



NAVIGATING ANALOGOUS COST ESTIMATION FOR UNIQUE, HIGH-COMPLEXITY PROJECTS

Enhancing Accuracy Through Informed Decision-Making

Accurate cost estimation is critical for the success of high-complexity projects, particularly in the aerospace, military, and civil engineering sectors. These projects often rely on analogous cost estimation methods, which utilize historical data from previous projects to estimate costs for new endeavors. However, navigating this process requires precision and adaptability, especially when working with outdated or limited data. This guide outlines best practices for improving the accuracy of your analogous cost estimates and provides practical strategies for addressing the inherent challenges in this methodology.

Five Key Strategies for Effective Analogous Cost Estimation

1 Break Down Reference Data into Subsystems for Granular Adjustments

- **Subsystem-level adjustments** offer a more precise approach to cost estimation in complex projects. Rather than relying solely on aggregate data, decomposing reference cost data points allows for more targeted modifications.
- **Leverage your technical team's expertise** to identify improvements, challenges, or complexities that could impact specific subsystems.

2 Address Outdated Reference Data with Adjustments

- **Historical data can offer valuable insights, but it often requires adjustments to remain relevant.** Technologies may evolve, manufacturing processes may improve, and regulatory frameworks may change over time, all of which must be considered in your estimates.
- **Collaborate with technical staff to evaluate how technology has evolved.** Ask: Is the technology now more understood, or are there new complexities?
- **Consider factors like improved assembly processes, regulation shifts, or outdated cost-sharing agreements** that might require adjustments to your estimates.

3 Tackle the Unique Cost Structures of Aerospace Systems

- **Estimating costs for aerospace systems can be challenging due to hidden or fragmented data.** Non-recurring engineering costs, research and development funding, or cost-sharing agreements can obscure a system's true costs.
- **In such cases, look to adjacent industries for more accessible data points and use these as benchmarks.** Apply scaling factors where necessary, particularly when data is incomplete or inconsistent.

4 Understand the Limits of Extrapolation

- **While extrapolating from past data is a common approach in analogous estimation, it comes with risks.** As project size or complexity increases, costs may not scale in the same way.
- **Use extrapolation with caution.** Understand that trends might deviate significantly from past projects as variables such as mass, size, or complexity reach technology thresholds that require more detailed analysis to be performed for a reliable cost estimate.

5 Be Mindful of the 'Price Floor' for Aerospace Components

- **Publicly available prices for aerospace components often represent the minimum possible cost, particularly for less complex systems.** However, more advanced systems typically do not advertise prices due to various factors, including competitive advantages or proprietary concerns.
- **Treat listed prices as the starting point, and remember that actual costs are likely higher,** particularly for custom-built or highly capable systems.

Practical Applications

By implementing these strategies, organizations can enhance the accuracy of their analogous cost estimates, ensuring better-informed decision-making and minimizing the risk of cost overruns. Whether working with outdated data or navigating complex aerospace cost structures, a thorough approach to cost estimation will allow stakeholders to make data-driven decisions with greater confidence.



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