

BLACKTECHSTARTUP EDUCATION

Startup Unit Economics Beyond the Spreadsheet: Gross Margin, CAC, LTV & Payback

Calculate economics from real direct costs, channel-specific acquisition spend and observed retention—then stress-test whether growth creates contribution or compounds losses.

Unit economics are only as good as the definitions under them. Excluding customer-success labor or inference costs from COGS can inflate gross margin; blending organic/referral acquisition into paid CAC can hide an expensive channel; projecting LTV from a guessed churn rate can turn three months of data into years of imaginary profit. Use cohorts and actual direct costs before ratios.

Know what weak and strong look like

READINESS AREA	WEAK / DILIGENCE RISK	STRONG / INVESTOR-READY
Gross margin	COGS includes only payment processing/hosting.	All variable/direct delivery costs included consistently by model.
CAC	Total marketing ÷ all customers.	Channel/cohort CAC includes relevant sales/marketing labor and spend; organic separated.
LTV	ARPU ÷ one-month churn from tiny sample.	Retention/cohort contribution margin grounds value; uncertainty shown.
Payback	CAC ÷ monthly revenue.	CAC ÷ monthly gross/contribution profit from acquired cohort.
Segments	One average for enterprise/SMB/self-serve.	Economics segmented where price, sales cost, margin or retention materially differ.

Define the economic unit

Customer, account, location, transaction, device or project may be the relevant unit. Pick the unit that matches how cost and value accumulate.

Rebuild COGS from the delivery system

Include infrastructure/model usage, support directly tied to service, implementation where recurring delivery requires it, third-party licenses, payment fees, fulfillment and warranty/rework as appropriate. Document judgment calls.

Calculate CAC by channel and cohort

Paid spend, sales compensation/commission and relevant acquisition tooling should be matched to customers acquired over a consistent period. Separate founder-led/organic channels so they do not subsidize paid CAC in the average.

Ground LTV in observed retention

For mature recurring cohorts, contribution-margin retention can support LTV estimates. For young cohorts, present bounded scenarios and observed cumulative contribution instead of pretending long-term churn has stabilized.

Use payback as a cash-risk metric

A “good” LTV/CAC ratio can still bankrupt a startup if payback is too slow relative to cash runway. Stripe notes payback varies by business model; your own collection timing, gross margin and financing capacity determine the safe range.

Run the diligence stress test before investors do

Do not rehearse an answer. Rehearse the evidence. Give yourself a short diligence window and try to produce the underlying records without rebuilding the story from memory. A clean result is reproducible, tied to a source system or signed document, and consistent with the numbers elsewhere in the company.

➔ **Gross margin:** Put the underlying records on screen and prove this standard: All variable/direct delivery costs included consistently by model. If the evidence still looks like

this weak state—COGS includes only payment processing/hosting.—record the gap, name an owner and give it a due date instead of explaining it away.

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 - **LTV:** Put the underlying records on screen and prove this standard: Retention/cohort contribution margin grounds value; uncertainty shown. If the evidence still looks like this weak state—ARPU ÷ one-month churn from tiny sample.—record the gap, name an owner and give it a due date instead of explaining it away.
 - **Payback:** Put the underlying records on screen and prove this standard: CAC ÷ monthly gross/contribution profit from acquired cohort. If the evidence still looks like this weak state—CAC ÷ monthly revenue.—record the gap, name an owner and give it a due date instead of explaining it away.
 - **Segments:** Put the underlying records on screen and prove this standard: Economics segmented where price, sales cost, margin or retention materially differ. If the evidence still looks like this weak state—One average for enterprise/SMB/self-serve.—record the gap, name an owner and give it a due date instead of explaining it away.
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Do the math investors will do

Core formulas: Gross margin = (revenue – COGS) ÷ revenue. CAC payback months ≈ CAC ÷ monthly gross profit per acquired customer. Example: CAC \$1,800, \$300 monthly revenue, 70% gross margin → \$210 monthly gross profit → ~8.6 month payback before churn/collection timing. At 40% gross margin, payback becomes 15 months with the same revenue/CAC.

Build the evidence investors can verify

- ✓ COGS policy and product-line margin bridge
 - ✓ CAC by channel/cohort
 - ✓ Retention cohorts and cumulative contribution
 - ✓ LTV scenarios with assumptions
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- ✓ CAC payback by segment
- ✓ Sensitivity table for price, margin, churn and CAC
- ✓ Reconciliation to financial statements/marketing/sales systems

Questions an investor may ask

- ? What cost did you exclude from COGS and why?
- ? What is paid CAC without organic/referral customers?
- ? How much LTV is observed versus forecast?
- ? Which segment has the shortest payback?
- ? Does the company have enough cash to fund the payback period at planned growth?

30-day repair sprint

- 1 Days 1–5: define unit and rebuild direct-cost policy.
- 2 Days 6–10: calculate margin by product/segment.
- 3 Days 11–15: rebuild CAC by channel/cohort.
- 4 Days 16–20: connect retention to cumulative contribution/LTV ranges.
- 5 Days 21–25: calculate payback and sensitivity.
- 6 Days 26–30: change pricing/channel/spend rules where growth destroys cash.

Research behind this guide

Use the primary and authoritative sources below to verify current rules, market conditions and technical guidance. Terms and regulations can change.

Stripe — CAC Payback Period



Stripe — Customer Lifetime Value



Stripe — Essential SaaS Metrics



Bessemer Venture Partners — Scaling from \$1M to \$10M ARR



Important: This guide is educational information, not individualized legal, tax, investment, employment, security or compliance advice. For decisions with material legal or financial consequences, use a qualified professional who can review your facts.

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