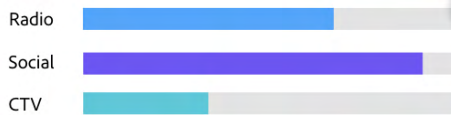




AI-powered marketing measurement and planning

How you can maximize marketing ROI with Adobe Mix Modeler

Return on investment



● Radio ● Social ● CTV

35% **48%** **17%**

AI recommendation

● Predicted ● Actual



Marketing teams are under pressure.

Marketers need to prove the effectiveness and ROI of their investments—and do so quickly—while growing revenue, increasing efficiency, and dealing with declining budgets.

This is becoming a greater challenge as consumer privacy shifts cut off access to valuable customer data, degrading the perceived accuracy and value of marketers' analyses. And unfortunately, traditional methods of marketing mix modeling take too long to return actionable insights in the fast-paced business world.

In short, marketing professionals' usual ways of measuring performance and planning future marketing investments are no longer up to the task.

At Adobe, our own marketers faced some of these same problems. After realizing there were no suitable solutions in the market already, they asked the Adobe data science team to build a new tool that could deliver faster, more robust analyses to inform strategic marketing decisions and increase ROI.

Crucially, the tool needed to:

- Project the impact of every marketing dollar spent
- Avoid overdependence on discrete touchpoints
- Incorporate business factors that may influence sales, such as economic indicators and brand or category health

“Most tools in market use a model that scores each channel fully before moving on to the next one,” says Kiyoshi Ihara, director and head of product for Adobe Mix Modeler. “But that takes a lot of time and makes forecasting and planning difficult because there aren't modeled relationships between channels.”

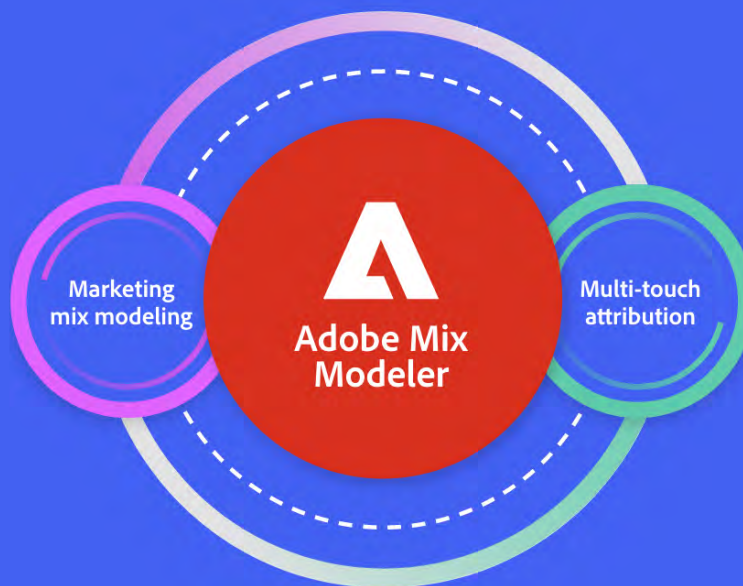
“There's a balance: You need confident, accurate, and timely information, not a false sense of precision three months after you needed to pivot.”

The answer is Adobe Mix Modeler.

“We needed something that would score each channel relative to the others to account for the impact channels have on each other,” Ihara continues. “We also needed to improve forecasting, which allows for planning—a huge gap in the industry when it comes to taking insights to action. And we wanted these insights and recommendations to be available in time for marketing decision-makers to act on them.”

The result was [Adobe Mix Modeler](#), an innovative marketing solution that uses predictive AI to join two powerful methodologies—marketing mix modeling (MMM) and multi-touch attribution (MTA). Together they form a holistic approach that enables marketing teams to quickly create and compare scenario plans and make decisions efficiently based on incremental ROI analysis.

Mix Modeler delivers faster insights and more trustworthy measurements than other tools. And the story of this unique and disruptive solution, a marriage of marketing art and data science, is one worth telling.



Mix Modeler's patent-pending, bi-directional transfer learning unifies two powerful methodologies.

How we got here and why it matters.

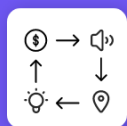
Adobe Mix Modeler is the AI-powered answer to a question that marketers have been asking for decades: **How do I accurately measure the cost and impact of my efforts?**

But first, it's important to understand how we got here.

In the early 1950s, Harvard Business School Professor Neil Borden got marketers thinking about this question when he coined the term “marketing mix,” which refers to the collection of marketing channels a company invests in. Today those include a diverse array of online and offline channels spanning both the digital and physical worlds.

Borden believed that, in a universe of complex forces, marketers have to juggle the elements in their marketing mix while keeping a close eye on the resources they have to work with.

What was true then is still true: Marketers must maximize limited resources to navigate a challenging and ever-changing business environment. Another truth that still holds up is the difficulty of accurately determining return on investment—what business outcomes are marketers achieving, how much is it costing them, and what is the best decision based on that information?

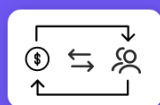


1950s

Focus on price, promotion, place, and product

1970s

Model from the University of Chicago measures correlation of sales and activity

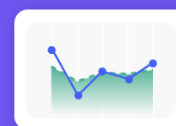


1980s

Data-driven approach to justify spend

2000s

Marketers realize this model does not reveal the whole picture



Today

Adobe Mix Modeler

Marketers applied Borden's idea to create marketing mix modeling, which uses regression analysis on historical data to quantify the impacts of various marketing activities on any conversion event. However, MMM had a number of shortfalls that kept it from remaining in widespread use as other digital methods of tracking customers' behavior emerged. Specifically, the MMM methodology suffered from being painfully slow to provide results due to its manual approach, lacking granularity in its analysis, and missing the bigger-picture value of building brand equity.

As technology advanced and the internet became prevalent, multi-touch attribution became a popular approach for tracking the increasingly complex ways consumers interact with brands and products across digital channels. MTA offered marketers a way to get granular insight into individual purchasing decisions.

But it also was flawed. MTA only measures digital channels, rather than the full share of wallet that includes offline channels, so it doesn't represent the full customer journey. And the methodology depends on click-path data, which primarily relies on tracking cookies that are being phased out.



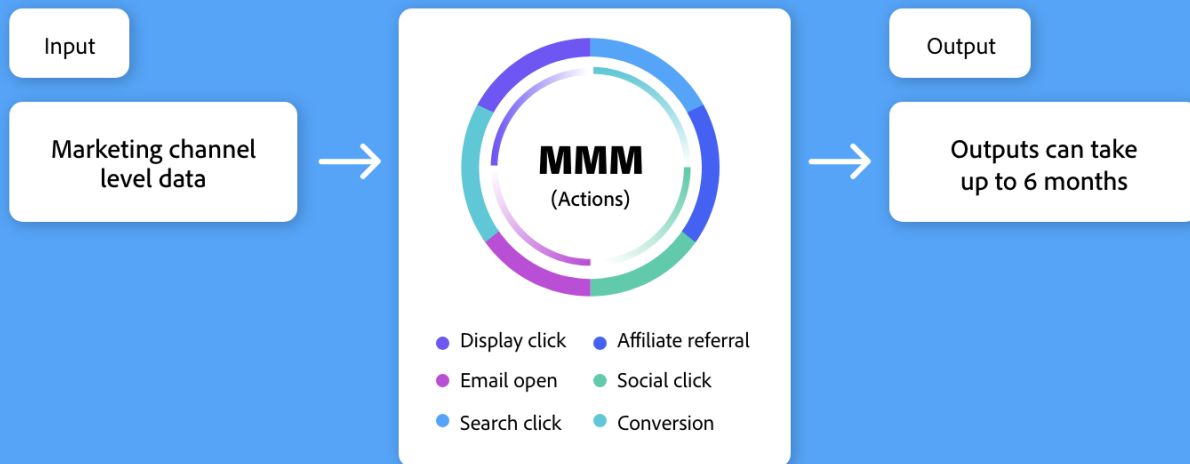
Most tools use a model that scores each channel fully before moving on to the next one, but that takes a lot of time and makes forecasting and planning difficult because there aren't modeled relationships between channels. There's a balance: You need confident, accurate, and timely information, not a false sense of precision three months after you needed to pivot."

Kiyoshi Ihara

Director and Head of Product
Adobe Mix Modeler

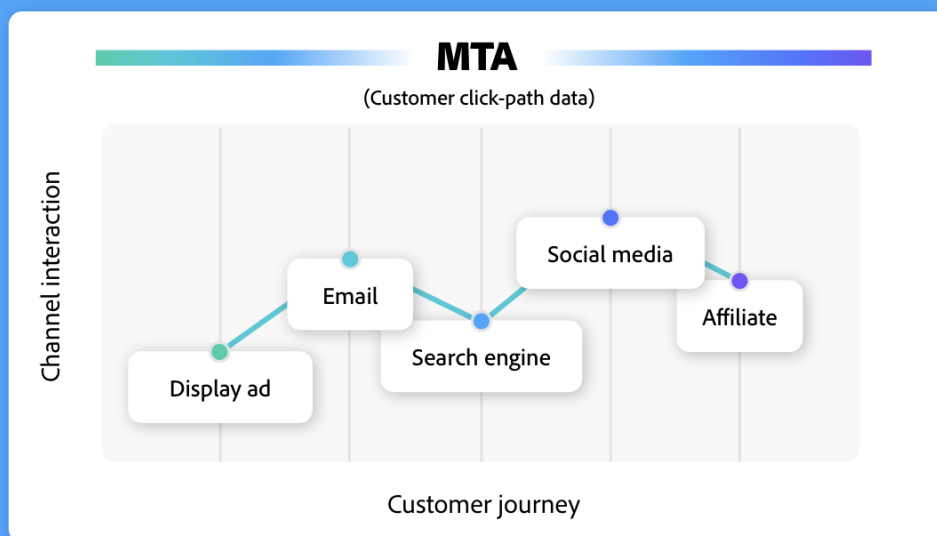
Common models used in the current market

Marketing mix modeling (MMM)



Marketing mix modeling traditionally provides results slowly due to its manual approach, sometimes taking up to six months for outputs.

Multi-touch attribution (MTA)



Multi-touch attribution usually generates results faster, though it relies on third-party cookies or fragile shared IDs and is resource intensive.

Three reasons your marketing team needs a better way to measure and plan.

Existing marketing tools are, simply put, no longer sufficient. Here are a few reasons why your team needs a better way to measure and plan.

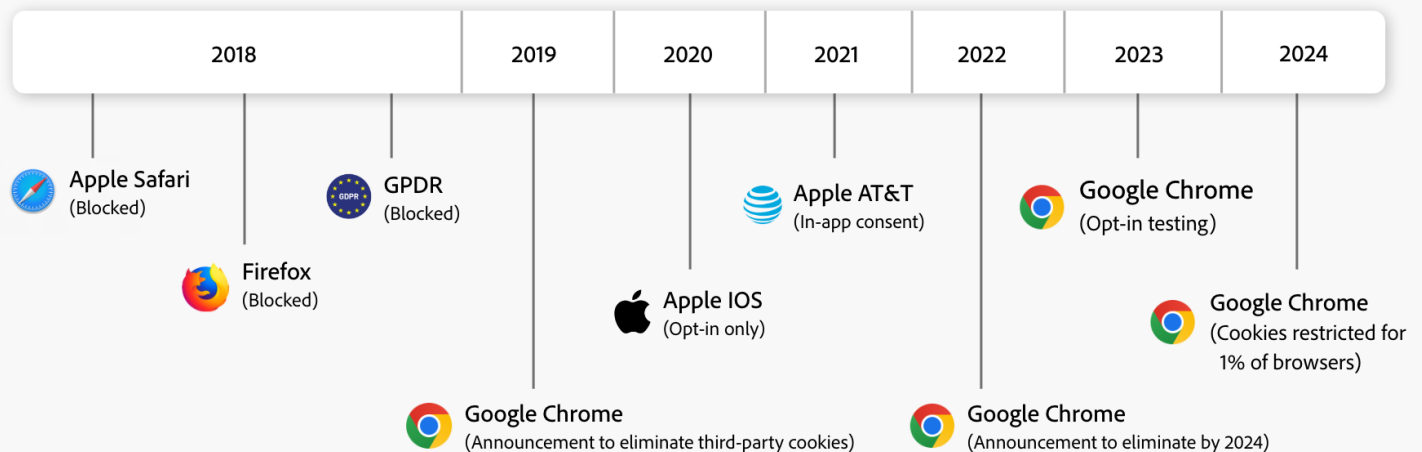
Conflicting results from multiple tools

Today there are more diverse and personalized media options than ever, but customers are harder to find and track due to signal loss. Available tools don't show the full picture of wallet share and fail to give modern marketing teams the holistic insights they need to make good decisions.

In many cases, teams cobble together insights from a number of tools and methods, creating a complicated and inefficient workflow that takes too long to execute and drives up costs. Operationally, this process provides results that are not only unsatisfying but also potentially conflicting, making it hard to defend key decisions with confidence.



Historical actions around third-party cookies



The impact of changing online privacy standards

A major reason these tools fall short is the degradation of customer engagement data due to changing online privacy standards—a minor earthquake for the marketing world. Some browsers, like Apple’s Safari and Mozilla’s Firefox, have completely blocked third-party cookies by default to preserve user privacy. While Google will stop short of blocking third-party cookies on its Chrome browser, it plans to make changes that will significantly reduce the number of users choosing to allow them.

The result is widespread cookie deprecation, a growing obstacle to marketers’ established methods of capturing user behavior and assessing where to prioritize marketing efforts and dollars. Additionally, some email programs, like Apple Mail, are obfuscating tracking pixels, while walled gardens like YouTube, Meta, and TikTok won’t share any individual-level data. Meanwhile, only 25% of Apple app users are opting in to device tracking, according to MMA Global’s 2022 State of Attribution Benchmark Report.

These changes dramatically reduce marketers’ ability to track user interactions across platforms and touchpoints. In this context, MTA, the most common method of analyzing the importance of each marketing touchpoint in customer decision-making, provides fewer insights and can produce deep concern about accuracy due to signal loss. Since only 35% of digital media spend can now be measured with MTA, marketers can no longer rely on this method alone.

The challenge of proving and optimizing ROI

An additional shortfall of available marketing tools is the inability to inform users of the incremental contribution of various activities and scenarios.

As budget pressures prompt financial leaders to ask for proof of ROI, marketing leaders must demonstrate the cost-effectiveness of their media spending. Yet only 9% of marketers at \$5-billion-plus companies report that they can accurately forecast the ROI impact of a 10% shift in marketing spend. The biggest challenge to 56% of these marketers is proving ROI using analytics, according to the 2023 Gartner Technology Marketing Benchmarks Survey. This crucial gap prevents marketers from making informed decisions about when and how to spend to optimize ROI.

Crunched budgets also mean that relying on current tools is overly expensive. In many cases, teams use a mish-mash of tools to gain insights, which drives up costs. Companies can ill afford this type of inefficiency, with marketing budgets at US companies shrinking from 9.3% of total revenue in 2023 to 7.9% in 2024. Accordingly, the 2024 Gartner CMO Spend Survey found that 73% of chief marketing officers say teams feel pressure to become more efficient and “do more with less” to deliver profitable growth.

Moreover, 47% of respondents say their organization perceives marketing as a cost center rather than a profit center. Clearly, the pressures on marketers are intense. And they’re likely to increase as the business world continues to digitize, privacy restrictions multiply, and economic headwinds keep blowing.

According to 2024 Gartner research, among surveyed CMOs:

73% say marketing teams feel pressure to “do more with less”

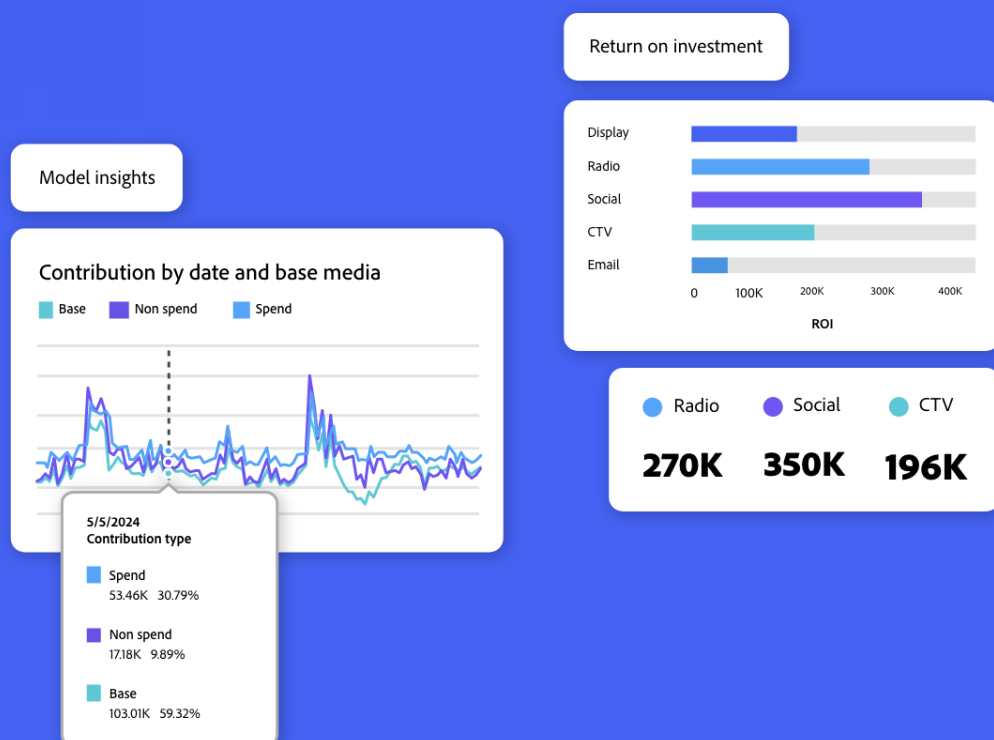
47% say marketing is viewed as a cost rather than a profit center

Adobe Mix Modeler: The AI-powered marketing measurement and planning solution.

Marketers now need ongoing access to data-backed, cost-informed analysis to guide them in building effective marketing plans and pivoting as conditions inevitably change. They want a measurement and planning solution that is fast, flexible, agile, trusted, and scalable to help them maximize marketing investments with advanced AI.

Adobe Mix Modeler is a purpose-built solution for rapid, confident marketing measurement and optimization. This tool harnesses the power of artificial intelligence and machine learning technology to mine data, deliver insights, and streamline workflows.

Mix Modeler's patent-pending, bi-directional transfer learning unifies MMM and MTA. Joining these two methods into one holistic approach enables faster, more intelligent analysis of historical marketing efforts, allowing teams to measure incremental performance at touchpoint and aggregate levels.



The ability of AI to rapidly integrate an enormous volume of disparate information means Mix Modeler can incorporate into its models any factors the user chooses—economic trends like unemployment or inflation, custom promotion calendars, weather patterns, or other time series-based datasets. These are factors that marketers couldn't effectively account for previously, and this newfound ability to do so opens up exciting possibilities for predictive modeling and future decision-making using the forecasted data.

For example, a professional sports team's marketing department might use Mix Modeler to run scenarios that help answer a number of questions: How much budget should be allocated per game if the team makes the playoffs? Will a rainy April decimate the ROI for a planned early-season campaign? Would a jersey giveaway drum up more interest at the beginning or end of the year? Would the social campaign play better on Instagram or Facebook? The team can run various scenarios fairly quickly and figure out the relative ROI to inform data-based decisions. If an early-season jersey giveaway will only be cost-effective if April is sunny, the team can schedule the giveaway for September if the April forecast calls for rain.

"There's a huge interest now in trying to overlay the reasoning behind performance, based on what marketers can control and what they can't control," Ihara says. "We try to reveal to marketers how much each factor matters. How much does a jersey giveaway matter relative to spend on Facebook? There's a relationship involved there."

Not only does Mix Modeler provide better analysis than existing tools, it does so far more quickly. Legacy media mix modeling solutions can take 3 to 12 months for initial model creation, are usually only updated once a year, and provide insights monthly with delays that leave you analyzing results and making decisions several quarters later.

In stark contrast, Adobe models can be adjusted frequently for rapid results so marketing teams can generate a slew of scenarios to see the potential impacts of budget changes, channel constraints, or other business factors. All of this allows for better, faster decision-making and more agile pivoting before, during, and after a campaign as business goals and priorities change.

Adobe Mix Modeler not only provides better analysis than existing tools, it does so far more quickly.

Additionally, Mix Modeler's machine learning measurement and attribution capability allows marketing teams to accurately calculate channel and campaign ROI and understand the incremental contribution of each marketing investment. In short, this tool incorporates costs into its models so that marketing teams and business leaders can understand the actual value of each action and where to spend to increase ROI or lower cost per conversion.

Using our earlier example, the sports team would certainly benefit from knowing whether the jersey giveaway, which will cost \$250,000, will likely boost ticket revenue by \$200,000 or \$2,000,000. And it could also use insight into how much extra sales revenue to expect from a giveaway in April compared to September.

Employing Mix Modeler in concert with other [Adobe Experience Platform](#) tools allows users to tweak scenarios and see the impacts of changes on their specific business reality—though they can use Mix Modeler with their other systems, too. If the jersey giveaway campaign is underperforming on Facebook with fewer click-throughs than expected, Mix Modeler can help uncover how to increase the value of that channel, perhaps by changing the timing of ads or shifting emphasis to another channel.



How Adobe Mix Modeler works.

Mix Modeler packages long-established statistical methodologies into a single product boosted by the latest innovations in AI and machine learning. The intuitive user interface means powerful and complex modeling is now accessible and scalable to marketers, analysts, and data scientists. Sophisticated analytics run behind the scenes to provide valuable insights that don't require a deep understanding of regression analysis.

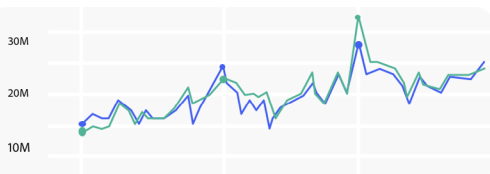
"It's critical that we reveal all this data as clean, marketer-focused insight that's very digestible and that marketers can make decisions off of," Ihara says. "But it also must be underpinned by a rigorous, modeling-based approach that their data science team has confidence in."

Mix Modeler is natively built on the foundation of the Adobe Experience Platform. Built-in AI algorithms leverage state-of-the-art technologies using:

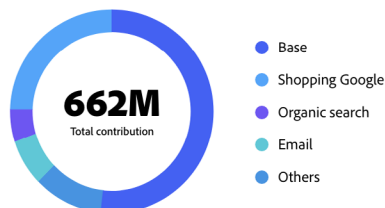
- Supervised machine learning
- Econometrics (e.g., time series analysis)
- Applied statistics (e.g., survival analysis)
- Transfer learning
- Bayesian method
- Causal inference
- Marketing and advertising science (e.g., adstock, diminishing return)
- Cooperative game theory (e.g., Shapley value)

AI recommendation

● Predicted ● Actual



Contribution by channel



Model assessment

● R2 ● MAPE

.73

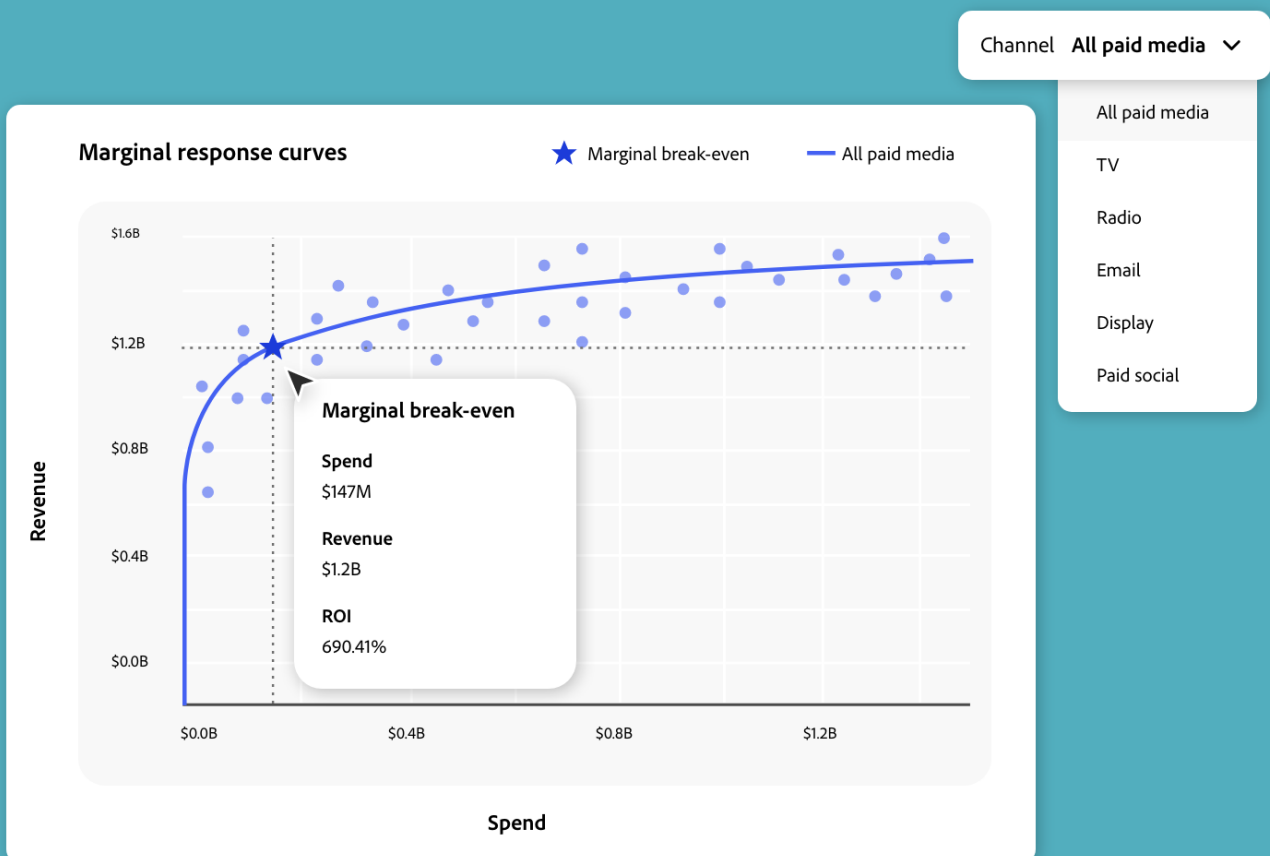
.28

● RMSE

9921942.97

Mix Modeler differs from other marketing modeling solutions in that it employs a multiplicative—or log-log—model instead of an additive model of analysis. A log-log model is a generalized linear model that can account for trends and patterns in data sets. The model can incorporate the effects of independent and dependent variables, identifying nonlinear relationships among them.

The log-log model is valuable for producing meaningful analyses and interpretations of complex data sets and trends over time. Put simply, it allows marketers to understand the impact and interplay of various channels and enables forecasting and scenario planning so that teams can quickly translate insights into meaningful actions.



Adobe Mix Modeler analyzes data to show marginal break-even point

Adobe Mix Modeler in action.

To put the modeling technique into action, marketers input data at the deepest granularity they can access. This includes aggregate-level data such as historical units sold, historical marketing channel volume and spend, impression-volume data from walled gardens like social channels, and offline advertising channel data. The system can capture conversion and revenue numbers from [Adobe Analytics](#), [Adobe Customer Journey Analytics](#), or a third-party data source, for example, to provide a comprehensive picture of marketing activities, spend, and results.

“In Mix Modeler, the data this runs on from Experience Platform is the same data you analyze in Customer Journey Analytics—so it’s the perfect exploratory tool to really get into the weeds of whether or not a campaign was successful and where a drop-off happened,” says Lily Chiu-Watson, Adobe’s director of product marketing for experience intelligence. “You could then go into Journey Optimizer and create a new journey to fix this problem. Then in Mix Modeler, you can see the incremental value of that channel go up.”

Adobe Mix Modeler differs from other marketing modeling solutions in that it employs a multiplicative—or log-log—model instead of an additive model of analysis.

Integration adds value and efficiency for teams already using solutions like Customer Journey Analytics, but Mix Modeler doesn’t require data from Adobe tools to deliver results.

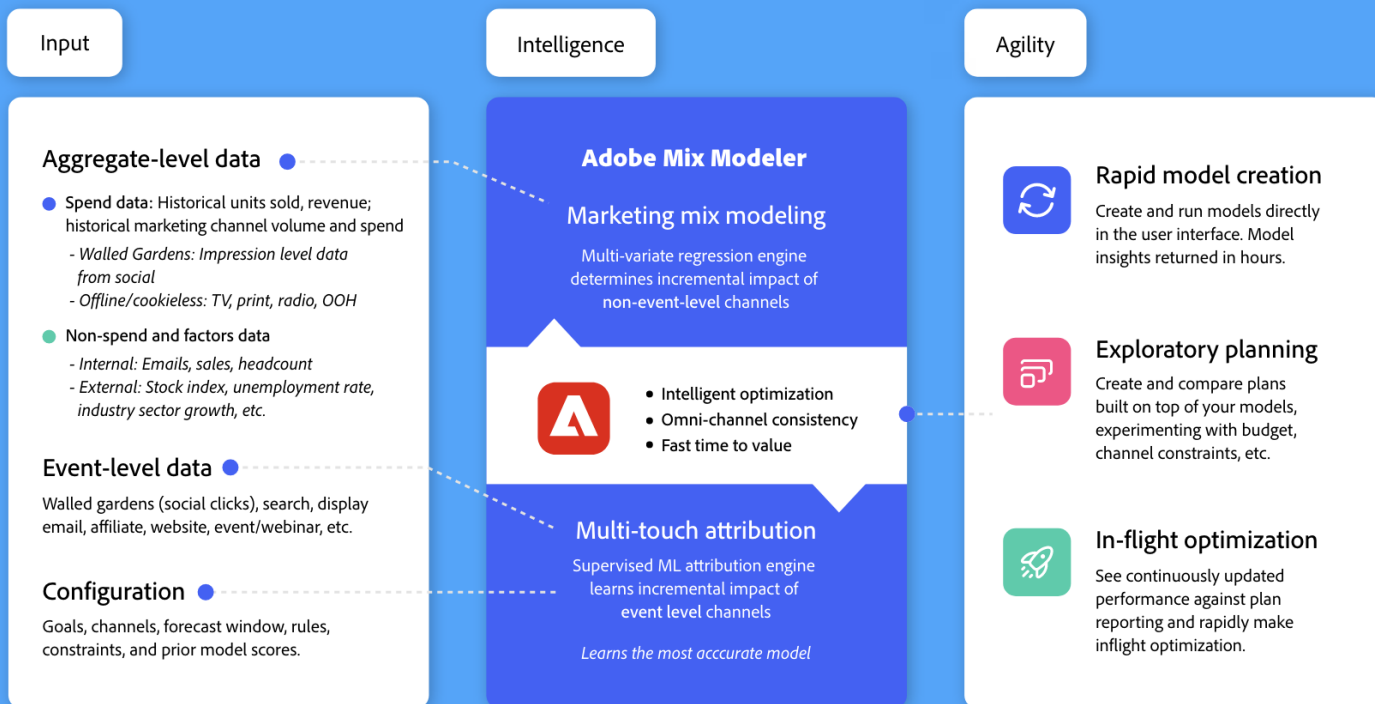
Users can also include non-spend data and factors like internal sales figures and headcount numbers, stock index information, and economic indicators like unemployment rate and industry-sector growth. Event-level touchpoints captured by MTA add to the bigger picture. In this way, users can create a model, incorporate prior beliefs, assign numeric confidence to each prior, and input internal and external business factors.

Once the model has ingested data, the user can configure it for business needs by adding goals, channels, forecast windows, rules, and constraints. Then, Mix Modeler’s multi-variate regression engine determines the incremental impact of each channel, while its supervised machine learning attribution engine learns the incremental impact of event-level touchpoints.

Users can create and run models directly in Mix Modeler’s interface and access insights in a few hours or even minutes. These models can be configured in the platform with custom look-back windows, touchpoints, conversions, segments, prior knowledge, and more. AI-powered scenario planning capabilities predict the optimal marketing budget allocation so you can confidently reach your business goals.

Mix Modeler brings measurement and planning together in a single application to help marketers understand channel and campaign performance, forecast plans effectively, and optimize marketing channel investments with greater speed and confidence.

Adobe Mix Modeler methodology



With Adobe Mix Modeler, a luxury retailer increased its efficiency.

Adobe Mix Modeler has the power to transform a company's marketing approach.

The marketing team at a prominent luxury retailer witnessed this firsthand when it participated in a pilot program to trial Mix Modeler in its marketing workflow.

The global brand has long used custom models and last-touch attribution to assess its marketing spend. Before Mix Modeler, team members found modeling arduously slow. They were able to complete just a couple of modeling scenarios in a workweek. Their methods also prevented them from modeling hypothetical scenarios with any real granularity or confidence.

Mix Modeler changed all that. With Adobe's help, the team increased operational efficiency by 50%. The platform's embedded machine learning helped generate better and faster insights as the team input more data and ran more scenarios.

"It's cumulative and grows as we grow," said the brand's vice president of global analytics. "It's already undeniable from an efficiency perspective. And for me, efficiency is money. If you're able to act faster, you're able to get competitive advantage faster."

The marketing team also benefits from Mix Modeler's capability to model potential scenarios. Team members can reduce costs by optimizing the effectiveness of their marketing dollars. And, they're able to rapidly build a business case for extra marketing investment on key priorities using models that detail how such spending is likely to translate to sales.

A prominent luxury retailer achieved:

50% increase in operational marketing efficiency

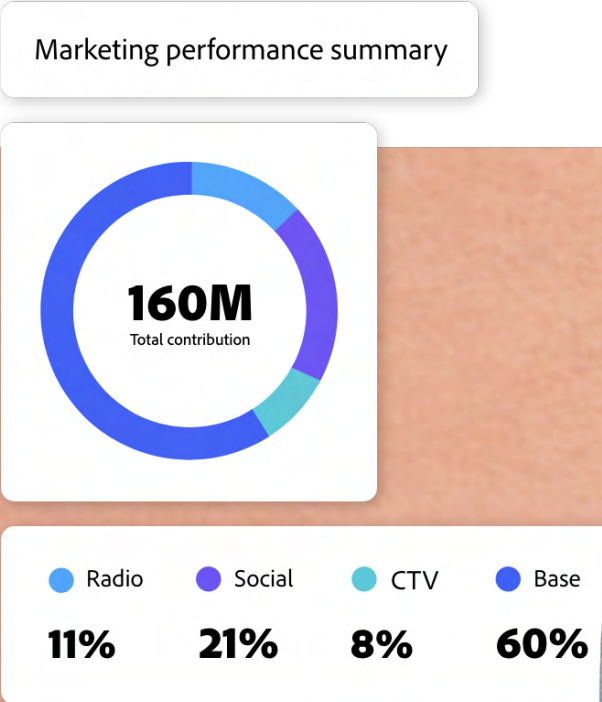
Generate marketing insights and prove ROI.

The future has arrived. With [Adobe Mix Modeler](#), you can strategically plan your marketing mix, optimize campaign spending in the moment, and make intelligent, data-driven recommendations critical to your business, all based on AI-powered measurement models that inspire confidence in the results.

Adobe has long been a trusted partner of organizations worldwide to deliver personalization at scale. Mix Modeler adds to the powerful capabilities of Adobe Experience Platform by allowing teams to understand the impact of their efforts and massively speed up marketing measurement and scenario planning, which helps them prove business value and make smarter decisions more quickly. That's a game-changing advantage in an increasingly competitive world.

Watch this [Adobe Summit session](#) to find out about the strategic imperative of establishing a scalable, transparent measurement and planning framework and learn about the strategies for developing an architecture that seamlessly connects marketing efforts and insights to actionability and business value.

[Learn more](#) about how you can maximize your marketing investments with advanced AI.



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