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What is price-volume-mix analysis? Separate price from what was sold

Price-volume-mix analysis reconciles a period change into price, volume, mix, new, and discontinued lines before a team assigns an explanation.

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MANAGEMENT SUMMARY

Price-volume-mix analysis explains why a declared revenue total moved between two periods. This article fixes the line grain, baseline and current period, net-revenue boundary, and price/volume convention, then works through a synthetic bridge from 3,300 to 3,420 units: price +60, volume +300, mix -300, new product +360, discontinued -300, residual 0. It separates descriptive variance from causal attribution and shows how missing lines, returns, new products, discontinued products, discounts, and costs change the decision. The evidence is a bounded Variance Works method page; formulas, values, and owner routing are author synthesis.

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A revenue total can move from 3,300 to 3,420 synthetic units and still leave the important question unanswered: what changed? The increase of 120 might combine a higher price, more units, a different product mix, a new line, and a discontinued line. The total reports the destination. It does not show the route.

Price-volume-mix analysis is a declared period-over-period decomposition of a revenue or margin movement into price, volume, mix, and separately new and discontinued lines. The decomposition is useful only when its line grain, revenue boundary, convention, and residual are visible. It explains the arithmetic movement under those choices. It does not, by itself, explain why buyers changed their behaviour.

What question does PVM answer?

PVM answers: which signed components reconcile the baseline total to the current total? A revenue bridge starts with the earlier period, applies one declared effect at a time, and ends at the later period. The method source describes the bridge as a sequence of price, volume, mix, new-product, and discontinued-product effects that must add exactly to the observed change (Variance Works, 2026).

That is a different question from “Did the price increase reduce demand?” A negative volume effect is an arithmetic component under the selected convention. It is not a causal estimate of price elasticity. The causal question needs its own treatment, comparison, outcome, and time window.

The distinction matters because one total can be handed to several owners:

Table 1 What question does PVM answer?

Observed component	Immediate question	Likely owner for investigation
Price	Did the per-unit price or declared transaction boundary change?	Pricing or sales operations
Volume	Did the number of matched units change, and is the exposure or capacity boundary stable?	Demand, sales, or capacity owner
Mix	Did the composition of matched lines shift toward different products, categories, or segments?	Assortment, segment, or portfolio owner
New product	What current-period line has no baseline sales, and what launch state explains its entry?	Product or portfolio owner
Discontinued product	What baseline-period line has no current sales, and was the exit planned or forced?	Product, portfolio, or commercial owner

Table from this essay. Sources and interpretation are given in the article.

This routing card is an operating framework, not an observed organizational result. It tells the team where to ask the next question after the bridge has reconciled.

Which objects must stay fixed?

The calculation is not reproducible until the comparison objects are named. Fix at least these fields:

Table 2 Which objects must stay fixed?

Object	Rule to declare	Failure when hidden
Baseline period	Earlier period and its cutoff	A moving starting point changes the comparison
Current period	Later period and its cutoff	A partial period can look like a volume decline
Line grain	Product, SKU, service, contract line, customer-product, or another unit	Mixed grains double-count or invent mix
Revenue boundary	Gross or net revenue, included credits, returns, refunds, and currency	Price and revenue effects no longer share a boundary
Currency	Reporting currency and conversion date or rule	Exchange movement is hidden inside the effects
Matched universe	Lines observed in both periods	New and discontinued lines contaminate matched effects
New and discontinued rule	How zero-baseline and zero-current lines are identified	Launches or exits are forced into price or volume
Decomposition convention	Which period supplies the units and reference price	Two bridges can disagree while both reconcile
Residual	Difference remaining after displayed effects	Missing data can masquerade as mix

Table from this essay. Sources and interpretation are given in the article.

The method source identifies period label, product identifier, quantity, and net revenue as the core inputs. It also describes optional category, gross-revenue, and unit-cost fields for deeper cuts (Variance Works, 2026). Those fields are not interchangeable. A gross-revenue field can support a discount cut. A unit-cost field can support a margin bridge. Neither should be inferred from a net revenue total.

How does the price-volume-mix decomposition work?

This article uses one explicit convention. For matched lines, price is valued at current-period units; volume is valued at the baseline average price; mix is the remaining matched-line change after those two effects. New and discontinued lines sit outside the matched-line calculation.

The convention is a choice, not a natural law. Another method may value the price change at baseline units or allocate mix differently. That can change the price, volume, and mix bars while leaving the fully reconciled total unchanged. A review should print the convention beside the result rather than presenting one split as the only possible truth.

What does a synthetic bridge look like?

The following four-line object is synthetic. It represents no company, customer, product, contract, or finance export. In rows C and D, a zero price marks the absence of a matched-period price observation. It does not mean that a new or discontinued product was sold for zero.

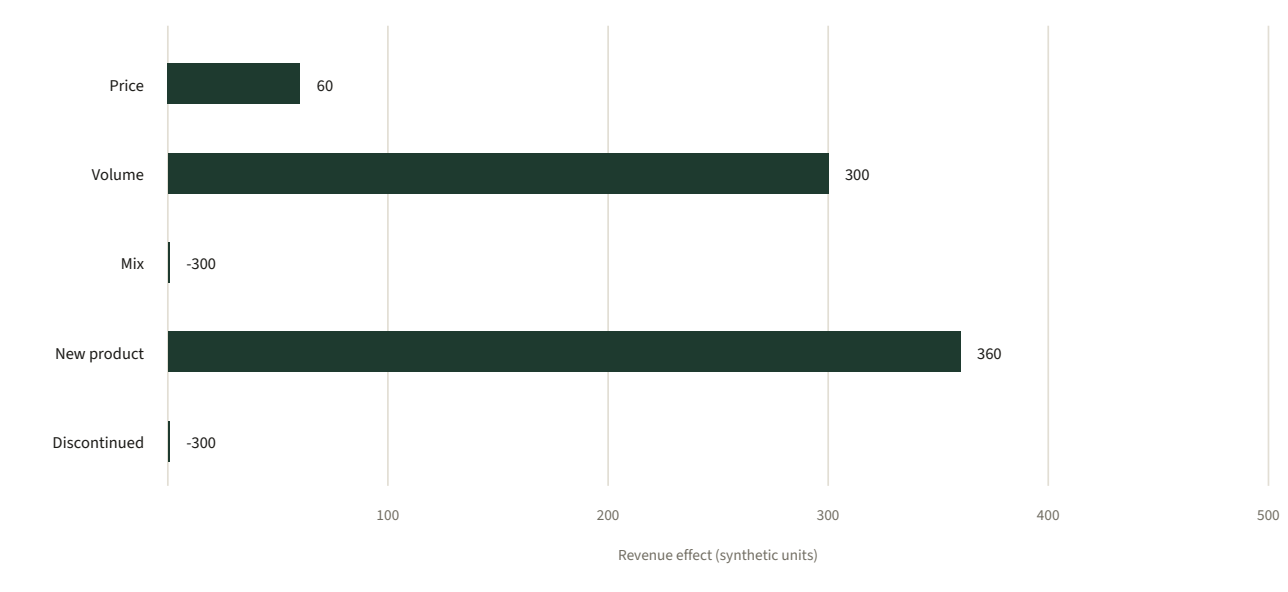
Table 3 What does a synthetic bridge look like?

Line	Baseline units	Baseline price	Baseline revenue	Current units	Current price	Current revenue	Status
A	100	10	1,000	140	11	1,540	Matched
B	100	20	2,000	80	19	1,520	Matched
C	0	0	0	30	12	360	New
D	20	15	300	0	0	0	Discontinued

Table from this essay. Sources and interpretation are given in the article.

The effect chart shows only the five signed components. The table underneath performs the actual reconciliation.

Figure 1 The signed effects in a synthetic PVM bridge



Author's synthetic bridge grounded in Variance Works (2026). The method source supplies the bounded five-effect bridge and exact-reconciliation rule; line values, formulas, and owner routing are author synthesis.

Table 4 What does a synthetic bridge look like?

Bridge step	Revenue effect	Running total
Baseline revenue	0	3,300
Price	+60	3,360
Volume	+300	3,660
Mix	-300	3,360
New product	+360	3,720
Discontinued	-300	3,420
Current revenue	0	3,420
Residual	0	0

Table from this essay. Sources and interpretation are given in the article.

The line arithmetic is visible rather than hidden inside the chart. Matched units rise from 200 to 220, and baseline matched revenue is 3,000. The baseline average price is therefore 15.

The price effect is:

The volume effect is $(220 - 200) \times 15 = +300$. Matched revenue rises from 3,000 to 3,060, so the mix effect under this convention is $60 - 60 - 300 = -300$. Line C contributes +360 as a new product. Line D contributes -300 as a discontinued product.

The full check is:

The zero residual is not a claim that real finance data are always complete. It is a proof that this synthetic object and this declared convention reconcile exactly.

Why is mix not a leftover to hide?

Mix is often treated as a miscellaneous bar because its interpretation depends on the comparison set and the convention. That is precisely why it should remain visible. Within the matched universe, mix captures the composition change that remains after the selected price and volume effects are removed.

Suppose total units stay flat while the business sells fewer units of a high-price line and more units of a low-price line. A volume-only view can report no change. A price-only view can misread the weighted average movement. The mix component exposes that the composition changed.

Mix is not a universal measure of product quality, customer preference, or portfolio health. A negative mix effect says that the observed composition and the chosen valuation convention produced a negative revenue component. To investigate it, split the matched set by a declared category, segment, channel, or geography if those fields are available. The source method describes category and within-category mix cuts as possible extensions, not as mandatory dimensions (Variance Works, 2026).

What happens to new and discontinued lines?

A matched-line effect needs a line observed in both periods. A new product has no baseline selling price or baseline quantity in the comparison object. A discontinued product has no current selling price or current quantity. Assigning either line to price or volume invents a comparison that does not exist.

The practical rule is simple:

Table 5 What happens to new and discontinued lines?

Line state	Show as	Do not do
Present in both periods	Matched price, volume, and mix calculation	Do not hide a material category or segment change inside one total
No baseline sales, current sales present	New product effect	Do not call the launch a matched-line volume increase
Baseline sales present, no current sales	Discontinued product effect	Do not call the exit a matched-line price decrease
Neither period has sales	Outside the bridge	Do not create a zero effect record just to increase row count

Table from this essay. Sources and interpretation are given in the article.

Separating these states makes the owner question clearer. A launch may need a product review. A discontinuation may need a portfolio or supply decision. Neither is the same as a price concession on an existing line.

Which data fields are required?

At minimum, retain one row per declared line and period with:

- 1 a period label and cutoff rule;
- 2 a stable product, service, or line identifier;
- 3 quantity, including the stated unit;
- 4 net revenue in the declared currency.

Useful extensions are unit cost for a margin bridge, gross revenue for a discount or gross-to-net cut, and category or segment for mix decomposition. The source method also warns against silently correcting unusable rows. Count them, explain them, and show the missing amount if they carry revenue. Otherwise, the bridge may appear precise while its input population has changed (Variance Works, 2026).

Returns and negative quantities need the same discipline. Retain them when the revenue boundary includes them, label the return rule, and test whether the period can produce net returns above sales. Do not turn a return into an ordinary negative demand signal without stating the accounting or operational treatment.

Is PVM a causal explanation?

No. PVM is a descriptive reconciliation. It allocates an observed total movement to arithmetic components under a declared convention. It does not identify the counterfactual revenue that would have occurred without the price change, assortment change, launch, or discontinuation.

That limit is easiest to see in the synthetic bridge. The negative volume effect on line B is consistent with fewer current units at its baseline reference price. It does not tell you whether the change came from price, lost distribution, a stock-out, a competitor, a contract ending, a capacity constraint, or an unobserved measurement change.

If the decision is causal, add a design around the bridge:

Table 6 Is PVM a causal explanation?

Causal field	Question to answer
Treatment	Which price, assortment, launch, or discontinuation action changed?
Comparison	Which eligible lines, customers, markets, or time periods provide the counterfactual?
Outcome	Revenue, units, margin, retention, or another defined result?
Window	When can the outcome respond, and how are partial periods handled?
Concurrent changes	What else changed in distribution, capacity, promotion, product, or contract terms?
Test	Which design can separate the focal change from those concurrent changes?

Table from this essay. Sources and interpretation are given in the article.

The bridge can supply descriptive inputs to that design. It cannot substitute for it.

Revenue bridge or margin bridge?

Revenue PVM and margin PVM are different objects. A margin bridge needs a cost field, a unit-cost definition, a cost period, and a rule for returns, freight, service, rebates, and other costs. If unit cost is missing, the team can reconcile revenue but cannot infer gross margin or contribution margin from the chart.

This is also where discount treatment must stay explicit. A net-revenue bridge may already include discounts and credits. A gross-revenue bridge may show them as an additional effect. The two bridges can both be valid, but their boundaries and labels must not be mixed.

The price realization article owns the transaction price that survives a declared price waterfall. PVM owns the period movement in a total. One can feed the other as an input, but a realized-price rate is not a PVM effect.

How should a team review a bridge?

Use this sequence before assigning a commercial explanation:

- 1 Declare the question. Is the team explaining revenue, units, margin, or cash, and at what scope?
- 2 Fix the periods. Record baseline and current cutoff, currency, and whether either period is partial.
- 3 Fix the line grain. Use one stable product, service, contract-line, or customer-product object.
- 4 Fix the revenue boundary. State gross or net revenue and the treatment of returns, credits, discounts, and foreign exchange.
- 5 Classify lines. Match lines present in both periods. Separate new, discontinued, zero-sales, and unusable rows.
- 6 Publish the convention. State which period supplies units, how baseline average price is formed, and how mix is calculated.
- 7 Reconcile and route. Print each signed effect and the residual. Send the arithmetic to the owner whose dimension changed, then use a separate test if a causal decision is required.

If a reader cannot reproduce the current total from the baseline and displayed effects, the bridge is not ready for an executive explanation. If it does reconcile, the result is still a bounded description, not proof of the reason.

The pricing architecture article owns the system that sets offers, authority, terms, and governance. The revenue event-schema article owns the event definitions that make period boundaries and transitions traceable. The pipeline coverage article owns the distribution hidden by a pipeline total. These are adjacent objects, not substitutes for the bridge.

What is PVM not?

PVM is not:

- a price realization rate or pocket-price waterfall;
- a pricing architecture or price-setting system;
- a demand forecast or price-elasticity estimate;
- a causal attribution model;
- a profit or contribution-margin result without cost data;
- a benchmark for what a commercial team should achieve;
- a universal price, volume, and mix convention that makes all bridges comparable.

The foundational habit is therefore not to memorize one formula. It is to make the comparison object and the convention inspectable. A bridge that moves from 3,300 to 3,420 and reconciles to zero residual can tell a team where to investigate. It cannot tell the team what would have happened under another price, product, or commercial decision.

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END OF ESSAY

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