Predictive Analytics: Too Important to Ignore
The six secrets to success with predictive analytics

Webinar December 18, 2013

Sponsored by:

Tony Cosentino
VP & Research Director, Business Analytics
Ventana Research

Jane Hendricks
Product Marketing Manager
IBM Business Analytics

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Ventana Research

Ventana Research is the leading benchmark research and strategic advisory services firm. Our unparalleled analytic insights and best practices guidance are based on our rigorous research-based benchmarking, business, technology and best practices services. Our unique approach to covering people, process, information and technology in organizations across business and IT is unique to our analyst firm.

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Research and Education
- Members (250,000+) and Reach to 3m+ Professionals
- Research and Reach across Finance, Ops and IT

Benchmark Research
- Conduct and Deliver Benchmark Research
- Develop Analytic and Best Practice Assessments

Technology Vendor Knowledge
- Formalized Research Coverage of Technology Vendors
- Deliver Research on Technology Impact to Business

Business and Technology Expertise
- Expertise Across Business and Technology
- Understand Business Domain and Processes
Today’s Speakers

Tony Cosentino  VP & Research Director
Ventana Research
Tony is responsible for the business analytics research practice including business intelligence, location intelligence operational intelligence, and predictive analytics. Tony is responsible for researching analytics, big data, cloud computing, business collaboration, mobile technology and social media. You can find Tony on Twitter at @tonycosentinovr, via email at tony.cosentino@ventanaresesarch.com or via his blog at http://tonycosentino.ventanaresearch.com.

Jane Hendricks, Product Marketing Manager
IBM Business Analytics
Jane Hendricks is a Product Marketing Manager for IBM Business Analytics focusing on IBM SPSS Modeler and related technologies. She has more than 15 years of experience in applying predictive, behavioral and attitudinal analytics to understand and help organizations maximize the results of their analytical efforts across industries and functional areas (marketing, customer relationships, human resources, and more). She holds a Bachelor of Arts degree from Northwestern University in Economics and Political Science as well as an M.B.A. from DePaul University (Chicago) in Marketing.
What is Predictive Analytics?
The Ethos of Big Data Analytics

- Moving from 20th to 21st century analytics: designed data and organic data
- Moving beyond internal and external data silos
- Moving beyond analytical silos
- Moving from the V’s to the W’s
Four Pillars of Big Data Analytics

- **Intersection of BDA and traditional analytics:** bringing structured and unstructured data together
- **Visual and data discovery:** exploring data in many ways
- **Predictive analytics:** reducing complexity and broadening scope
- **Real-time and right-time analytics:** operationalizing analytics on an industrial scale
Enabling the Five Analytic Personas

A big data foundation must meet the following roles & responsibilities:

Information Consumers
• Digest information and perform basic interactions

Knowledge Workers
• Utilize and interact analytics to drive actions and decisions.

Designers
• Enable the design and use of information across roles.

Analysts
• Mash-up data and design analytics to provide foundational insights for business.

Data Geek
• Enable big data to be exploited in an immature world through Data Scientists.

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# Predictive Analytics in Context

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<tr>
<th></th>
<th>Strategic</th>
<th>Ad Hoc</th>
<th>Operational</th>
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<td>Execution oriented goals (e.g. Fraud</td>
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<td>cause analysis, campaign management)</td>
<td>detection)</td>
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<td>Manager, Analyst</td>
<td>Managers, Users, other systems</td>
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<td><strong>Example Tools</strong></td>
<td>Specialized Analytical tools</td>
<td>Business Intelligence</td>
<td>BP/CEP systems</td>
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<td>Months to years</td>
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## Operationalizing Predictive Analytics

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Example Tools:
- Specialized Analytical tools
- Business Intelligence
- BP/CEP systems

User:
- Executive, Analyst
- Manager, Analyst
- Managers, Users, other systems

Timing:
- Months to years
- Days to months
- Real-time to intraday
Key Insights
Key Insights into Predictive Analytics

• Predictive analytics is very important to organizations.
• Predictive analytics maturity varies widely among organizations and people.
• Revenue-generating functions are primary users of predictive analytics.
• Various teams handle implementation of predictive analytics.

Source: Ventana Research
Predictive Analytics Benchmark Research

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Key Insights into Predictive Analytics

• More timely results, and more frequently updated models are needed.
• Inadequate resources and training for predictive analytics projects.
• Line of business is funding predictive analytics projects.
• Organizations expect further predictive analytics to have a positive impact.

Source: Ventana Research
Predictive Analytics Benchmark Research

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Opportunities
Areas of Opportunity

- Marketing Analytics
- Human Capital Analytics
- Operational Analytics
- Risk and Compliance
- Finance Analytics
Top Five Benefits of Predictive Analytics

- **Achieve competitive advantage**: 68%
- **New revenue opportunities**: 55%
- **Increased profitability**: 52%
- **Increased customer service**: 45%
- **Operational efficiencies**: 44%

Related Research Points:
- Management (76%) has no doubts that predictive analytics is a top priority.
- Almost two thirds (65%) of marketing use today and another fifth (19%) by end of 2015.

Key benefits of represent achievement in the process and using technology.

Source: Ventana Research
Predictive Analytics Benchmark Research

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Barriers
Foundational Information Challenges

Top five barriers facing organizations today

- Multiple versions of the truth: 64%
- Data spread across too many apps and systems: 67%
- Data not timely enough: 60%
- Data not clean enough to use: 58%
- Technology not able to meet needs: 57%

Source: Ventana Research Information Management Benchmark Research

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Technical Challenges in Predictive Analytics

What technical challenges have been encountered in its use of predictive analytics:

- Difficult integrating into our information architecture: 55%
- Cannot access the necessary source data: 35%
- Results not accurate: 22%
- No challenges: 20%
- Too hard to use: 18%

Related Research Points:

- Midsize (73%) and Very Large (65%) businesses especially have difficulty integrating predictive analytics into their information architecture.
- Largest barrier to making changes to predictive analytics technology is lack of resources (59%).

Source: Ventana Research
Predictive Analytics Benchmark Research

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Changing Needs of Buyers

Related research:
- Small companies (83%) consider usability to be a very important consideration.
- Functionality becomes relatively more important as company size increases

### Category

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<th>% selecting Very Important</th>
</tr>
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<tr>
<td>Usability</td>
<td>70%</td>
</tr>
<tr>
<td>Capability</td>
<td>60%</td>
</tr>
<tr>
<td>Reliability</td>
<td>58%</td>
</tr>
<tr>
<td>Adaptability</td>
<td>47%</td>
</tr>
<tr>
<td>TCO/ROI</td>
<td>47%</td>
</tr>
<tr>
<td>Manageability</td>
<td>33%</td>
</tr>
<tr>
<td>Validation</td>
<td>26%</td>
</tr>
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</table>

Source: Ventana Research Technology Innovation Benchmark Research

User experience and simplicity is most critical.

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delivered solid results in a challenging market.

Projected sales of main products in 2013

Distribution of market share among the major industry players
Six Secrets to Success

1. Think broadly to educate and specifically to implement (e.g. The V’s, the W’s, 4 Pillars of BDA, Time-to-Value)

2. Determine use case and best practices; address big data and revenue generating functions

3. Evaluate the maturity of your organization with respect to People, Process, Information and Technology

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Six Secrets to Success

4. Create a cross-functional plan to specifically address skillsets and deployment process and tools.

5. Identify other tools and applications with which predictive analytics should be integrated.

6. Deploy models for competitive advantage—move to more granular, right-time and updated models.

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Overcoming Challenges and Realizing Business Value with IBM Predictive Analytics

Jane Hendricks, Product Marketing Manager, IBM SPSS Modeler

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Overcoming Barriers to Realizing Benefits of Predictive Analytics

**Usability**
Addressing the analytical needs of the Business User

**Access to Data**
Exploiting value from the relevant new mix of data

**Integration**
Making decisions at point of impact
Power to the User

Guidance throughout the process – from analysis to deployment

One-click modeling for the business user

Visual analytical workbench to expand and extend analysis

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Simplicity Without Sacrifice

- Comprehensive predictive analytics platform
- Providing advanced analytics for Big Data with integrated optimization and decision management capabilities
- Within a visual interface with built-in guidance.
- Deployed on a desktop or integrated within operational systems
- That brings predictive intelligence to a single user or an entire enterprise

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Supports Predictive Analytics Best Practices

- CRISP-DM (Cross Industry Standard Process for Data Mining)
  - Business understanding
  - Data understanding
  - Data preparation
  - Modeling
  - Evaluation
  - Deployment
# Breadth of Modeling Techniques

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<tr>
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<th>Algorithms</th>
<th>Usage</th>
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<td>Auto Classifiers, Decision Trees, Logistic, SVM, Time Series, etc</td>
<td>Used to predict group membership (ie will this employee leave?) or a number (ie how many widgets will I sell?)</td>
</tr>
<tr>
<td><strong>Segmentation</strong></td>
<td>Auto Clustering, K-means, etc.</td>
<td>Used to classify data points into groups that are internally homogenous and externally heterogeneous. Identify cases that are unusual</td>
</tr>
<tr>
<td></td>
<td>Anomoly detection</td>
<td></td>
</tr>
<tr>
<td><strong>Association</strong></td>
<td>APRIORI, Carma, Sequence</td>
<td>Used to find events that occur together or in a sequence (ie market basket).</td>
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Extend Analytics with R

R Integration
Scale R execution by leveraging database vendor provided R engines
R Build/Score, Process and Output node support

Custom Dialog Builder for R
Provides the ability to create new Modeler Algorithm nodes and dialogs that run R processes
Makes R usable for non-programmers

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Access to Big Data = Opportunity for Richer Insight

- Support for all types of data
  - Standard Document Formats (i.e. Excel, Flat Files, Variable Files)
  - Enterprise Data Warehouses
  - Hadoop
  - IBM Cognos
  - SAS
  - Unstructured Data
  - Survey Data
  - Streaming Data
  - Etc...
- No SQL Knowledge Needed
Bring Analytics to the Data for Faster Insight

- **Databases:**
  - SQL Pushback
    - Sampling for DB2 on z/OS
    - In-Database R (Netezza, SAP HANA and Oracle)
  - In-Database Mining
  - Vendor Algorithms
    - IBM InfoSphere®, Netezza®, Oracle, Microsoft SQL Server
    - Netezza®: Two Step, Model Management, Model Viewer support (Regression Trees, Decision Trees, Kmeans and TwoStep)
  - SPSS Scoring Adapters w/ Text Analytics Support – Netezza, DB2 on z/OS, Teradata and DB2 LUW

- **Hadoop via SPSS Analytic Server**
  - Auto Classifier, Auto Numeric, Split Model

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Bridging the Gap Between Forecasting and Prediction

Before

After

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Accessing Data that Matters, Regardless of Format or Source

**HOW?**

**Interaction data**
- E-Mail / chat transcripts
- Call center notes
- Web Click-streams
- In person dialogues

**Descriptive data**
- Attributes
- Characteristics
- Self-declared info
- (Geo)demographics

**WHY?**

**Attitudinal data**
- Opinions & Preferences
- Needs & desires
- Survey results
- Social media

**Behavioral data**
- Orders
- Transactions
- Payment history
- Usage history

**WHAT?**

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Uncovering Structures that Create Better Models

- Text Analytics
  - Natural Language
  - Sentiment Analysis
- Entity Analytics
  - Disambiguate identity
  - People, places, things
- Social Network Analysis
  - Uncover relationships
  - Find leaders and laggards

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Delivering Predictive Decisions at the Point of Impact

Opportunity for Better Decisions In Business Applications, Processes and Solutions

- How Can I Be Alerted When There Are Constraints In My Supply Chain?
- When a Customer Buys My Product, How Do I Optimize a Cross-sell Opportunity?
- What Offer Should I Send a Customer When He/She Is Near My Store?
- Contact Center Agent — How Do I Know Which Offer to Give?
- How Can I Reduce Production Downtime?
- How Can I Automatically Allocate Network Bandwidth to My High-value Customers?
- While In the Store, How Much New Product Should I Order to Replenish the Shelves?
- How Do We Communicate Energy Usage to An Empowered Energy Client?

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Optimize your operational decision with Decision Management.

Optimized Decisions

- Business Rules + Optimization + Predictive Analytics

All Data

Optimize Actions Within Resource Constraints, Aligning Execution With Strategy

Empower Real-time and Adaptive Decisions Accommodating Changing Conditions

Provide Front-line Employees and Systems With Recommended Actions

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Example: Deployment of Analytics in a Call Center for Insurance Claims

Structured, Unstructured, Social Media and Business Intelligence Data

Simulation and Optimization

Rules

Scoring

Level | Points
--- | ---
Low Risk | > -5
Medium Risk | > +1
High Risk | > +8

Frontline Rep Only Sees “Refer” At the Point of Impact

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Example: Predictive Maintenance

Predict failures and recommend corrective actions before incidents occur

Recommended actions delivered to operational dashboard
IBM SPSS Modeler 16 Editions

- **SPSS Modeler Gold**
  Provides organizations with the ability to build and deploy predictive models directly into the business process to help people or systems make the right decisions each time. This is achieved by combining the power of Modeler Premium with Decision Management which combines predictive analytics with rules, scoring and optimization within an organization's processes and operational systems to deliver recommended actions at the point of impact.

- **SPSS Modeler Premium**
  Extends the value of Modeler Professional with the ability to leverage unstructured data through text analytics, entity analytics, social network analysis to create more accurate models that address a multitude of business problems and analytic requirements using almost any type of data.

- **SPSS Modeler Professional**
  Provides a range of advanced algorithms, data manipulation and automated modeling and preparation techniques to build predictive models and uncover hidden patterns in structured data.
IBM SPSS Predictive Analytics

Optimized decisions made possible by pervasive, predictive, real-time decisions at the point of impact

Predictive Customer Analytics
Acquire
Grow
Retain

Predictive Operational Analytics
Manage
Maintain
Maximize

Predictive Threat & Fraud Analytics
Monitor
Detect
Control

Data Collection
Social Media Analytics
Statistics
Modeler
Analytic Server & Catalyst
Analytic Answers

Collaboration and Deployment Services

Cognos software
InfoSphere
IBM Research
WebSphere software

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Want to learn more about Modeler?

- Take our two-day introductory class. Choose the class format that works best for you.
  - Introduction to IBM SPSS Modeler and Data Mining
    - Classroom
    - Instructor Led Online (virtual classroom)
    - Self-paced Training
- For more information, or to book your Modeler Training Class Call 1.800.543.2185
- Visit us on the web
Questions and Answers
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