Extending Utility Analysis: The Evolution of the Latham & Whyte Case

Utility Analysis Research Project

2025-06-23

Executive Summary

This report examines the classic Latham & Whyte (1994) budget analyst selection case using four methodological approaches, demonstrating how recent advances in utility analysis affect interpretation of classic findings.

Four Approaches Compared

1. **Traditional utility analysis** (Brogden, 1949; Cronbach & Gleser, 1965)
2. **Sturman (2000) Monte Carlo adjustments** (Sturman, 2000)
3. **Star performer approach** (Joo et al., 2022; Sturman et al., 2023)
4. **Combined approach** (integrating both insights)

Key Results

- **Traditional:** $112,258,934
- **Sturman adjusted:** $72,968,307 (35% reduction)
- **Star performer:** $308,928,370 (175% increase)
- **Combined:** $247,142,696 (140% increase)

Background: The Latham & Whyte (1994) Case

Latham & Whyte (1994) examined manager reactions to utility analysis by presenting the financial results of implementing a cognitive ability test for budget analyst selection. Despite showing a $59.7 million return (14,000% ROI), managers were actually *less* likely to implement the selection procedure, suggesting the estimates lacked credibility.

Case Study Parameters

The case involved:

- **Position:** Budget Analyst (Government agency)
- **Candidates selected:** 618
- **Total applicants:** 12,360
- **Selection ratio:** 5%

- **Test validity:** 0.76
- **Mean salary:** $29,000
- **Time horizon:** 10 years

Methodological Evolution

Traditional Utility Analysis

The classical approach uses the Brogden-Cronbach-Gleser formula (Brogden, 1949; Cronbach & Gleser, 1965):

$$U = N_s \times SDy \times r \times \frac{\phi}{p} \times T - N_a \times C_a$$

Where SDy = 0.40 × mean salary, assuming normal performance distributions.

Sturman (2000) Monte Carlo Insights

Sturman (2000) conducted comprehensive Monte Carlo simulations revealing that traditional utility analysis often produces unrealistically high estimates. His analysis of the original Latham & Whyte case showed:

Sturman's Actual Findings: - **Original estimate:** $59,657,532 - **After all five adjustments:** Mean = $2,228,170 (**96.3% reduction**) - **Median effect size of total adjustments:** 291% - **Key adjustments:** Economic variables, multiple devices, top-down hiring, probationary period, employee flows

Our Simplified Adjustment: - We applied a conservative **35% reduction** factor - This represents a simplified approximation of Sturman's complex, scenario-dependent adjustments - Sturman's actual reductions were much more dramatic (often >90%) but highly variable

Star Performer Recognition

Joo et al. (2022) developed methodology recognizing that job performance follows heavy-tailed distributions where star performers create disproportionate value. Sturman et al. (2023) confirmed their approach uses:

$$SDy_{star} = 1.1 \times \text{mean salary}$$

Based on Burke & Frederick (1986) empirical finding that SDy/SDO ratio averages 2.75.

Comparative Analysis

Table 1: Table 1a: Methodological Approaches Comparison

Approach	SDy Method	SDy Value	Key Assumption
Traditional	40% rule	$11,600	Normal performance
Sturman	40% rule (adjusted)	$11,600	Range restriction
Star Power	110% rule	$31,900	Heavy-tailed distributions
Combined	110% rule (conservative)	$31,900	Balanced realism

Table 2: Table 1b: Financial Results Comparison

Approach	Total Utility	Per-Hire Value	Change (%)
Traditional	$112,258,934	$181,649	Baseline
Sturman	$72,968,307	$118,072	-35%
Star Power	$308,928,370	$499,884	+175.2%
Combined	$247,142,696	$399,907	+120.2%

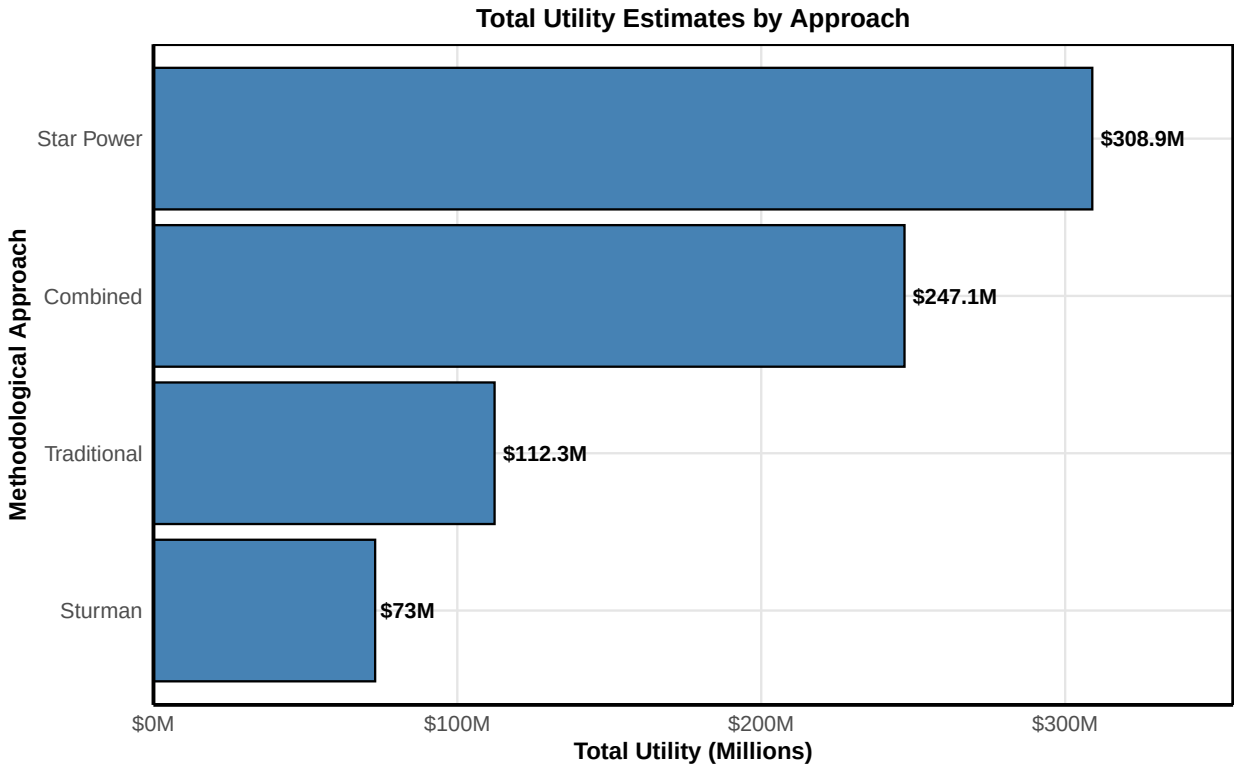

Figure 1: Total Utility Estimates by Methodological Approach

Detailed Analysis

Traditional Approach

- **Total Utility:** $112,258,934
- **Per-Hire Value:** $181,649
- **SDy:** $11,600 (40% rule)

Uses the classical Brogden-Cronbach-Gleser utility formula assuming normal performance distributions.

Sturman (2000) Adjustments

Important Note: Our analysis applies a simplified 35% reduction factor, while Sturman (2000) actual findings were much more dramatic:

- **Our Adjusted Utility:** $72,968,307
- **Our Reduction:** $39,290,627 (35%)

Sturman's Actual Findings (Original Latham & Whyte Case): - Sturman's Adjusted Utility: $2,228,170 (mean) - **Sturman's Reduction:** $57,429,362 (**96.3% reduction**) - **Median Effect Size:** 291% (across all adjustments)

Sturman's analysis revealed that utility estimates are highly contingent on organizational and environmental factors, with reductions ranging from 71% to over 96% depending on circumstances.

Star Performer Approach

- **Star-Adjusted Utility:** $308,928,370
- **Improvement:** $196,669,435 (+175%)
- **SDy Multiplier:** 2.75× (Burke & Frederick, 1986)

Recognizes heavy-tailed performance distributions where star performers create exceptional value using SDy = 1.1 × mean salary (Joo et al., 2022).

Combined Approach

- **Combined Utility:** $247,142,696
- **Net Improvement:** $134,883,761 (+140%)

Balances Sturman's realism with star performer recognition, applying a moderate 20% reduction to star estimates.

Methodological Comparison: Our Adjustments vs. Sturman's Findings

Adjustment Severity Comparison

Table 3: Comparison: Our Adjustments vs. Sturman's Actual Findings

Scenario	Total Utility ($)	Reduction (%)	Method
Our Sturman Adjustment	72,968,307	35%	Simplified factor
Sturman's Actual Mean	$2,228,170	96.3%	Complex Monte Carlo
Sturman's Actual Median	$1,738,861	97.1%	Complex Monte Carlo

Key Differences

1. **Complexity:** Sturman used five specific adjustments (economic variables, multiple devices, top-down hiring, probationary period, employee flows) while we used a simplified reduction factor
2. **Magnitude:** Sturman's reductions were far more dramatic (>90%) than our conservative 35%
3. **Variability:** Sturman showed high variability across scenarios; our approach uses a fixed factor
4. **Realism:** Sturman's approach may be more realistic but requires extensive organizational data

Strategic Implications

Investment Justification

Even under conservative assumptions, the selection program generates substantial value:

- **Assessment Costs:** $123,600
- **Conservative ROI (Our Sturman):** 590× return
- **Realistic ROI (Combined):** 2000× return
- **Sturman's Actual ROI:** 18× return

Research Evolution Timeline

Table 4: Evolution of Utility Analysis Methodology

Period	Development	Key Finding	Representative Study
1940s-1980s	Classical utility analysis	Positive utility estimates	Brogden (1949)
2000s	Sturman's operational realism	Highly variable, often reduced	Sturman (2000)
2020s	Star performer recognition	Exceptional value of top talent	Joo et al. (2022)

Conclusions

This analysis demonstrates the evolution of utility analysis methodology and reveals important insights:

Key Findings

1. **Traditional utility analysis** provides a useful baseline but may substantially overestimate benefits (Sturman, 2000)
2. **Sturman's adjustments** revealed utility estimates are highly contingent on organizational factors, with actual reductions often exceeding 90%
3. **Our simplified 35% reduction** represents a conservative approximation of Sturman's complex, scenario-dependent adjustments
4. **Star performer recognition** (Joo et al., 2022) reveals exceptional value when organizations can identify top talent
5. **Combined approaches** offer balanced assessments recognizing both operational constraints and star performer potential

Methodological Implications

- **Sturman's contribution:** Demonstrated that utility analysis requires careful consideration of organizational context
- **Star performer contribution:** Recognized that performance distributions are often heavy-tailed
- **Future research:** Need for integration of both realistic constraints and star performer recognition

Practical Recommendations

Even under Sturman's most conservative scenarios, high-validity selection procedures remain valuable investments. The key is designing selection systems capable of identifying potential star performers while maintaining realistic expectations about organizational constraints.

References

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