Calculating the ROI of AI: Cost per Outcome — Methodology Review

Dodone External Methodology Library | Source-faithful research brief | Version 1.0

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Document control

Field	Value
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Status	Independent source review — not an external audit
Publication type	AI cost allocation and unit-outcome economics
Source policy	Original public material only; no Dodone adaptation
Full source links	See section 14

Executive summary

AWS recommends assigning AI costs to applications and business outcomes, then measuring cost per meaningful outcome instead of inferring value from token counts or usage alone. Cost per Outcome is an intermediate measure, not financial ROI by itself; the unit outcome must also be linked to economic value.

Scope: Attribute AI expense to business use cases, determine costs per successful outcome, then compare those costs with the outcome's business value.

Important: This paper documents published source material only. A missing equation or input is reported as not available in the reviewed sources; no substitute model or artificial worked example has been created.

1. Purpose and scope

Attribute AI expense to business use cases, determine costs per successful outcome, then compare those costs with the outcome's business value. This paper is an independent explanatory analysis of published methodology; it is not endorsed by the originating publisher.

2. Counterfactual and baseline

Choose a stable business metric and baseline before AI. The blog illustrates developers remediating bugs, beginning at five bugs per week before AI adoption. It notes that developer costs may be fixed or variable depending on use case.

3. Published model inputs and variables

- Attributed AI cost by app/use case, including relevant cloud and model costs.
- Count of business outcomes achieved for the specified period.
- Business/product revenue or cost effects attributable to those outcomes.
- Volume, complexity, use-case characteristics and baseline conditions.

4. Cost methodology

Tag or allocate costs to the AI workload; track changes as model prices, context lengths, usage and providers change. The text explains whether labour should be included depends on the economic question and whether staff cost changes with AI utilisation.

5. Benefit and value methodology

Choose an outcome such as bugs fixed, then link successful outcomes to product economics or other value. Cost per Outcome is compared against business value, not mislabelled as ROI.

6. Published formulas and calculation logic

- Published: Cost per Outcome = AI Cost / Business Value Metric.
- The article says financial ROI requires comparing cost with the value of the outcome but does not give one universal formal algebraic ROI equation for all use cases.

7. Publisher-reported worked examples or results

Publisher illustrates a developer productivity case using a baseline of five bugs remediated per week and subsequent AI spend relative to the bug remediation metric. It emphasises that different bug complexity can change the economic interpretation.

8. Sensitivity, attribution and uncertainty

Track cost per outcome repeatedly because both numerator and denominator change with AI model, context, work complexity and usage. The publication notes ramp-up and delayed time-to-value may matter.

9. Author-scope qualifications and methodological limitations

- Cost per outcome is not a financial return percentage.
- A business value metric requires a defensible economic value for each outcome.
- Simple bug counts ignore severity, complexity and quality differences.

10. Independent reproducibility assessment

High for Cost per Outcome given measured costs and an outcome denominator; partial for financial ROI because outcome valuation is use-case-specific.

11. Public-information gap register

Information unavailable or incomplete	Source review status
Universal monetary value per business outcome: not supplied.	Not publicly available / insufficiently specified in reviewed source
Common financial ROI defaults or a single total-value formula: not supplied.	Not publicly available / insufficiently specified in reviewed source
Independent evidence that any given outcome causally created revenue: not supplied.	Not publicly available / insufficiently specified in reviewed source

12. Independent reviewer observations

These observations address verifiability and scope; they are not additions to the publisher's financial method.

Confirm each numerical claim against the original publication before relying on it for an investment decision. Do not treat conceptual frameworks or opportunity estimates as if they were a reproducible company-level ROI algorithm.

Do not fill source gaps using assumed discount rates, value multipliers, proprietary weights, industry benchmarks, model code or synthetic test fixtures. An independent audit of calculations is possible only where sufficient primary data and methodology are disclosed.

13. Audit and publication checklist

- Primary publisher and publication dates have been identified.
- Source-specific equations are separated from descriptive process narratives.
- All author-reported numerical examples are identified as publisher examples.
- Unavailable parameters and proprietary elements are explicitly marked.
- No Dodone adaptations or fabricated examples have been introduced.
- Claims of complete numerical reproducibility are limited to publicly verifiable material.

14. Original source links and attribution

The following are the original publisher resources reviewed. Each link is clickable in the PDF and editable Word file.

S1 — Calculating the Return on Investment (ROI) of AI — https://aws.amazon.com/blogs/aws-cloud-financial-management/calculating-the-roi-of-ai/

Research cut-off: 31 October 2026. Access conditions and source text may subsequently change.

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