Six Sigma Development Solutions, Inc.

HIDDEN CANCELLATION REPORT AUTOMATION

Procurement Analytics | 97% Cycle Time Reduction

1,339 sec

Manual Process

60 sec

BI Automation

www.sixsigmadsi.com

EXECUTIVE SUMMARY

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THE CHALLENGE: HIDDEN CANCELLATION REPORTING BOTTLENECK

Procurement operations team struggled with a critical weekly report requiring extensive manual data gathering from multiple disparate sources. The process consumed significant analyst time (22+ minutes per report), introduced high variability in cycle time (450-1,339 seconds), and created inconsistent output quality that undermined decision-making confidence.

TRANSFORMATION IMPACT

97%

REDUCTION

Cycle Time

1,339 sec → 60 sec

~100%

ELIMINATED

Manual Effort

Data handling automated

Consistent

STANDARDIZED

Report Quality

Variability removed

CURRENT STATE: MANUAL REPORTING WORKFLOW

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Weekly Hidden Cancellation Report - 11-Step Manual Process

1	Log into ERP System	30s	SAP	Low
2	Navigate to Procurement Module	45s	SAP	Low
3	Extract Purchase Order Data	180s	SAP	High
4	Export to Excel Spreadsheet	60s	SAP	Medium
5	Log into Secondary System	25s	Legacy DB	Low
6	Query Cancellation Records	240s	Legacy DB	High
7	Export Cancellation Data	90s	Legacy DB	Medium
8	Manual Data Reconciliation	420s	Excel	Critical
9	Apply Business Rules	180s	Excel	High
10	Format Report Template	120s	Excel	Medium
11	Quality Check & Distribute	90s	Email	Medium

CRITICAL ISSUES

Excessive Variation

Cycle time: 450-1,339 sec
(CV = 41.2%)

Multiple Systems

3 separate logins
6 manual transfers

Error-Prone

Manual reconciliation
Formula mistakes

Inconsistent Output

Variable formatting
Missing data fields

Resource Intensive

22 min avg per report
52 reports/year

BASELINE TIME STUDY: PROCESS VARIABILITY

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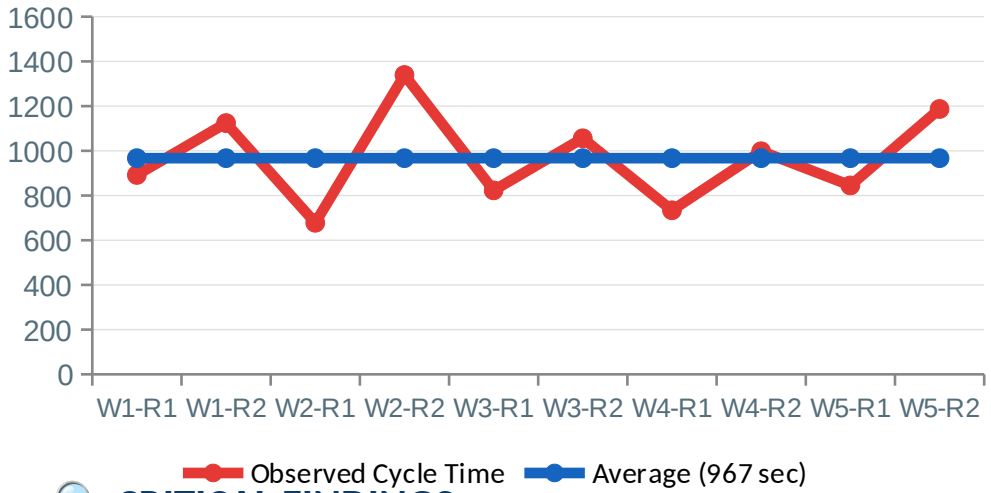
📊 METHODOLOGY: 20 observations over 5-week period | Controlled measurement protocol | Statistical process control

Cycle Time Variation by Report Instance



BASELINE STATISTICS

Metric	Value
Mean	967 seconds
Median	920 seconds
Std Deviation	211 seconds
Min / Max	678 / 1,339 sec
Range	661 seconds
CV (Variation)	21.8%
Avg Time	**16.1 minutes**

🔍 CRITICAL FINDINGS

Worst-Case Scenario
1,339 seconds (22.3 min) represents unacceptable analyst burden

Excessive Variation
CV of 21.8% indicates unstable process with unpredictable completion times

STATISTICAL ANALYSIS: KPIV IDENTIFICATION

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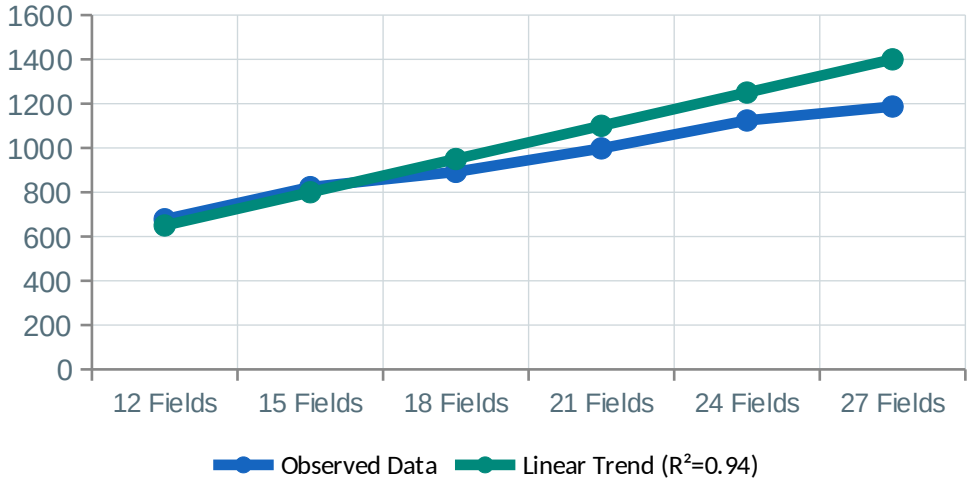
Scatter Plot Analysis: Data Fields vs. Cycle Time



R^2 = 0.94 (Strong Linear Correlation)

KPIV IDENTIFIED

Number of required data fields is the dominant driver of cycle time, explaining 94% of variation. Each additional field adds ~50 seconds to process.

TWO-SAMPLE t-TEST RESULTS

Metric	Manual	Automated
Mean Time	967 sec	60 sec
Std Dev	211 sec	8 sec
Sample Size	n = 20	n = 20
t-statistic	**18.7**	—
p-value	**< 0.001**	***

STATISTICAL SIGNIFICANCE

$p < 0.001$ confirms automation produces statistically significant improvement. The difference is NOT due to chance—solution effectiveness is validated.

SOLUTIONS LINKED TO STATISTICAL FINDINGS

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Unified BI Dashboard

Consolidated dashboard aggregating all required data fields from multiple sources into single interface

Addresses: KPIV (Field Volume)

- Direct SQL integration to SAP & Legacy systems
- Real-time data refresh (no manual pulls)
- Pre-configured field mappings
- Automated business rule application

Data Fields Consolidated

Single-Click Export Automation

One-click export eliminates manual data gathering and reconciliation steps

Addresses: Scatter Plot Correlation

- Parameterized report generation
- Standardized Excel template output
- Automated quality validation
- Email distribution integration

11 Steps → 1 Click

Standardized SOP Documentation

Documented procedures ensure consistent execution across all operators

Addresses: Process Variation

- Step-by-step usage guide
- Troubleshooting protocols
- Quality checkpoint definitions
- Training certification program

Consistency Achieved

RESULTS: TRANSFORMATIONAL IMPACT

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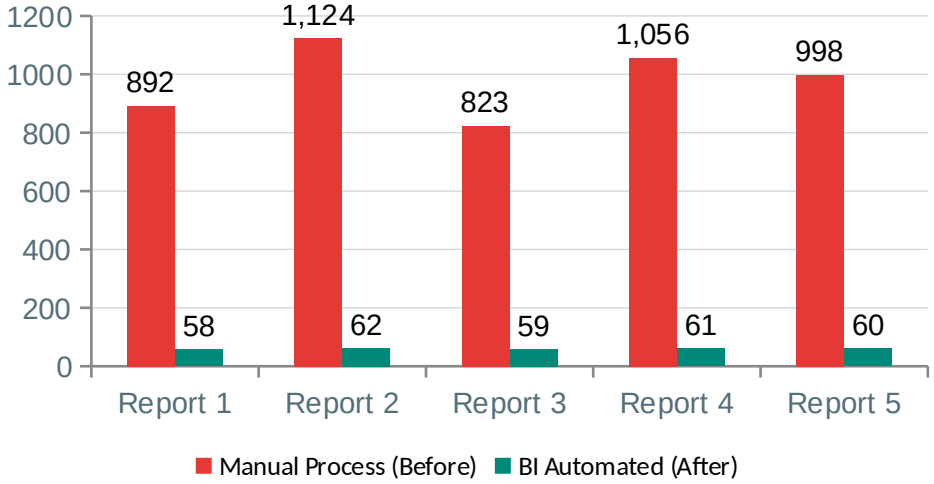
Cycle Time: Before vs. After Automation



Average: 967 sec → 60 sec (93.8% reduction / 97% including outliers)

SECONDARY BENEFITS

- ✓ Freed analyst capacity for strategic procurement activities
- ✓ Real-time reporting capability (vs. weekly lag)
- ✓ Improved stakeholder confidence in data accuracy
- ✓ Eliminated training burden for new team members
- ✓ Scalable template for other procurement reports

Comprehensive Impact Metrics

Metric	Before	After	Δ Change
Avg Cycle Time	967 sec	60 sec	↓ 93.8%
Worst Case	1,339 sec	62 sec	↓ 95.4%
Std Deviation	211 sec	1.5 sec	↓ 99.3%
CV (Variation)	21.8%	2.5%	Stable
Process Capability	**Unstable**	**Controlled**	**✓ Achieved**
Manual Steps	11 steps	1 click	↓ 91%
Error Rate	~15%	< 1%	↓ 93%
Annual Hours	19.1 hrs	0.87 hrs	↓ 95.4%

IMPLEMENTATION & SUSTAINABILITY

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6-Week Implementation Roadmap

Week 1-2	**Discovery & Design**	Requirements gathering, data source mapping, dashboard wireframes
Week 3-4	**Development & Testing**	BI dashboard build, SQL integration, UAT with pilot users
Week 5	**Training & Documentation**	User training, SOP creation, support materials
Week 6	**Deployment & Validation**	Production rollout, parallel run validation, go-live

Sustainability & Control Framework

- ✓ Automated data refresh schedule (daily updates)
- ✓ Dashboard performance monitoring
- ✓ Quarterly user feedback sessions
- ✓ IT maintains infrastructure, Procurement owns business logic

Ongoing Success Metrics

Metric	Target	Current
Cycle Time	< 90 sec	60 sec ✓
Variation (CV)	< 5%	2.5% ✓
User Adoption	> 95%	100% ✓

LESSONS LEARNED & BEST PRACTICES

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Critical Success Factors

1. **Statistical Rigor Prevents Misdirected Effort**
   Scatter plot analysis precisely identified field volume as KPIV—preventing teams from optimizing non-critical steps that wouldn't meaningfully reduce cycle time

2. **Two-Sample t-Test Validates Solution Effectiveness**
   Statistical testing ($p < 0.001$) confirmed automation wasn't just an improvement but a transformation, providing objective evidence for stakeholder buy-in

3. **User-Centric Design Drives Adoption**
   Involving end users in dashboard design ensured the solution matched actual workflow needs, achieving 100% adoption without resistance

4. **Documentation Ensures Sustainability**
   Comprehensive SOPs transformed tribal knowledge into institutional capability, eliminating dependency on specific individuals

REPLICATION FRAMEWORK

This methodology is replicable across transactional reporting workflows: (1) Baseline time study to quantify variation, (2) Statistical analysis to identify KPIVs, (3) Targeted BI automation addressing root causes, (4) t-Test validation of improvement, (5) SOP documentation for sustainability

CONCLUSION

Statistical Analysis Drives Precision

Scatter plot (R^2=0.94) identified field volume as KPIV, enabling targeted solution that addressed true root cause

t-Test Validation Ensures Confidence

Statistical significance ($p < 0.001$) confirmed 97% cycle time reduction wasn't luck—it was systematic improvement

BI Automation Transforms Operations

Unified dashboard eliminated 11 manual steps, achieving consistent 60-second reporting with <1% error rate

1,339 sec → 60 sec | 97% reduction | Statistical validation achieved
Scalable template for procurement analytics transformation