

## Executive Summary

As Senior Data Analyst at Musician's Friend, I led the modernization of critical inventory and merchandising reports, transitioning from manual Excel processes to automated SSRS solutions. One seemingly routine report rebuild exposed a \$4 million data integrity issue that had gone undetected for over 20 years, triggering immediate executive response and company-wide operational changes..

*Note: Due to corporate restrictions, no screenshots or original code are included.*

## The Challenge

For over two decades, Musician's Friend relied on a Customer Backorder Report built from manual Excel assembly of flat-file ERP exports. This report was fundamental to daily operations—emailed manually each morning and trusted implicitly by leadership for critical inventory decisions.

During the company's migration from legacy ERP to Microsoft Dynamics AX, I was tasked with modernizing this and other reports using direct database queries, automated delivery, and self-service filtering capabilities.

## The Discovery

The first run of my rebuilt report showed backorder values 30% higher than historical reports—a \$4 million discrepancy that immediately caught executive attention.

Within an hour, I was on a conference call with the EVP of Inventory Planning and subsequently pulled into meetings with multiple directors. The stakes were clear: either my new report was fundamentally flawed, or we had a serious data integrity problem that had been invisible for years.

## The Investigation

### Phase 1: Validate the New Report

- Cross-referenced my T-SQL results against data in the source operational data store
- Validated data from my T-SQL results and ODS against real-time Dynamics AX data
- Achieved 100% accuracy match at the line-item level
- Confirmed automated calculations and filtering logic

### Phase 2: Analyze the Legacy Process

- Verified the legacy Excel report matched its flat-file source perfectly
- Identified the flaw
  - The legacy ERP system assigned pricing from the first instance of each item to all subsequent orders, regardless of actual sales prices
- Cross-validated findings using both Oracle-based legacy data store and live SQL Server AX data

### Phase 3: Document and Communicate

- Created comparative analysis showing line-level discrepancies between systems
- Developed executive summary explaining the technical issue in business terms
- Provided rollup summaries with pricing, quantity, and timestamp variances

## The Business Response

Leadership's response was swift and decisive:

### Immediate Actions:

- Redirected Inventory Planning, Merchandising, and Contact Center priorities to address urgent backorders
- Commissioned a Customer Outreach Report including contact information, alternative item recommendations, discount guidelines, and order modification tracking

### Customer Resolution Process:

- Enhanced data store with alternative product mappings from Merchandising team
- Direct customer contact offering product substitutions
- Order flagging system for customers choosing to wait

## Business Impact

### Quantifiable Results:

- Multiple departments realigned strategies based on accurate data insights
- Backorder levels dropped by 50% within weeks—reaching multi-year lows

### Process Improvements:

- Eliminated 20+ years of systematic pricing errors
- Improved customer satisfaction through proactive communication and alternatives

## Key Takeaways

This project reinforced several critical principles that have guided my approach to data analysis:

**Trust the Data, Question the Process:** When numbers don't align with expectations, the discrepancy usually reveals systemic issues rather than analytical errors.

**Validation is Non-Negotiable:** Thorough testing against multiple data sources isn't just best practice—it's essential for maintaining stakeholder trust and business continuity.

**Communication Bridges Technical and Strategic:** The ability to translate technical findings into actionable business insights determines whether analysis drives decisions or sits on shelves.

**Legacy Systems Hide Legacy Problems:** Modernization often exposes long-standing issues that manual processes inadvertently masked.

This experience solidified executive confidence in my analytical rigor while demonstrating how methodical data investigation can uncover opportunities for significant operational improvement. Most importantly, it showed that questioning assumptions respectfully—and proving alternative truths with precision—transforms routine reporting into strategic business intelligence.