Avoiding Business Analytic Failures & Road Map for Implementation

Assess the viability of the practical use of business analytics to improve performance

June 7, 1:00 pm

Presenter: Robert Zwerling – Aurora Predictions

Founder and Managing Director of Aurora Predictions, a software company that provides revenue foresights planning to ensure companies make their quarterly revenue targets and insights to understand what drives their revenue dynamics. He is also founder and president of Z Concepts, a company that promotes innovation in technology and civics; and co-founder of US Vigilance (www.usvigilance.com), inspiring responsible citizenship through fact based and reasoned discussion on public policy. He has been a high-tech entrepreneur for 25 years founding and growing software companies in telecommunication, manufacturing & distribution, high data availability and predictive analytics.

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Culture & Framework to Implementing Analytics

“Discover your tomorrow today”
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Topic & Goal

Avoiding Business Analytic Failures & Road Map for Implementation

Through case studies of successes and failures in implementing analytics you’ll learn whether such efforts can be muted or meaningless for you. You’ll get a road-map of engaging analytics and the needed systems, processes, and people.

Goal – take home knowledge that enables your action

Assumption – generally understand value of analytics
About – Robert J Zwerling, P.E.
Managing Director, Aurora Predictions

- 25+ years growing software companies in M&D, Telecom, High Data Availability & Predictive Analytics with 3 successful exits
- Authored a dozen papers on predictive analytics, 1 patent pending
- Bachelor & Masters in Engineering, Member Tau Beta Pi, and Register Professional Engineer
- Co-Author, *Vigilance The Price of Liberty*
- Co-Founder, *US Vigilance*, promoting responsible citizenship (www.usvigilance.com)
- Co-Producer with Richard Nixon Foundation, *The Collegiate Forum*
- Supporter Hoover Institution at Stanford University
Presentation Plan to “Round the Bases”

• Start with a line drive to right by *Defining Analytics*

• Tagging 1\textsuperscript{st} with the *Barrier to Analytics*

• Steal 2\textsuperscript{nd} with *Cases of Analytic Failure & Success*

• Run to 3\textsuperscript{rd} with *Analytic Infrastructure Considerations*

• Tag home with *Analytics System Considerations*
Defining Analytics

“line drive to right field”
What is the Meaning of “Analytics”

• **Reporting**: presentation of past data & its arithmetic comparison – Scorecards/Dashboards of past are *NOT* analytics

• **Analytics**: arithmetic, statistic and mathematic calculation on past data for insight and prediction
Meaning of “Insight” & “Foresight”

• **Insight** – revealing *facts* of the past – interesting but not necessarily actionable

• **Predictions (Foresight)** – *calculation* on facts of past for future outcomes both interesting & actionable

  (forecasts, predictions, probability & accuracy)
Barriers to Analytics & Components for Success

“tagging 1st base”
General Perception of Barriers to Implementing Analytics

- **Complex**
  - Simpler new generation tools

- **Cost not Budgeted**
  - ROI on analytics is 10X

- **CEO Support**
  - Management yes, CEO no

- **Data Availability/Integrity**
  - Only matter of effort & new gen tools address
The Biggest Barrier to Analytics Is Culture
What is the Meaning of “Culture”

• The Merriam-Webster dictionary defines Culture:
  Beliefs, customs, arts, etc., of a particular society, group, place, or time

• The culture needed for “Analytics” is:
  Mindset, system, people and processes in the business to make data driven decisions using quantitative analysis and predictions
Components of Analytics Culture & Relation

- Mindset
- System
- Process
- People
Mindset vs. Analytic Contribution to Business

Analytics Contribution
- Impact
- Influence
- Insight
- Support

Mindset to Business

Reporter
Commentator
Advisor
Partner

mindset
people
system
process
# Mindset vs. Deliverables & System

<table>
<thead>
<tr>
<th>Mindset</th>
<th>Deliverables</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporter</td>
<td>Timely &amp; Accurate Historical Reporting</td>
<td>Excel &amp; BI</td>
</tr>
<tr>
<td>Commentator</td>
<td>Reporting with Simple Analytics of Interest</td>
<td>Discovery &amp; Visualization (DV)</td>
</tr>
<tr>
<td>Advisor</td>
<td>Influential Reporting with Insights</td>
<td>Desktop Stat (DS) or DV &amp; Analytics (DV&amp;A)</td>
</tr>
<tr>
<td>Partner</td>
<td>Impactful Insights &amp; Foresight</td>
<td>DV&amp;A</td>
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</table>
## Types of Analytics Systems

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop Statistical (DS)</td>
<td>Excel add-on experimental &amp; personal use, small database, need statistician</td>
</tr>
<tr>
<td>Enterprise Data Mining</td>
<td>Very complex, large, for specialized use only, all else suicide</td>
</tr>
<tr>
<td>Discovery &amp; Visualization (DV)</td>
<td>Deep dive with trends &amp; dashboards for insights but not predictive</td>
</tr>
<tr>
<td>Discovery, Visualization &amp; Analytics (DV&amp;A)</td>
<td>Deep dive trends &amp; dashboards for insights &amp; predictive analytics for foresight</td>
</tr>
</tbody>
</table>
Analytics Implementation Model

Mindset to Business

Analytics Contribution
- Impact
- Influence
- Insight
- Support

System
- DV&A
- DS or DV&A
- DV
- Excel

Roles:
- Reporter
- Commentator
- Advisor
- Partner
The People & Processes

• People: need threshold number of “core” & “consumer” users or be at risk to attrition

• Processes: written procedures for regular operation for data loading to collaboration

  Data Accessible

  Data Timely

  Data Accurate
Case Examples of Analytics Failures & Success in:

Telecommunication, Healthcare, Retail & Transportation

“stealing 2nd base”
Examples of Cultural Deficiencies – Death by Excel Culture

Fortune 500 telecom company management believe forecasting & analytics would enable better productivity and decisions but failed against culture of spreadsheets

“people who care don’t know & people who know don’t care”
Examples of Cultural Deficiencies – Death by Excel Culture

4 analytics projects with 10X-70X ROI terminated after completion because Excel:

- Protects my job from productivity
- Hides mistakes – just blame the data
- Makes me indispensable – I’m the MESS
Examples of Cultural Deficiencies – Death by Excel Culture

- Management failed to purge people inhibiting analytics
- Analytics that was implemented was “backroom” – expensive with high complexity to give same “cover” as Excel
Implementation Failure – Mindset & System Mismatch

Analytics Contribution
- Impact
- Influence
- Insight
- Support

Mindset to Business

System
- DV&A
- DS or DV&A
- D&V
- Excel

Sufficient People & Processes
Insufficient

Management
Staff

Mindset
Process
System
People

Analytics Reporting
Partner
Advisor
Commentator
Reporter
Examples of Cultural Deficiencies – Death by Reporting Mindset

$5B healthcare provider wants analytics for better decisions & personnel development but failed to develop personnel

“Good enough is good enough”
Examples of Cultural Deficiencies – Death by Reporting Mindset

- FP&A successful in regular monthly and ad-hoc reporting but despite repeated attempts failed in analytics
- Comfortable with copy & paste from DV&A to Excel and email in “a minute”
- Comfortable with a large team spending 2 weeks in C&P to produce monthly management reports
- Disconnect: Finance it gives reports operations wants & ops says it gets reports finance provides
Examples of Cultural Deficiencies – Death by Reporting Mindset

Management failed to:

• **Push** folk from their comfort zone

• Provide **time** in day to develop analytical skills

• Provide incentive to **develop** the analytical skills
Implementation Failure – Mindset & Analytics Mismatch

Analytics Contribution
- Impact
- Influence
- Insight
- Support

System
- DV&A
- DS or DV&A
- D&V
- Excel

Mindset to Business

Staff
Management

People & Processes
Sufficient People & Processes
Insufficient

Analytics Reporting
Advisor
Partner
Commentator
Reporter
Examples of Cultural Deficiencies – Death by Attrition

NASDAQ Retailer installed analytic system for better operational forecasting & planning but failed to assure sufficient users

“one & done - anything less than a choir is at high risk”
Examples of Cultural Deficiencies – Death by Attrition

• Goal to reduce monthly planning cycle effort by 50% and get 98% forecast accuracy – goal met!

• One person in Finance trained as “core” user then later promoted

• No written procedures nor analytic consumers

• Core user gets promoted but replacement had no processes or consumer demand
Examples of Cultural Deficiencies – Death by Attrition

• People change and delay will doom analytics unless analytics is:
  
  o Is quickly integrated into operations
  
  o Has written procedures
  
  o Has sufficient core users & consumers
Implementation Failure – Insufficient People & Processes

- Impact
- Influence
- Insight
- Support

Mindset to Business

Analytics Contribution

System

DV&A ✓
DS or DV&A
D&V
Excel

People & Processes

Sufficient People & Processes
Insufficient
Example of Cultural that Works – Doing All the Right Things

NYSE freight transportation company successfully implemented forecasting & analytics for better revenue planning & risk mitigation

“putting all the pieces together”
## Cultural that Works – Doing it Right

<table>
<thead>
<tr>
<th>Asset</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Mindset</td>
<td>Finance sought to partner with business for analytic revenue forecasting to save time, quarterly 18 month rev planning to mitigate risk &amp; to manage street expectations</td>
</tr>
<tr>
<td>✓ Analytic System</td>
<td>Realized Excel &amp; DS are not enterprise so went DV&amp;A</td>
</tr>
<tr>
<td>✓ People</td>
<td>Start team of 3 core users that grew to 80 consumers in executive, sales &amp; marketing</td>
</tr>
<tr>
<td>✓ Process</td>
<td>Users trained, operational processes for data loading &amp; collaborative input</td>
</tr>
</tbody>
</table>
Example of Cultural that Works – Doing it Right

• Increased forecast accuracy & forecast line of sight through analytics & human collaboration

• Extensively use forecasting & correlations with economic indicators to assure revenue trends

• Extensively use advanced analytics for Street earnings management
Example of Cultural that Works – Doing it Right

Use correlations to find lead economic indicators & advanced forecasting to reveal risk points in demand.

Units vs. U.S. GDP
Lead 9 Months

Point of discussion when forecast bar outside green line.
Item to Note Regardless of Failure or Success

- Data was never an issue
- Big-Data vs. Right Data
- Real Time vs. Right Time
Case Summary – Killers to Analytics

- Management Push/Purge
- Lack of Process
- Insufficient People
- Excel Culture

Diagram: Mindset, Process, System, People

Aurora Predictions
Infrastructure Considerations for Implementing Analytics

“running to 3rd base”
Checklist for Analytics Infrastructure

- Mindset
- Process
- System
- People
Analytical Systems – Vendor Sampling

- **Desktop Statistical**
  - Crystal Ball (Oracle), Minitab®, Forecast Pro

- **Enterprise Data Mining**
  - SAS, SPSS (IBM)

- **Discover & Visualization**
  - New Gen Cloud: ClearStory, DataHero, Domo
  - Old Legacy: QlickView, Tableau

- **Discovery, Visualization & Analytics**
  - New Gen Cloud: Alteryx, BigML, Datameer, Aurora
  - Large Cloud: Data Analytics (Oracle)
The People

- The Evangelist – man with the cause
  (Man can fly)

- The Backer – man with the budget
  (I’ll invest in that)

- The Test Pilot – smart guy
  (I’ll fly that)

- The Congregation – group of users
  (We’re the airline to fly that)
You need $\geq 3$ core users & $\geq 7$ consumers, anything less is at risk from attrition
## Key Processes – Must be Written

<table>
<thead>
<tr>
<th>Processes</th>
<th>Goal</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Loading</td>
<td>Assure Right Data Updated at Right Time</td>
<td>Sufficient Reaction Time</td>
</tr>
<tr>
<td>Data Quality Assurance</td>
<td>Right Data Without Errors</td>
<td>Free from Errors &amp; Missing Data</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Authorities for Inputs, Approvals &amp; Updates</td>
<td>Assure Access &amp; Advancement</td>
</tr>
<tr>
<td>Training</td>
<td>Assure Capability &amp; Effectiveness of Use</td>
<td>Clear &amp; Comprehensive</td>
</tr>
</tbody>
</table>
Considerations of Analytical Systems

“coming into home plate”
Ad-Hoc Point vs. Systematic Solutions

- **Point solution** often require a Data Scientist to cobble together technology to answer a specific issue

- **Systematic solution** uncovers heretofore unknown answers and inspire heretofore unasked questions
Systematic & Transportable Solution

1. Systematic – the application of predefined comparisons and statistics meaningful to business applied to *all* data across *all* dimensions

2. Transportable – use of predefined comparisons and statistics across any business database

(vs. point solutions are not systematic nor typically transportable)
Dimensionality & Visualization Intelligence

• Analytic intelligence require unrestricted dimensionality to reveal value in the data
  (why Excel & BI have limited value)

• Visualization can further reveal value in data – but separate sizzle from the bacon
Dashboard Sizzle – Good Looking But Difficult to Discern a Decision
Visualization Complexity – Lot’s of Value But Need to be Skilled User
Closing Thought
“Know thy self, know thy enemy. A thousand battles, a thousand victories.” – Sun Tzu

“and the winners are”
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