cities and regional cities. Causal inference × area optimization visualizes optimal media allocation by area.

Major Cities



In major cities, the digital shift is advancing and YouTube/SNS effects are prominent.

Regional Cities



In regional cities, traditional media such as TV and promotional flyers rank higher in impact.

Clients often manage promotion spend and advertising spend separately, creating challenges for overall optimization. Evaluating both together enables integrated promotion/advertising media optimization.

client Situation

Promotion Initiatives

Promotional Flyers

SNS Campaigns

In-store Events

Coupons

Advertising Initiatives

TVCM

YouTube Ads

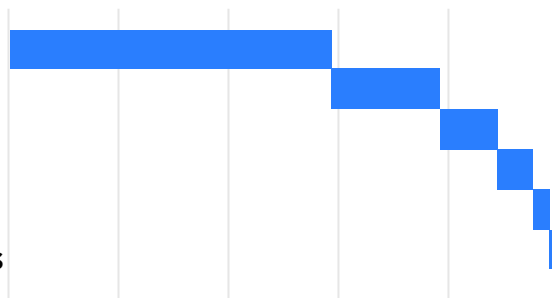
SNS Ads

Newspaper Ads

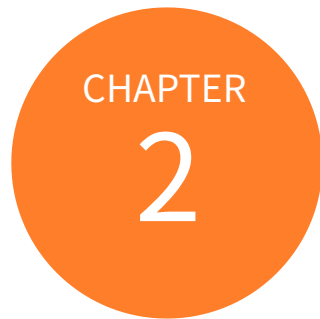
A wide range of promotion and advertising initiatives are being implemented, but overall optimization has not been achieved.

Simulation Example

Baseline
YouTube
Poster
TV
Coupon
In-store Events



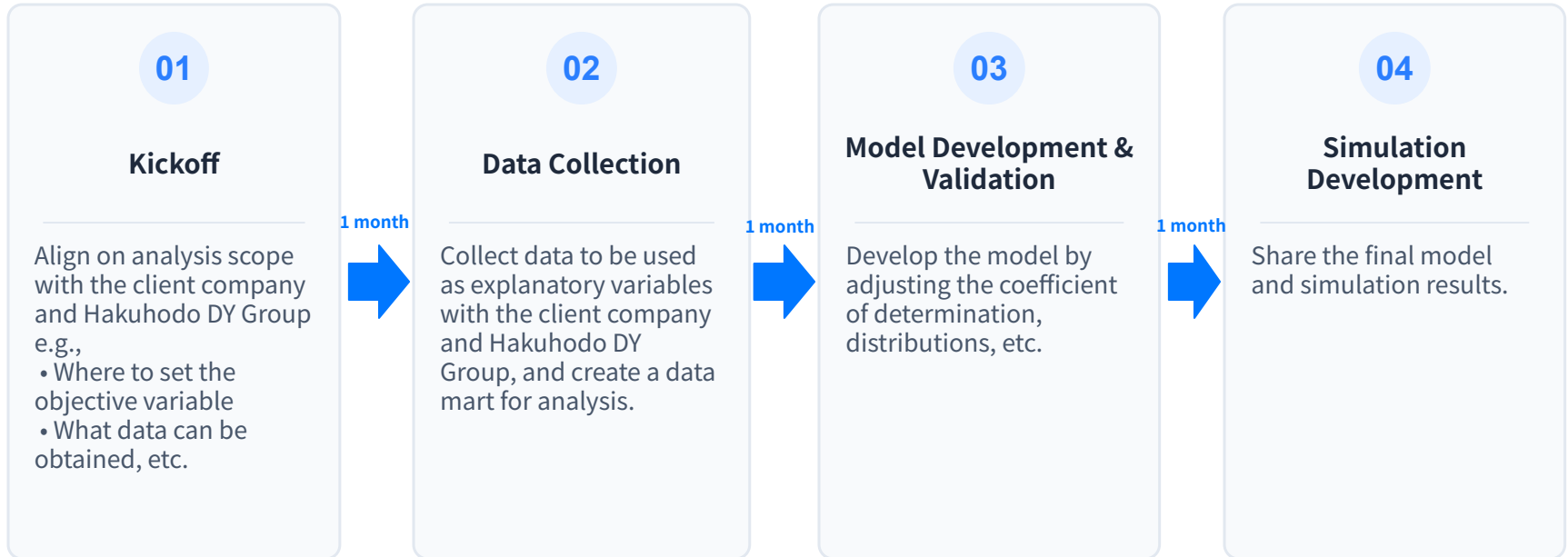
Integrate promotion and advertising spend, build a model, and optimize them together.



Detailed Meridian Analysis Flow

From kickoff to actual simulation, implementation is possible in about 2–3 months.

Overall schedule (start to delivery): 3 months



2.1. Analysis Design

Organize the data used for analysis and create a data mart.
Because a wide variety of data can be used, align with the analyst as needed.
*As a recommendation, at least two years of each data type is preferable.

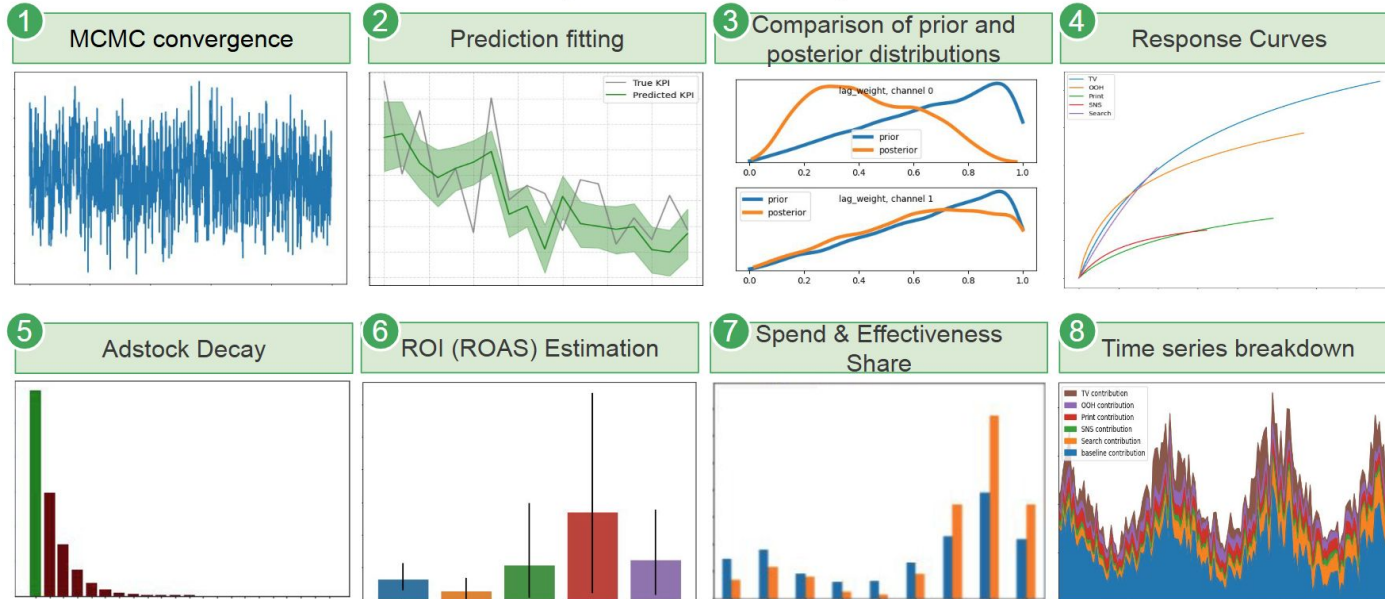
	Data Type	Metric	Geo Granularity
Outcome Variable	App Downloads / First-Time Users	App Downloads / First-Time Users	By Area
Digital Media	PF x Campaign Performance by Menu	imp, Click, Spend	Nationwide
	Google Ads, DV360	imp, Click, Spend	By Area
	YouTube	imp, Click, Spend, R&F	By Area
Search Volume	Google Query Volume	Index	By Area
Mass Media	TV	GRP, Spend	By Area
	Newspapers / Magazines	Publication Date, Publisher, Spend	By Publisher
	Out-of-Home (OOH) / Transit Advertising	Location, Spend, Campaign Period	By Placement
Other	Events	Major Event Name, Event Period	By Area / Nationwide
	Regional Demographics	Population, Number of Households, etc.	By Area

2.2. Estimating Media Effects and Validating the Model

Check whether the model has learned correctly mathematically and whether the results are valid and reliable from a business perspective.

Validate the model mainly across the following eight points to build the optimal model.

Primary model evaluation points*1

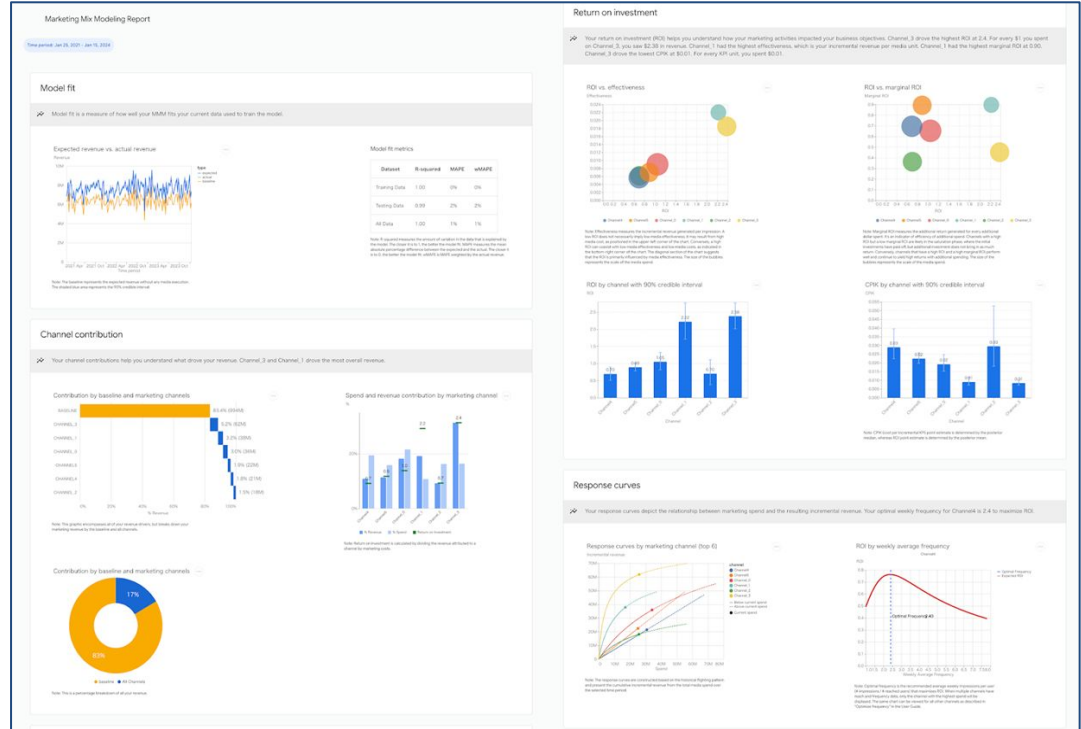


2.3. ROI Analysis and Simulation

ROI Analysis Items

- Model fitting
 - R^2 / MAPE (Mean Absolute Percentage Error)
 - Convergence of each parameter
- Estimated media contribution and ROI
- ROI and marginal ROI of each medium
- Elasticity of each medium

(relationship between spend and incremental sales)



Simulations can be run according to planning conditions.

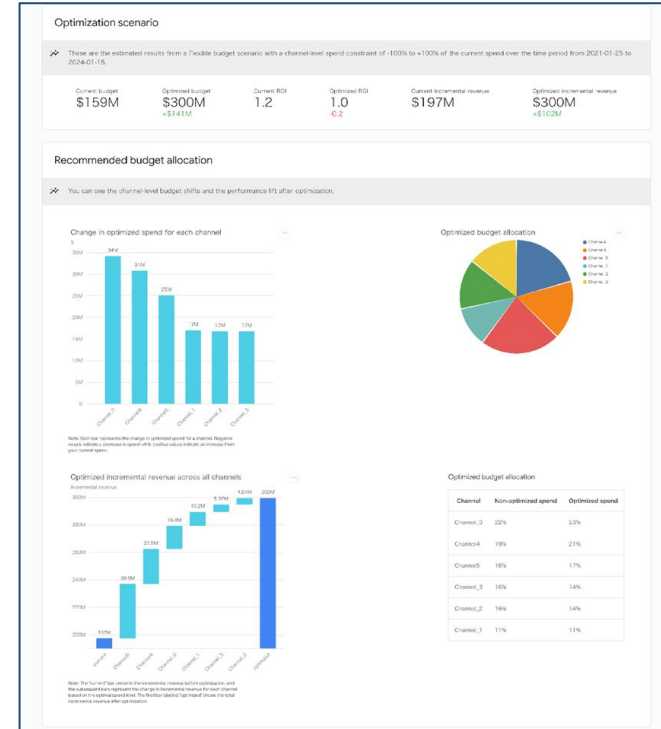
Simulation Examples

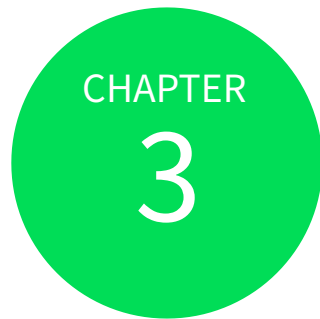
① Optimizing media budget allocation within a fixed total budget

- Maximizing sales
- Minimizing ROI

② Maximizing sales while maintaining ROI above a certain level

- Total media budget
- Optimal media budget allocation



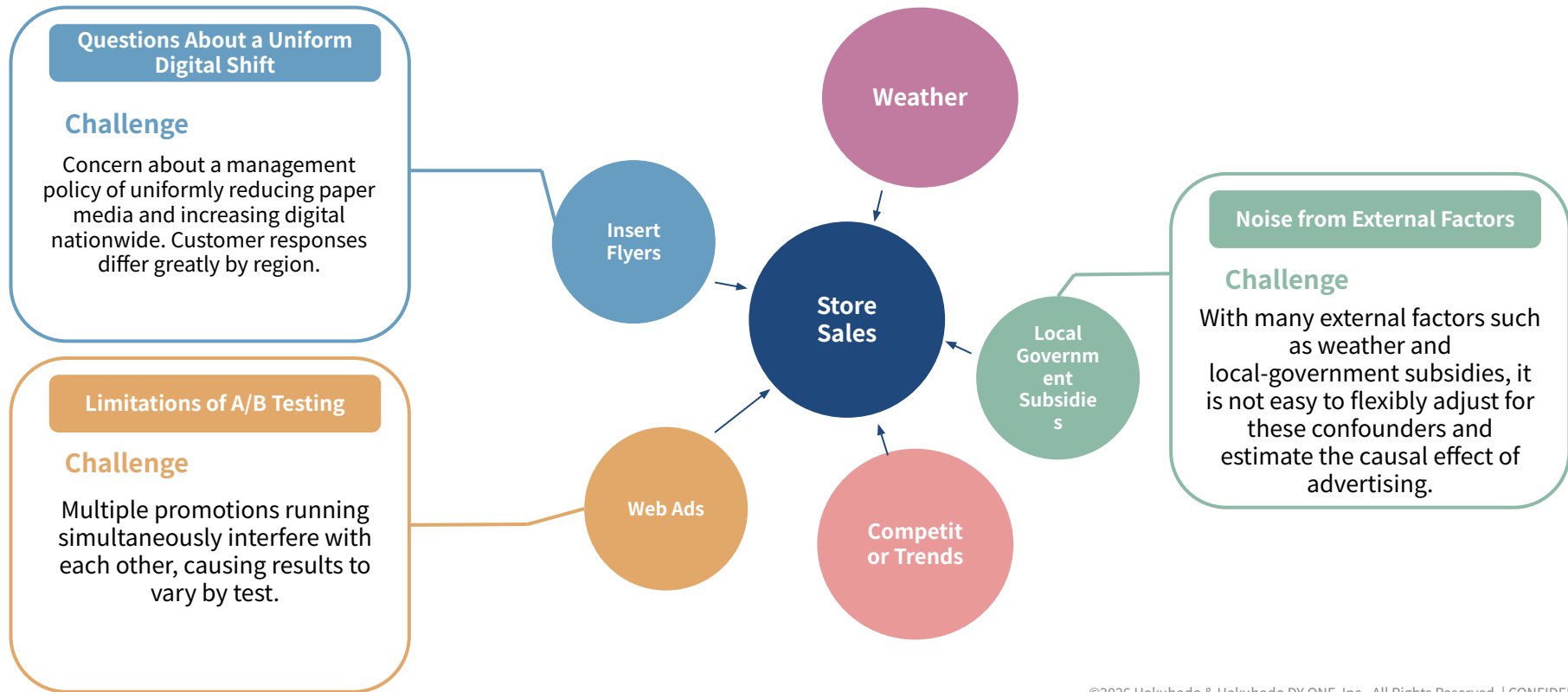


Meridian Case Study

3.1. Regional Optimization Verification in the EDION Project

Regional Optimization and Integrated Promotion/Advertising Optimization in the EDION Project (Challenges)

In the consumer electronics industry, sales are strongly influenced by external factors, so determining how to allocate investment based on data under complex external conditions is a major challenge.



Regional Optimization and Integrated Promotion/Advertising Optimization in the EDION Project (Approach 1)

Break through the limits of local approaches such as A/B testing and conventional MMM that only captures nationwide-average trends. Establish a hybrid evaluation method that simultaneously enables macro-level overview and micro-level conditional optimization according to market environment and regional differences.

	Traditional Approaches (e.g., A/B Testing)	Conventional MMM	MMM × Casual ML
Evaluation Perspective	Local / Micro-level	Holistic / Macro-level (Average Trend)	Holistic with Conditional Insights (Hybrid Approach)
Handling External Factors	Limited (Easily affected by noise from concurrent activities)	Strong (Well suited for overall trend analysis)	Very Strong (Bias mitigation through Causal ML)
Capturing Regional Differences	Difficult (Results vary across individual tests)	Limited (Restricted to national average trends)	High Granularity (Estimation of Conditional Average Treatment Effects (CATE))
Conclusion	Challenges in reproducibility and accuracy	Best suited for macro-level budget allocation	Enables micro-level optimization tailored to regional and market differences

Regional Optimization and Integrated Promotion/Advertising Optimization in the EDION Project (Approach 2)

Use Causal Machine Learning (DML) to calculate empirical area-level ROI with noise and bias minimized as much as possible. Inject this into Meridian (Bayesian inference) as an anchor prior to reduce overdependence on data assumptions and maximize simulation reliability.

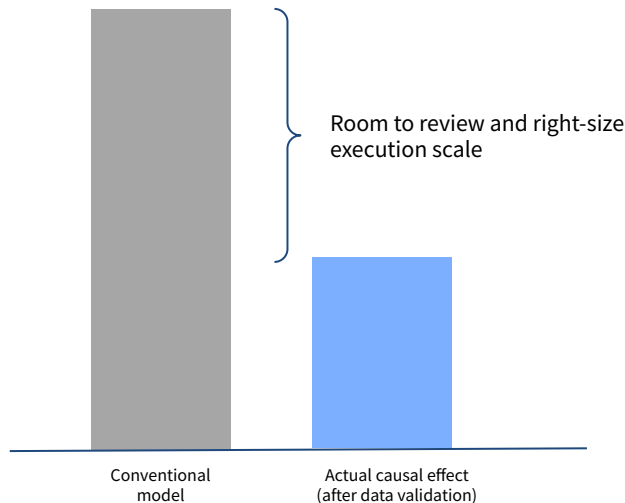


*In practice: (1) estimate ROI by region using DML; (2) cluster regions using media ROI data by region; and (3) build a model for each regional cluster, setting the average ROI of regions within the cluster as the Meridian ROI prior.

Regional Optimization and Integrated Promotion/Advertising Optimization in the EDION Project (Results)

Actual results showed regional differences of more than 4x in investment efficiency. Identifying the optimal combinations of areas and initiatives enables optimization of overall marketing initiatives.

Right-sizing paper media execution based on data



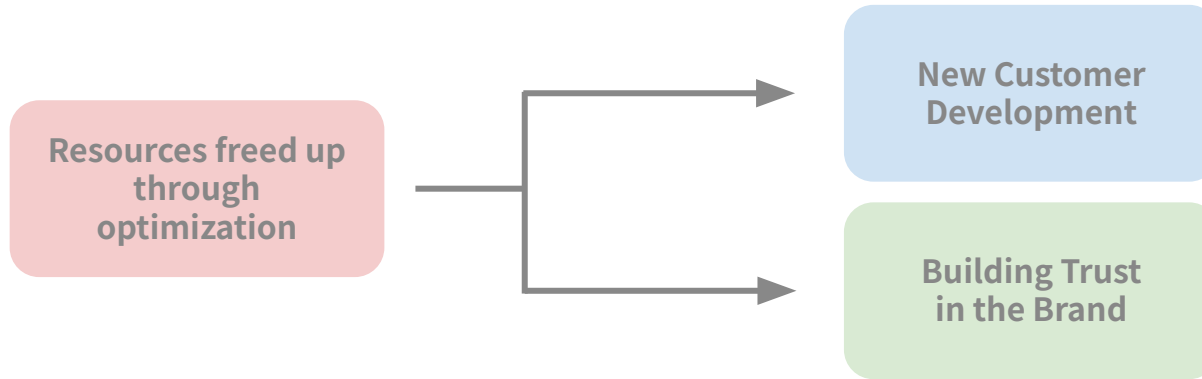
For DM, a long-standing priority promotion, variation in investment effectiveness by area was visualized.

Analyze and quantify regional differences in media effects



Rather than a uniform digital shift, the results clearly separated areas where paper is effective from areas that should shift to digital.

Based on media investment optimization with Meridian, create value through appropriate investment allocation and drive true marketing transformation.



From optimizing investment allocation to strategic reinvestment for the future

Strategically reinvest the resources created by optimizing marketing investment allocation as funds to approach new customers who can continue using the brand over the long term.

“Trust” as the premise for price appeals

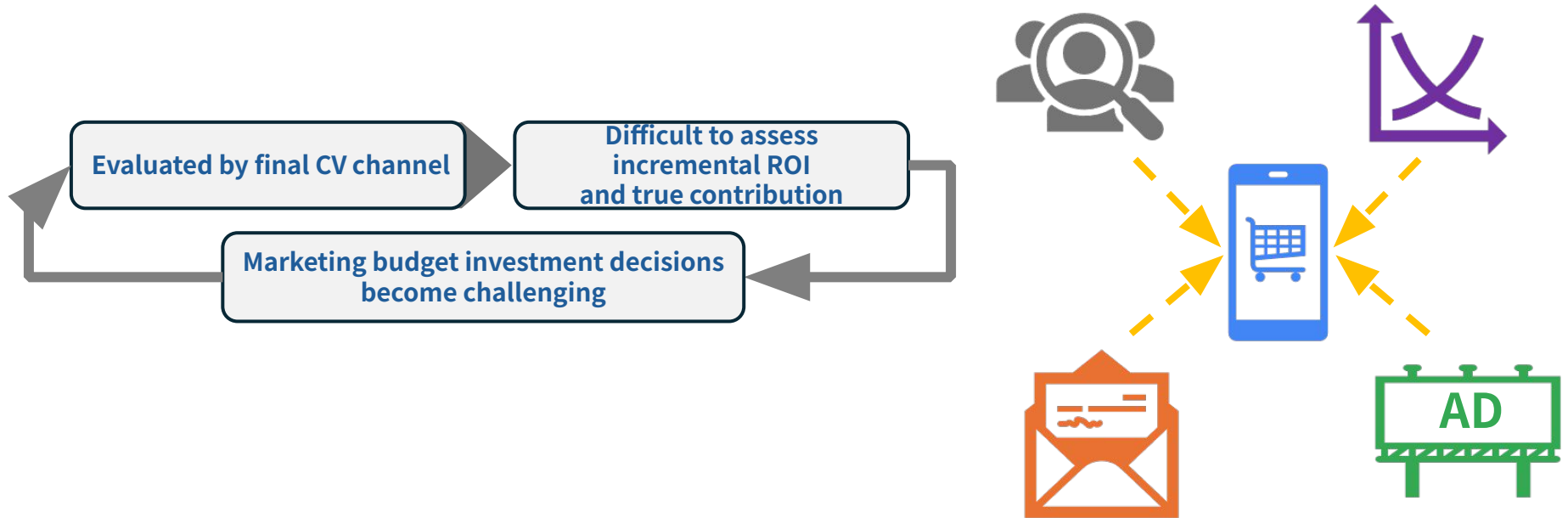
Because discount campaigns depend on trust in the brand, shift the perspective from short-term efficiency to building a medium- to long-term communication foundation.

3.2. Conversion Optimization Validation for a Taiwan Health Supplement Brand

Evaluating the Effectiveness of Multi-Channel Marketing for a Taiwan Health Supplement Brand

Evaluation of Multi-Channel Marketing Effectiveness & Conversion Optimization for a Taiwan Health Supplement Brand

A Taiwan Health Supplement Brand deploys a diverse and comprehensive set of marketing channels, including online advertising, various initiatives, direct mail, and SMS. However, precisely understanding the true impact of each channel had become a major challenge because the channel mix was so broad.



CPA

Traditional key evaluation metric. Direct, but not sufficiently precise.

ROI

A high ROI does not automatically mean additional investment; growth potential must be evaluated.

Saturation

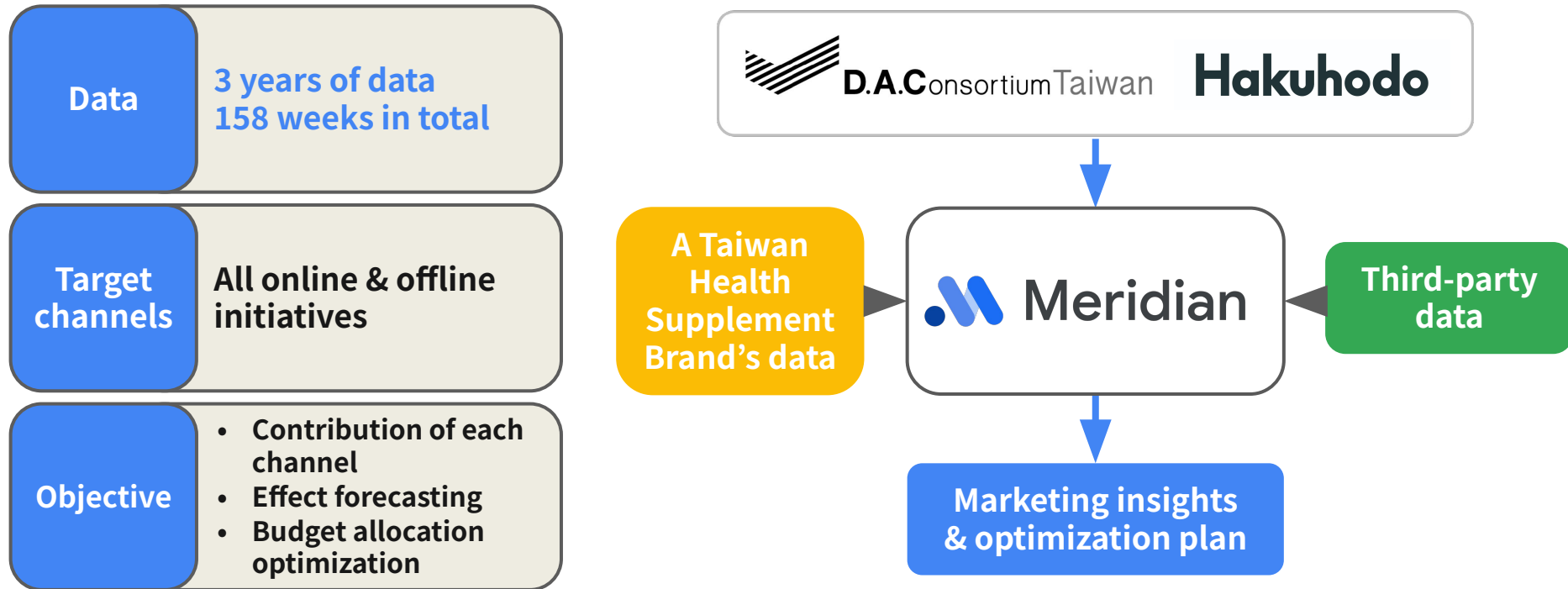
Difficult to quantify with the existing evaluation framework.

Based on a Taiwan Health Supplement Brand's business model and evaluation needs, Taiwan DAC began examining three key issues.

Using Meridian, we extracted insights and provided a new perspective on the direction of a Taiwan Health Supplement Brand's business model.

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We consolidated three years of actual marketing and outcome data, and integrated a wide range of third-party data covering internal and external influencing factors. Through Meridian, we built an analytical model to evaluate where true marketing contribution was being generated.



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Through model analysis, we identified each media type's contribution, growth potential, strengths, and weaknesses. Based on these findings, we developed optimized budget allocation proposals aligned with the client's objectives, as well as a strategy to advance marketing investment.



YouTube

Comparable to traditional TV



Search & Display

Versatile use cases Used as a complementary channel



Traditional TV

High acquisition cost
Difficult to evaluate effectiveness



SNS

Stable acquisition performance
Strategically effective channel

Conventional
experience-based
judgment

Post-analysis
insights

At the current
budget level, ROI
potential is
comparable to
traditional TV

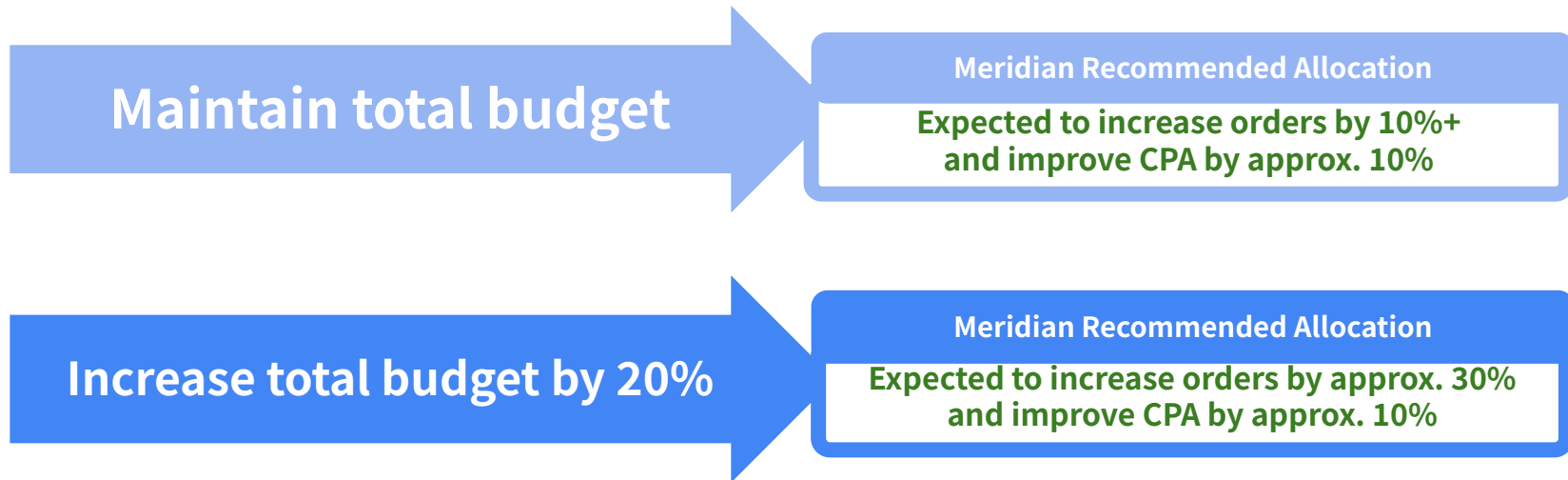
Stable ROI,
low saturation & broad
reach High potential

An important large-scale
upper-funnel foundation,
with saturation increasing
depending on budget levels

Stable acquisition
performance can be
expected, while continuous
creative refresh is key to
maintaining effectiveness

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Because the Meridian model accounts for Adstock and Hill functions, it enables multiple investment allocation simulations tailored to business objectives, significantly reducing uncertainty and risk in future marketing activities.



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The analytical insights showed that long-form TV commercials significantly enhance the long-tail effect on sales and make a substantial contribution to the revenue the client seeks. At the same time, in an increasingly competitive media environment, the challenge is how to improve precise delivery effectiveness while optimizing budget efficiency.



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As a solution, we explored a combined YouTube × Google Search strategy, whose potential was confirmed through Meridian analysis. We designed a way for the brand to apply the know-how built through TV commercials to YouTube advertising.

**Long-form video
is effective**

Apply the effectiveness of long-form video to YouTube to maximize impact

**Changes in
user habits**

Expand into CTV reach, delivering precisely, controllably and effectively

**Google
Search & Display**

Surround users across diverse touchpoints and complement at low cost

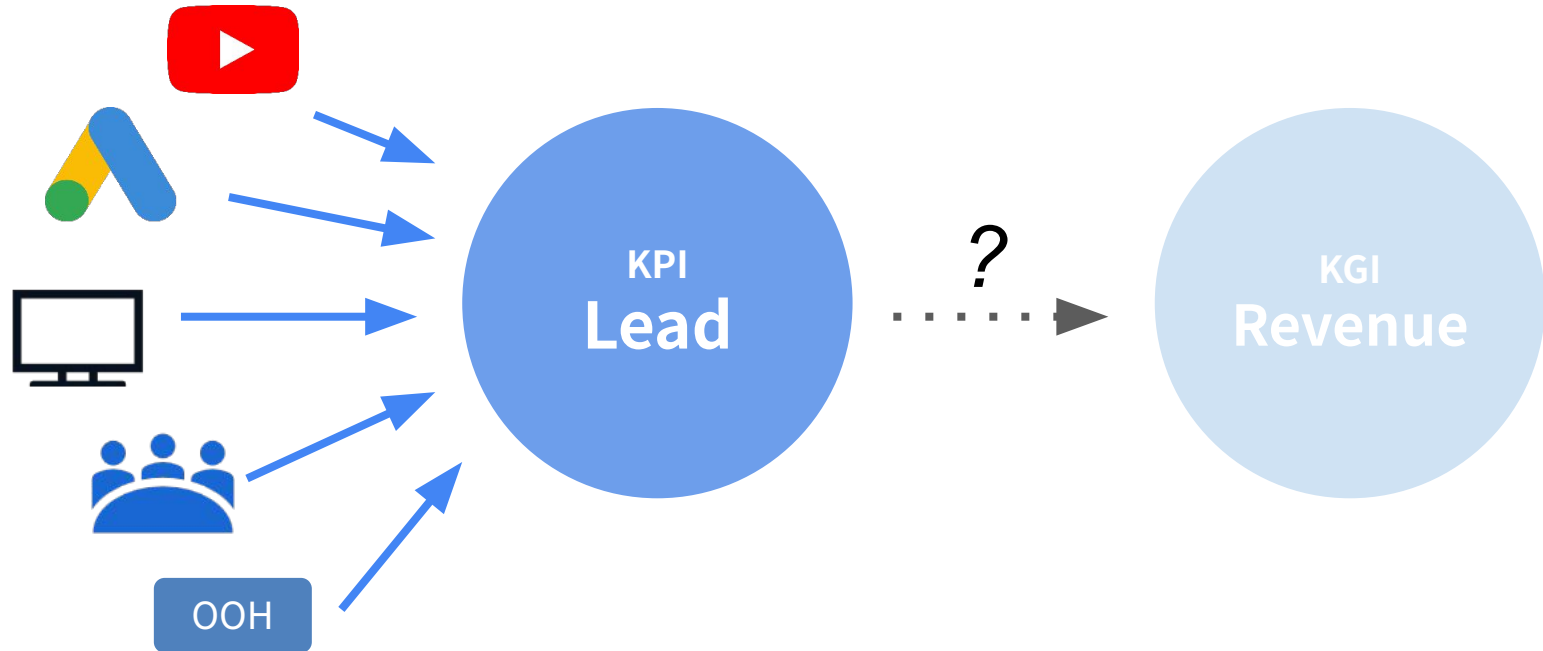


3.3. Ngern Tid Lor (Thai financial services provider)

Choosing the right KPI, and building simulations that fit real-world constraints

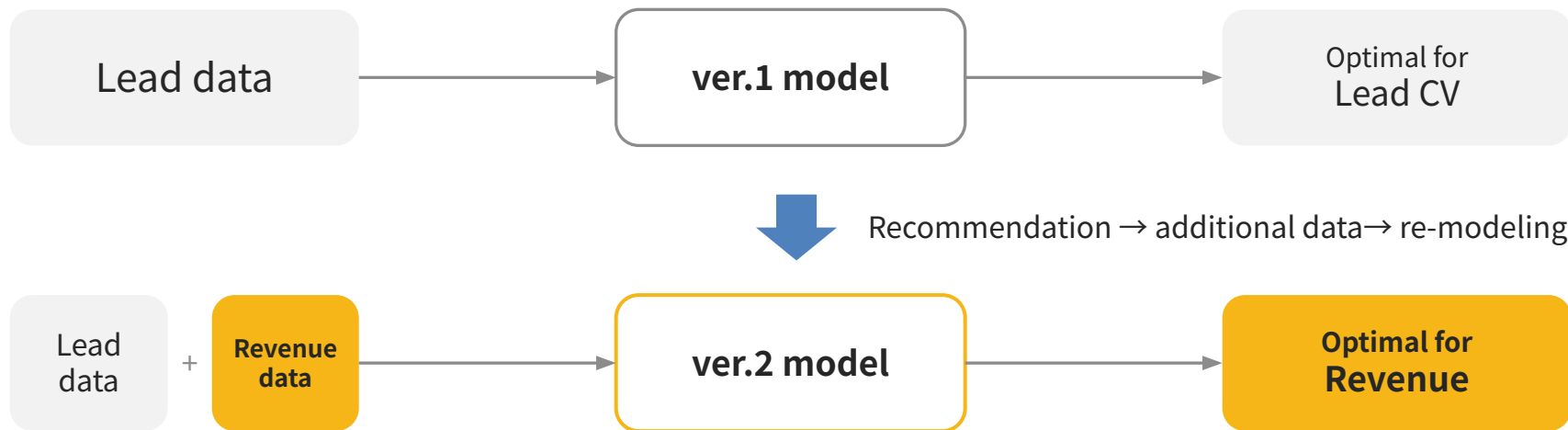
Challenge: A digitally trackable metric alone couldn't lift model accuracy

Ngern Tid Lor ran various ad channels including offline (TV) and digital media. The initial Meridian model used “lead volume” as its target KPI. But this proxy was disconnected from business results and limited in accuracy.



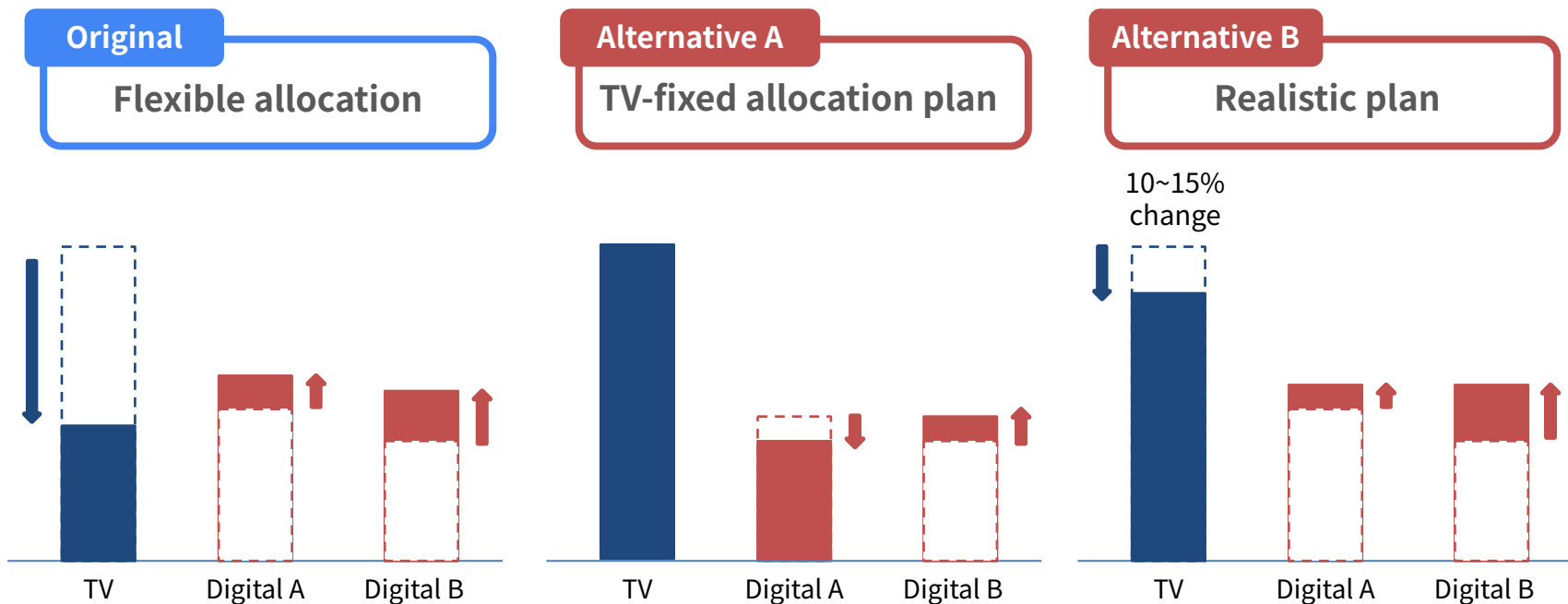
Approach 1: From leads to revenue

Rather than settle for a low-accuracy proxy, we rebuilt the model around a KPI closer to the business. Moving from ver.1 (lead) to ver.2 (revenue) shifted the guidance toward what actually drives business results.



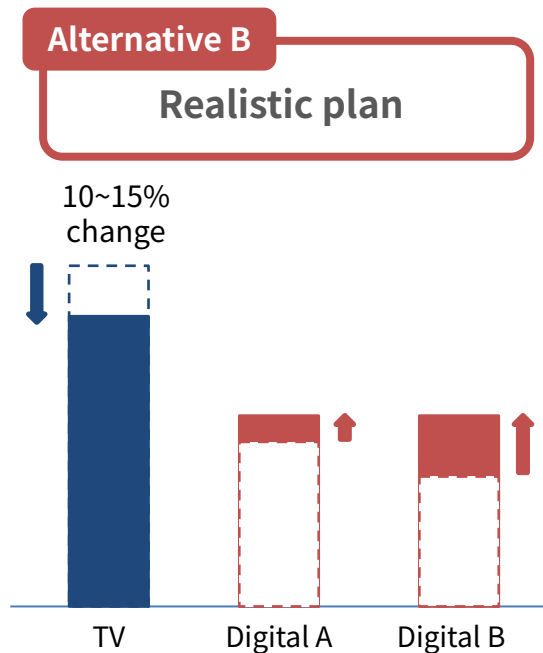
Approach 2: Simulations built for real-world constraints

Budgets can't always move freely. TV commitments, departmental ownership, and internal alignment all constrain what's executable. So we prepared multiple simulation patterns to match real conditions.



Result: Without increasing total budget, the room to rebalance became clear

Across scenarios, the revenue-based model consistently pointed to room to shift budget from over-invested to under-invested channels. The expected upside was quantified without raising total spend.



8% expected revenue growth
without changing the total budget and with the TV
budget adjusted within a realistic range.

Takeaways: What this case shows about applying Meridian

Three lessons stand out: KPI design, accuracy through iteration, and executability.
How the tool is used is what separates the results.

The KPI defines
the answer

Accuracy comes
from the right
target, then
iteration

Executable
beats
theoretical

CHAPTER

4

FAQ



We only have 18 months of usable data. Can analysis still be conducted?



Please consult with us regarding whether analysis can be conducted based on your available data period. One option is to increase the number of data points by using daily data, for example.



At what level of granularity should the objective variable be set in Meridian (SKU, specific product, brand, overall category, etc.)?



If the objective variable has a sufficient data period (number of weeks), analysis can be conducted at various levels of granularity. However, if the granularity is too fine, data shortages and weak linkage with advertising are more likely to occur. We therefore recommend first setting the objective variable at an aggregated level that makes it easier to capture overall business trends.

*The appropriate granularity depends on data availability and the analysis objective. If candidate data is shared, Hakuholdo DY Group can check data volume in advance, conduct basic analysis, and propose the optimal analysis granularity.



Can the objective variable be an intermediate KPI such as site visits, rather than only sales?



Analysis is possible if the data period (number of weeks) is sufficient and the data is actual observed data. Estimated values or survey data may reduce accuracy, so we recommend using actual tracking data. If you are unsure whether your available metrics can be used, please consult us; Hakuhodo DY Group can check data suitability in advance.



Can effects be estimated and visualized by advertising creative (asset / message)?



Yes. However, caution is needed if multiple creatives are delivered at the same timing with very similar delivery trends. If their movements are too similar, the statistical model cannot distinguish which asset generated the effect (multicollinearity), making separation by creative difficult. If you provide the data, Hakuhodo can check in advance whether effect separation is possible and propose the optimal unit for visualization.



When optimizing budget allocation simulations, can practical flexible conditions be reflected?



Yes. Practical requirements such as “keep total digital ad spend fixed,” “keep the TVCM budget within an upper limit of XX,” or “maintain a specific medium at the previous year’s level” can be incorporated as constraints.



Is it possible to simulate how much sales can grow if ad spend is increased?



Yes. Advertising tends to show diminishing returns as investment scale increases, but Meridian can account for this tendency and verify how much sales growth can be expected.