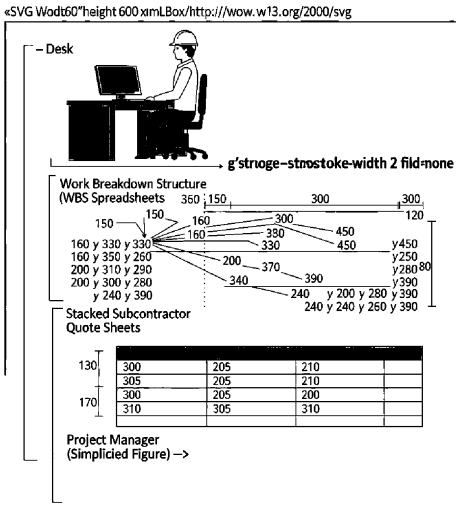
NICHE-SEARCH

WORKSHEET 6 OF 9

Post-Project Cost-Variance Retrospective

Complete within 30 days of final invoice receipt. One session, one to two hours. File by project type -- not by year -- so future estimators for the same work type find it during bid preparation.



Complementary worksheet for
Project Cost Estimation
by Ibrahim Anwar

SECTION 1

What This Is For

The post-project retrospective is the only mechanism that breaks the cycle of repeating the same estimation errors. Without it, the business runs on assumptions that may have been wrong for years without anyone knowing, because no one compared the estimate to the actuals after the project closed. With it, every project generates data that either confirms the estimation model is calibrated correctly or identifies a specific component where the assumptions need adjustment.

The worksheet compares estimated versus actual cost per component, calculates the variance percentage and direction, and requires a one-sentence cause for every variance exceeding 10%. A single retrospective is useful. Five retrospectives for the same project type produce a trend. A trend in the same direction is a methodological bias -- the estimate template for that work type needs a systematic correction, not a larger contingency buffer on the next bid.

SECTION 2

Benefits

What you get when you actually run this worksheet on a real situation:

- Identifies which cost components are consistently overestimated or underestimated, turning estimation errors from recurring losses into one-time corrections.
- Produces the actual unit cost data that seeds the internal parametric database -- the most relevant cost reference the business can build.
- Separates genuine field surprises from systematic model errors, which require different responses.
- Creates an audit trail showing estimation accuracy over time -- a concrete answer to due diligence questions about backlog reliability.
- Closes the feedback loop between estimation and execution, which Turner and Townend identify as the largest gap between Indonesian and global construction contractor practice.

SECTION 3

Framework To Use

Estimate-vs-Actual Component Comparison

Three passes: (1) variance > 10% in either direction -- flag it; (2) same direction as the last project of this type -- it is methodological bias; (3) under-estimate -- confirm the saving is real, not deferred.

ESTIMATE (AT BID)	ACTUAL (FROM INVOICES)

SECTION 4

How To Use

Follow these steps in order. Each one builds on the previous.

1. Wait until all invoices for the project have been received. Do not run the retrospective while invoices are still outstanding -- incomplete actuals produce misleading variances.

2. List every cost component that appeared in the original estimate as a separate row. Use the same component structure as the WBS Quick-Build Sheet for this project.

3. Fill in the Estimated column from the original bid document, not from memory. The figure used should be the estimate as submitted, not a revised mid-project version.

4. Fill in the Actual column from invoices, payroll records, and subcontractor final accounts. Every figure must have a source document. A figure sourced from memory is not valid for this exercise.

5. Calculate Variance (Estimated minus Actual) and Variance % ((Estimated minus Actual) / Estimated x 100). Positive variance: project came in under estimate. Negative variance: it exceeded estimate.

6. For every component where the absolute variance exceeds 10%: write the primary cause in one sentence. Use the cause taxonomy in Appendix A -- it forces specific answers rather than vague attributions.

7. Compare the direction of each component's variance against the previous retrospective for the same project type. A component that was over-estimate by 15% last time and over-estimate by 12% this time is methodological bias, not two separate errors.

8. Calculate total project variance as a percentage of BAC. Record this figure, the project type, duration, and contingency category in the summary row of Appendix B.

SECTION 5

Example Use

A contractor completes a pipe installation project. Contract value $78,000. BAC was $68,000 (direct cost $58,000, overhead $6,960, contingency $3,040). All invoices received. The retrospective is run 3 weeks after project completion.

Materials: Estimated $31,200, Actual $34,100. Variance: -$2,900 (-9.3%). Just under the 10% flag threshold. Note: "Steel pipe prices increased $0.18/m between estimate date and purchase date. No material price lock was obtained."

Field labour: Estimated $14,500, Actual $18,200. Variance: -$3,700 (-25.5%). Flagged. Cause: "Productivity assumption of 12 m/day was based on a project where the client provided the excavated trench. This project required the contractor to dig the trench -- actual productivity was 8 m/day on trench sections." This is a productivity assumption error, not a bad luck event. The estimate template for pipe installation must be split into two scenarios: client provides trench vs contractor provides trench.

Equipment (excavator hire): Estimated $3,800, Actual $5,600. Variance: -$1,800 (-47.4%). Flagged. Cause: "Trench preparation required 4 additional excavator days. Directly caused by the same productivity miss as field labour."

Subcontractor (backfill compaction): Estimated $4,200, Actual $4,050. Variance: +$150 (+3.6%). No flag.

Contingency used: $3,040 reserved, $3,040 drawn. Reserve fully consumed.

Total: Estimated $68,000, Actual $71,950. Project overran BAC by $3,950 (5.8%). Margin eroded from planned 14.1% to 7.7% of contract value.

The retrospective reveals a single root cause: the productivity assumption for pipe installation was not split by trench-provision type. Two template corrections result: (1) add a checklist item -- "Who provides the trench -- client or contractor?" with separate productivity rates; (2) add excavator days as a direct estimate variable linked to trench length, not a fixed-duration estimate.

This retrospective is filed under "Pipe Installation" in the project type folder, not under the client's name or the year.

SECTION 6

The Worksheet

Tear this out, copy it onto a fresh sheet, or fill it in directly.

Post-Project Cost-Variance Retrospective

Complete within 30 days of final invoice receipt. One session, one to two hours. File by project type -- not by year -- so future estimators for the same work type find it during bid preparation.

COST COMPONENT	ESTIMATED ($)	ACTUAL ($)	VARIANCE ($)	VARIANCE (%)	DIRECTION (OVER / UNDER)	PRIMARY CAUSE (ONE SENTENCE)

SECTION 6 (CONTINUED)

Reflection Prompts

After filling in the worksheet on the previous page, work through these.

1. For every component where the variance exceeds 10% in the same direction as the previous project of this type: this is methodological bias, not a field exception. Write a one-sentence template correction: 'Future estimates for this work type should adjust [component] assumption by [direction] [amount] because [reason].' That sentence is the action item -- not a larger contingency on the next bid.

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2. For every component where actual came in under estimate: investigate whether scope was actually reduced, whether the saving will reappear as a deferred cost in a future period, or whether a subcontractor invoice is still outstanding. Savings that disappear under scrutiny are not savings -- they are unrecorded costs.

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3. Calculate total project variance as a percentage of BAC. Record this figure, project type, duration, and contingency category in the summary log (Appendix B). After five projects of the same type, calculate the average variance percentage. A consistent negative average means the template is systematically optimistic and must be corrected, not the contingency increased.

SECTION 7

Tips and Traps

TIPS

- File retrospectives by project type, not by year. When the next pipe installation bid comes up, the estimator opens the pipe installation folder and reads the last three retrospectives. That is the reference -- not the national standard, not memory.
- The one-sentence cause per variance is the most valuable output. A complete cause statement names the mechanism: 'steel price increased between estimate and purchase' is a mechanism. 'Market conditions' is not. The mechanism tells you what to do differently.
- Run the retrospective within 30 days of final invoice receipt, not at year-end. By year-end, the estimator who prepared the bid may have moved on, and the specific detail needed to write accurate cause sentences is harder to reconstruct.
- Compare contingency drawn against contingency reserved as a separate row. If contingency is consistently fully consumed, the category classification is too optimistic. If consistently 50%+ unused, the category may be too conservative.

TRAPS

- Using bookkeeping summaries rather than individual invoices as the Actual source. Bookkeeping summaries may include costs allocated across multiple projects or period-end adjustments that do not map to individual cost components.
- Running the retrospective before all invoices are received. A subcontractor's final invoice, received 45 days after project completion, can represent 20-30% of total cost.
- Treating a negative variance as proof that the estimate was wrong and must be inflated next time. A negative variance may mean scope was reduced mid-project, a risk event was properly absorbed by contingency, or a subcontractor performed more efficiently than expected. Investigate before adjusting the template.
- Attributing all variance to 'client changes' or 'field conditions' without examining whether the estimate template itself contributed. A template that consistently misses on the same component is a template problem, not a recurring field exception.

SECTION 8

Appendixes

Appendix A -- Variance Cause Taxonomy

Use this taxonomy to write the one-sentence cause per flagged component.

Materials
- M1: Price increase between estimate date and purchase date
- M2: Quantity takeoff error -- more material needed than scope implied
- M3: Specification change -- higher-spec material than estimated
- M4: Waste / breakage above assumed rate
- M5: Unused material -- estimate was conservative or scope reduced

Field labour
- L1: Productivity assumption too optimistic for actual site conditions
- L2: Rework -- quality issue required repetition of completed work
- L3: Scope addition absorbed without a variation order claim
- L4: Crew size or composition differed from estimate basis
- L5: Actual duration shorter -- productivity above assumption

Equipment
- E1: Duration exceeded estimate (linked to labour productivity miss)
- E2: Additional equipment required not in original estimate
- E3: Breakdown downtime -- equipment unavailable during critical path

Subcontractor
- S1: Final invoice exceeded subcontract value -- scope not managed
- S2: Additional work absorbed without variation order
- S3: Final invoice below subcontract -- partial scope reduction

Contingency
- C1: Identified risk occurred and was absorbed as planned
- C2: Unidentified risk occurred -- contingency used outside original scope
- C3: Contingency unused -- risk did not occur

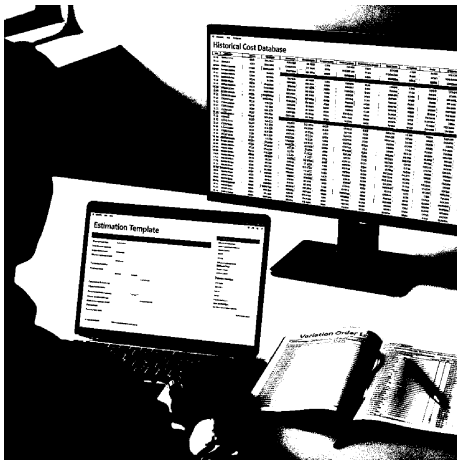
Appendix B -- Project Type Variance Summary Log

Project type: _____ File location: _____

Date	Project ref.	BAC ($)	Actual ($)	Variance ($)	Var. %	Cat.

After 5 rows: calculate average variance % Average = _____ %

Average > +5% : estimate template consistently conservative.
Average -5 to +5%: estimate template is calibrated.
Average < -5% : estimate template systematically optimistic.
  Identify which components drive the bias.
  Adjust the template assumptions, not the contingency.



WHERE THIS WORKSHEET COMES FROM

Project Cost Estimation

Calculate the Cost Before Signing, Not After the Work Has Started

by Ibrahim Anwar

This worksheet is one of nine in the *Project Cost Estimation* companion worksheet pack. The full pack is grouped into three categories: high-volume worksheets you can run weekly, niche-search worksheets for rare but high-value situations, and specific-case worksheets that walk you through a single concrete scenario.

Every framework, decision filter, and figure used in these worksheets is drawn from the chapters of the source book. The book sets the diagnosis, the worksheets give you the form to act on it.

Read the source book on Google Play Books:

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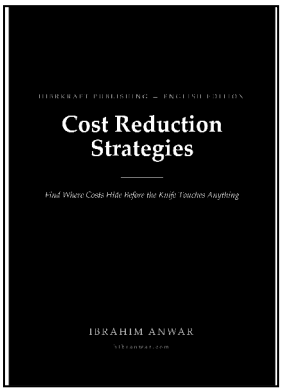

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Cost Reduction Strategies

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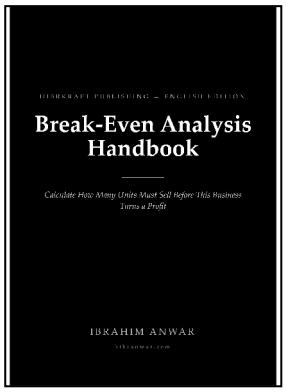

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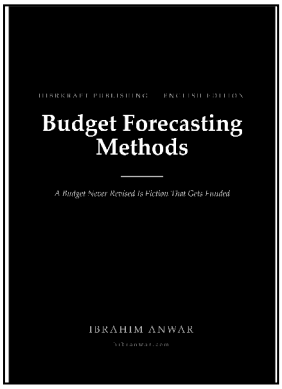

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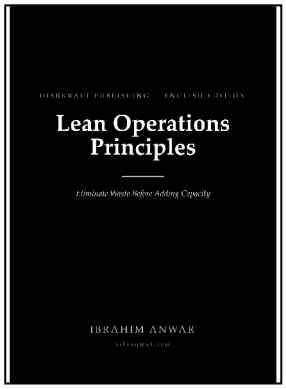

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