

# *Essential Business Analytics for Managers Leveraging Decisions for Performance*

## *Abstract*

### *The Emerging Need for Manager Centric Analytics*

Management performance is closely tied to the results of the decisions made by managers. Recent advances in analytics provide better insight into the information that managers rely on when making better decisions. The use of analytics by managers is best enabled when managers have access to tools and methods that are easy to use, apply to a problem or issue, and make sense for the tasks a manager executes.

### *Analytics Support Decision Making*

There are a variety of analytics and analytic approaches available today, so what type of analytics do managers really need? Managers at all levels require a good working knowledge of the core analytics available to them today. The convenience of value added analytics in tools provides a day to day capability for increased manager performance. Business intelligence can provide managers with dashboards and a running tally of performance data for known indicators. However, when an incident occurs or tracking indicators require further understanding then the manager needs a bit more insight to identify the issue and execute a corrective action.



### *What New Analytics are Available to Improve Decision Making?*

Improvements in artificial intelligence, neural nets, and machine learning now provide managers with this insight. Once the realm of data scientists, analytic tools are now available that enable managers to tap their potential. Additionally, statistical and semantic analytics are being used in new ways to provide better insights.

### *Extending Analytics to Business Analysts*

Added value comes from extending the use of these analytics to others in the organization especially the various types of analysts. Easy use of analytics is not limited to managers. Business analysts, process analysts and others can take advantage of the new tool that are emerging that provide core decision support and analytic investigation.



This course is for managers and professionals seeking to gain skills in accelerated and improved analytics for decision making. Easy to use analytics provide the organization with efficient and effective means of correcting and governing the flow of work that delivers the goods and services to customers.

# *Essential Business Analytics for Managers*

## *Leveraging Decisions for Performance*

Day One

### *Day 1 Theme: Analytics for Managers*

There are many tools and methods for financial analysis. What is missing are tools and analytics that help with the everyday decisions managers make. The focus today is applying analytical techniques to key indicators that provides operational as well as strategic insight value.

#### *Section 1 – What do we mean by management analytics?*

- Managers, models and analytics
- The important role of models
- The emergence of the digital twin for organizations
- Business and Management models are the basis for the digital twin
- The digital twin supports the use of analytics
- What is the analytic method used for management insight?
  - *Events, Incidents, Variable Change and Exceptions*

*Video and Discussion: Management Analytics*

#### *Section 2 – Performance Indicators*

- How managers use indicators
- Indicators are about how well you are doing
- Taking management action on indicators
- The driver diagram and impacts on the indicator
- Applying analytics to KPI of an organization
- Example: *Analytics used in Balanced Scorecard Strategy Maps*

*Exercise: What Really is Digital Transformation?*

#### *Section 3 – The management value of component and factor analytics*

- Component analysis for management insight
- Using basic component analysis for insight
- What is factor analysis and what do you use it for?
- What analytics support factor analysis?
- Example: *The Driver Diagram for Balanced Scorecard*

#### *Case Study Activity Part 1: Factor Analysis of a Budget*

*Exam 1 – First Day.*

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Day Two

### *Day 2 Theme: Statistical Analytics for Managers*

The most familiar analytics that managers and analysts use are those coming from business statistics. Statistical techniques look for patterns in data. The main use of statistics today by managers is what is embedded in most BI systems. They are good for monitoring, collecting and reporting on operational data. They give you averages, ranges, some correlation and some regression and of course capability for drill down. They also give you hints of reliability of data by the study of variance. What they don't give you are analytics for insight into why something is happening.

#### *Section 4 – Descriptive Analytics – Finding out what happened*

- Managers need to discover and probe what happened
- Looking for patterns in data
- Ranking organization objects by properties
  - Processes, Documents, Systems, Databases, Organizations etc.
- Comparative analytic results
- Developing a multi-property composite ranking

*Video and Discussion: Discovery Analytics – Why they are important*

#### *Section 5 – Diagnostic Analytics – Why did this happen and where is the issue?*

- What do diagnostics look like?
- Typical management diagnostic analytics
- Focusing on problem identification
- Choosing the diagnostic
- Example: *Ranking process factors*

*Demo and Discussion: What remedial action should you take?*

#### *Section 6 – Predictive Analytics – What might happen?*

- Can you accurately predict things?
- What is correlation and how does it work?
- Different types of correlation (sequenced and unordered)
- Validating the correlation result
- Example: *Using correlation in prediction, Sales versus Advertising*

#### *Case Study Activity Part 2: Sales Analysis*

*Exam 2 – Second Day.*

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Day Three

### *Day 3 Theme: Semantic Analytics for Managers*

More recently, semantic analytics have been added to the manager's toolbox. These are discovery types of analytics that provide the manager with insight into where understanding indicators such as consumer preferences lie. Semantics are also used to identify points of consolidation of processes, organization, acquisitions and mergers. Semantic analytics are used to align the organization levels with influences from outside the organization. Understanding where similarities and differences are in processes and organizations provides managers with a better planning horizon for change.

#### *Section 7 – Sentiment and Keyword Analytics – What image do you have?*

- What do your employees think?
- What is the image of the organization?
- What do customers think? The enterprise context
- Website sentiment – How your web site is viewed
- Example: *Analyzing Sentiment in Documents*

*Exercise: Identifying Targets for Sentiment Analysis*

#### *Section 8 – Impact Assessment using Semantic Tracking Analytics*

- The semantic impact inference idea
- Using inference to assess impact of change
- Understanding the type and degree of impact
- Interpreting the results of the analytics
- Example: *Assessing impact of change*

*Demo: Assessing impact of Change – Two Approaches*

#### *Section 9 – Semantic Analytics and Consolidation*

- Organization consolidation approach
- Removing duplication in processes, documents, systems etc.
- Example: *Process Consolidation*

#### *Case Study Activity Part 3: Tracing Process Impacts*

*Exam 3 – Third Day.*

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Day Four

### *Day 4 Theme: Machine Learning Analytics for Managers*

The new and emerging types of analytics most useful to managers are those related to machine learning. Machine learning uses data sets ranging from small data sets (hundreds or thousands of rows) to what is called big data (millions of rows). Algorithms are applied to increase the accuracy of predictions or trends. Managers deal with small to medium data set sizes, usually up to a few thousand rows of the most recent data. Machine learning is most useful to a manager when the data is changing over time and the manager needs to understand the direction of change.

#### *Section 10 – Using Regression for Prediction*

- A key use of machine learning is prediction
- The regression idea – What a manager chooses to look at
- How is this different from correlation?
- Preparing data for regression analysis
- Example: *Sales trend over time analysis*

*Exercise: Identifying Issues with Budgets*

#### *Section 11 – Recommendations Using Machine Learning*

- Recommendation engines – the friend of marketing and operations managers
- Three types of recommendation approaches
- Suggesting what customers, users, citizens should do or buy
- People who bought this product also bought that product
  - *Assessing buying habits with correlation matrices and affinity analysis*
- Example: *Book Buying Habits*

*Demo and Discussion: Managing Process Performance with Correlation Matrices*

#### *Section 12 – Identifying when and where to apply Predictive Analytics*

- The manager's viewpoint – it depends on what your organization does
- Applying predictive techniques to operations
- Identifying the drivers of performance
- Example: Ranking process performance

### *Case Study Activity Part 4: Predicting Process Performance*

*Exam 4 – Fourth Day.*

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Day Five

### *Day 5 Theme: Neural Net Analytics for Managers*

Today the emphasis is changing to the use of artificial intelligence neural nets to help diagnose and predict indicators of significance to managers. Artificial intelligence (AI) augments and replaces human intelligence where it makes sense to do so. As such, AI works with both knowledge and data. A manager can use combinations of analytics such as neural nets, machine learning and statistics that provide the best practice in addressing solutions or evaluating an opportunity. Cross checking or enhancing results is one of the goals of applying combinations of analytics.

#### *Section 13 – Using Neural Nets for Factor Analysis*

- A quick review of neural nets
- Deciding on the objective
- Setting the input data, training the net and evaluating the results
- Suggesting an action
- Issue of bias in neural nets

*Video and Demo: How do Neural Nets Work?*

#### *Section 14 – Indicator Analytics – Assessing Value of Indicator Inputs*

- Prescriptive Analytics – Managing performance improvement
- Identifying the key indicator – e.g. managing department performance
- This is like prediction – You can change the variable values and see the expectation
- Example: *What process factor is most important?*
- How does this compare with ranking algorithms?

*Demo and Discussion: Managing Sales Performance with Neural Net Analysis*

#### *Section 15 – Classification and sorting into categories*

- Classification – what is it?
- How does it work?
- Sorting data and knowledge
- Example: *HR use NN for sorting applicants*

### *Case Study Activity Part 5: Recommending a Performance Improvement Strategy*

*Exam 5 – Fifth Day.*

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## Learning Objectives

The manager and analysts who attend this course can expect to learn how to use the most recent developments in management analytics.

- Describe the key analytics managers use today.
- Explain how 'easy to use' analytics can help a manager
- Applying analytics to identify performance issues
- Identify when to use specific analytics for organization performance
- Know when to apply the analytics in a process
- Verify that the analytic is providing management insight
- Comparing the results of multiple analytics
- Using analytics to predict what might happen next

This professional training session provides a hands-on, skill-oriented working knowledge of the analytic techniques that managers and analysts should consider and use. The learning approach uses discussions, interactive exercises, a case study and group exercises that focus on outcomes that lead to transformation success. Participants can apply this learning as soon as they get back to their office.

Some of the analytics covered in this course are: Ranking, Factor Analysis, Affinity, Correlation, Regression, Correlation Matrices, Sentiment and Keyword Analytics, Semantic Comparisons, Semantic Inference, Alignment Analytics, Principle Component Analytics and Neural Net Impact Analysis.

These analytics typically support multiple needs of the manager such as: Decision making, Process improvement, Process consolidation, Organizational change, Hiring needs, Performance analysis, Financial analysis, Predictive and Diagnostic analysis, Traditional data analysis, Organization alignment, and more.

*Note: The case study used in this workshop is based on the retail industry as most people are familiar with retail from their shopping or work experience.*

### **Who should attend?**

Managers, Process Analysts, Business Analysts, Managers, Professionals, IT Specialists, IT and Business Architects.

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