

Business Analytics Executive Overview

Module 4 - Analytics Success Today and Tomorrow

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Lesson 1.1

Analytics Maturity



Improving Analytics Programs

Regularly assess the analytics capability maturity.

Drive all analytics programs with a clear line of sight to a business outcome.

Build out a future-state set of capabilities from a gap analysis of their current capabilities and those needed for their business strategy.



Lesson 1.2

Analytics Maturity Levels



Level 1: Basic

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Silo-based

Ad-hoc

Data is argued over

Level 2: Opportunistic

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Units pursue their own analytics initiatives

Culture still tends to get in the way of acting on any analytics

No strong leadership

Level 3: Systematic

A shift toward a matrixed set of shared, centralized, and organized services and technology standards.

Some performance alignment using increasingly structured and repeatable processes.

Level 4: Differentiating

The organization is consistently performance-oriented.

The office of the Chief Data Officer (CDO) and/or Chief Analytics Officer spearheads business innovation.

Level 5: Transformational



Data and analytics is used widely and embedded in business strategy, tactical, and operational decisions — transparently.

Data is used to make operational, tactical and strategic decisions.



Lesson 1.3

Key Maturity Disciplines



Analytics Vision and Strategy

Deciding what do you want analytics to do for your business.

How to guide the evolution of your culture to take advantage of data.

Strategy involves determining what the analytics roadmap looks like and what resources must be marshalled to achieve it.

Value and Outcome Management



Analytics organizations need to have a sufficient record of where money is spent.

Tying reality to the vision.

Determining what metrics will be used to gauge success.

People, Skills, and Organization

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Anticipate upcoming needs and ensure that the proper skills, roles, and organizations exist, are developed, or can be sourced to support the work identified in the analytics strategy.

People, Skills, and Organization



The right organizational structures need to be put into place to ensure the support and coordination for developing and deploying analytics tied to business outcomes.

Technology and Solutions

Analytics organizations increasingly implement a variety of technologies.

Requires concentrated vendor management skills, and managers who understand how and when to implement each.



Lesson 2

Analytics Success Factors



Executive, Business Leader, and IT Support

Executives need to be on board with encouraging or mandating that the organization become more data-driven.

Executive, Business Leader, and IT Support

Business leaders need to provide the necessary resources (including budget) for particular projects AND for ensuring that the analytic output actually gets acted upon.

Executive, Business Leader, and IT Support

The IT organization needs to lead the implementation of the technologies involved.

Culture



Knowing who the influencers, detractors, and saboteurs are and how to navigate change is key.

Data Quality

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There won't be buy in if the data can't
be trusted.

Data Governance



An enterprise program to deal with the systemic issues of data quality.

Data Literacy



An emerging concept of getting business people to speak data and also getting data people to speak business.

Analytic Modeling



Bad analytic models will lead to bad decisions.

Good analytic models are forward-looking—trying to identify and predict patterns or suggest actions, not simply stating what happened in the past.

Metrics and KPI Design



Focus on leading indicators and do a good job of articulating or propagating them.

Indications of Good Indicators

Each metric has a “pedigree” ultimately linking it to the company’s mission.

Measures represent reality, not estimates, interpolated data, or subjective input.

Used by individuals on a regular basis to gauge their (process) performance.

Indications of Good Indicators

Tied to incentives.

Affects desired behavioral change.

Not just actionable, but results in action.

Entire metrics effort is cost-effective.

Metrics change with the times, situations, available data, etc.

Indications of Bad Indicators

Disagreement or mistrust of underlying data.

Users don't understand how metrics are computed.

Conflicting metrics.

Metrics are tied to punishments.

Indications of Bad Indicators

Over-aggregation, fabricated ratios & indices, and arbitrary weightings.

Unintended consequences.

Defaulting to vendor's packaged metrics.

Quelled innovation.

A General Approach to Defining Metrics

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- Define the perspective. That is the overall scope or area of focus for the metrics, such as financial, or customer.
- Establish the critical success factor (CSF) or a general statement of perspective performance, such as “increasing annual revenue.”
- Define an objective for the CSF, such as “grow the average selling price of product X”

A General Approach to Defining Metrics

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- Define a goal or specific target for the objective, such as “increase our average selling price by 10%”
- Define a way to measure the objective and goal that uses data and math, such as “our fiscal year transactions divided by the number of units returned”

A General Approach to Defining Metrics

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- Metrics shouldn't just be published or used without some range of acceptability or non-acceptability. For example, "bad, fair, good, excellent". Each should bring about a particular action.
- And finally, the metric itself, including details of how it will be calculated using available data, and how it will be reported.

Experimentation



Great data science has a bit of R&D.

Create a culture of experimentation.

Exogenous Data



Incorporate data from outside of the organization.

Story Telling



Use more than numbers and let data tell a story of persuasion.

Collaboration



Business cultures as a rule are becoming more collaborative; so must analytics.

Reuse



Adapting and reusing models is powerful, but requires some manual cataloging of these models.

Ethics



Just because you can do it doesn't mean you should.

Employ a data ethicist.



Lesson 3

Analytics Trends and Futures





Lesson 3.1

Analytics as a Corporate Strategy



Corporate Strategy



30% of organizations have begun exploring or implementing data monetization initiatives to generate a broader range of economic benefits from their information assets, with nearly 50% more planning to do so over the next two years.

Corporate Strategy



The vast majority of corporate strategies will explicitly mention information as a critical enterprise asset and analytics as an essential competency.

Corporate Strategy



Treating and measuring information as an actual asset can help business leaders maximize information's economic benefits.



Lesson 3.2

Data Literacy



Data Literacy



Data and analytics leaders struggle to get their message across and information assets are underutilized.

CDOs on Data Literacy



“Poor data literacy” is the second biggest challenge, just behind “culture challenges to accept change” and just ahead of “lack of relevant skills or staff.”

Changes to Business



Creators and producers of data, analytics, and AI-based solutions will benefit from a clarity of the business context for data and analytics.

New Life Skills



Similar to the maturation of Six Sigma in the 1990s as a core competency, data literacy will impact all employees from the boardroom to the break room becoming not just a business skill, but a critical life skill.



Lesson 3.3

Valuing Information Assets



Measuring Data

A failure to quantify information's potential and delivered value limits the organization's ability to identify and pursue data monetization opportunities.

Adapt and Implement Valuation Models

Over the next few years, 30% of CDOs will partner with their CFO to formally value the organization's information assets for improved information management and benefits.

Ascertaining the Value of Data

Recently, mergers and acquisitions (M&As) and intellectual property (IP) consultancies have begun helping companies assess the value of their information assets for corporate buyers.

Accounting is Lagging Behind



Although information clearly meets the established criteria of a balance sheet asset, the accounting standards boards have resisted, allowing information value to go unreported.

Benefits of Determining the Value of Your Information

Prioritize information management and deployment initiatives.

Prove the benefits of information-related initiatives.

Make improved enterprise information management (EIM) budgetary decisions.

Identify opportunities for either better monetizing or disposing of certain information assets that may be underperforming.



Lesson 3.4

A Data Science and AI Ethical Code of Conduct



AI Usage is Increasing



Adoption of artificial intelligence has increased 270% since 2015.

AI and Ethics



Organizations with more than 20 data scientists will require a professional code of conduct incorporating ethical use of data and AI.

Ethical Mishaps

Cambridge Analytica used Facebook's advertising data to post political ads to influence U.S. elections.

The COMPAS algorithm is used in criminal sentencing in the U.S., even though judges do not understand the logic of the models and some researchers have found the algorithm unintentionally discriminates against black people.

Potential Ethical Abuses

Stanford University studied how facial recognition algorithms might predict sexual orientation, potentially invading personal privacy.

Frole is a technology company offering an AI-enabled tool, DeepSense, that helps hiring managers evaluate candidates based on an analysis of their social media profile. But is our online personality representative of our work personality?

Ethical Initiatives



Bloomberg Technologies put out a public call to action to develop a data science code of conduct as part of its annual data-for-good exchange.

In January 2018, Microsoft released a free book, “The Future Computed: Artificial Intelligence and Its Role in Society.”

Ethical Initiatives



INFORMS has developed a code of conduct for analytics professionals.

Google published its principles on AI.

The Future of Life Institute published its AI Ethics “Asilomar” principles.

The IEEE published its Ethics in Action principles.

Ethical Initiatives



A Forbes Insight study showed that 92% of companies that see themselves as leading in AI invest in ethics training for their technologies, compared to 48% in nonleading companies.



Lesson 3.5

Continuous Intelligence



Growing Continuous Intelligence

A small but growing number of early adopter companies have implemented real-time, custom-built infrastructures that provide continuous intelligence.

Growing Continuous Intelligence

New business processes must provide continuous intelligence that leverages prescriptive analytics.

Growing Continuous Intelligence

Over the next few years, more than half of major new business systems will incorporate continuous intelligence to improve and automate decisions.

Lesson 3.6

Reinventing, Digitalizing and Eliminating Business Offerings



Strategic Planning Assumption

By 2020, information will be used to reinvent, digitalize or eliminate 80% of business processes and products from a decade earlier.

It's a Digital World



To compete in a digital world, enterprises must digitalize their models, in which products, services, markets, channels and processes are transformed through digital technologies.

Growth of IoT



By the end of the decade data and analytics will have been used to reinvent, digitalize or eliminate 80% of business processes and products from a decade earlier.

A photograph showing three students in a hallway. In the foreground, two girls are sitting on a bench, looking at a yellow spiral-bound notebook and smiling. Behind them, another student is sitting on a chair, looking at a laptop. The background is slightly blurred.

Lesson 3.7

AI Will Struggle to Scale in the Organization

Complexity Remains a Barrier to Scaling AI

AI projects will remain alchemy, run by wizards whose talents will not scale within the organization— that is until the technology begins to help more with the creative part of the process.

Data Science Automation is Catching Up

For example, automated processes for the selection of AI algorithms are simplifying technical processes, allowing AI users to focus on business problem solving.

IT systems are not always ready to systematically integrate smart components.

A Need for Common Language Competencies

The success of AI projects hinges on tight collaboration with the business through open-minded domain experts.

A photograph showing three students in a hallway. In the foreground, two girls are sitting on a bench, looking at a yellow spiral-bound notebook and smiling. One girl has dark hair and is wearing a blue zip-up hoodie. The other girl has glasses and a ponytail, wearing a black jacket over an orange shirt. In the background, a boy in an orange t-shirt is sitting on a chair, looking at a laptop. The hallway has white walls and doors.

Lesson 3.8

Most Analytic Insights Will Fail to Deliver Business Value

Lower Expectations



Over the next few years, only 20% of analytic insights will deliver business outcomes.

Higher Returns



Even a single insight can have significant impact, delivering almost the entire ROI for a project through a single transformational business concept.

A photograph showing three students in a hallway. In the foreground, two girls are sitting on a bench, looking at a yellow spiral-bound notebook and smiling. Behind them, another student is sitting on a chair, working on a laptop. The background is slightly blurred.

Lesson 3.9

Quantum Computing Will Start to Outperform Traditional Analytics Computing

Qualifying Quantum



A commercially available, affordable and reliable quantum computing (QC) product or service has the potential to transform an industry.

Qualifying Quantum

Within a few years, proof-of-concept analytic projects using quantum computing infrastructure will have outperformed traditional analytic approaches in multiple domains by at least a factor of 10.

Potential Application

A variety of POCs have shown that QC approaches can deliver significantly higher levels of performance in numerous domains.

Example: Volkswagen

Using GPS data from more than 10,000 taxis in Beijing, it has created an algorithm to calculate the fastest routes to the airport while minimizing traffic.