Data Analytics, Machine Learning and AI
Jim Collins - IBM
The unprecedented challenges for Finance, driven by change, requires CFOs to digitally reinvent their organizations.

**Business Risk and Volatility**
- Increasing
  - **Considerations**
    - Accelerating business change:
      - New competitors
      - Changing business models
      - Changing customer expectations
    - Arising from:
      - Disintermediation
      - Virtualization
      - Technical innovation

**Business Expectations of Finance**
- Changing
  - **Proactively manage business growth and risk**
    - Advanced, predictive analytics
    - Input to business strategy
    - Meaningful business partnership & alignment
    - Curate and integrate enterprise data

**Challenges for Finance**
- Unprecedented
  - **Master digital skills and disciplines**
    - Data and analytics
    - Strategic partnership
    - Re-invention of processes, organization and technology
  - **Balance the accounting mandate**
    - Timely, accurate regulatory reporting
    - Business controls
    - Transaction processing
  - **Do it now – and do it for less**
    - Reduce Finance functional costs below 1% net revenues

**Imperatives for Finance**
- Urgent
  - **Continual reinvention – the new normal**
    - Scalable, flexible operating model
    - A “new contract with technology”
    - Rebalance the services portfolio – transform the basics
    - Fundamental skillset shifts
    - Shrink the core
    - New philosophy of data
      - Periodicity
      - Broader definitions
      - Visualization
  - **Time is not on the side of the CFO**
Finance organizations need to embrace digital drivers

**New focus:** Employ advanced analytics across the enterprise

**New expertise:** Build the right talent for an agile and innovative organization

**New ways to work:** Digitize services and processes

**New experiences:** Create deeper relationships that business partners desire and want and build experiences that employees desire and want
The most effective Finance organizations digitally reinvent through new focus, new ways to work and new expertise

**Digital Reinvention of Finance**

**New Expertise**
- Center of excellence for analytics/cognitive computing
- Management of change associated with Digital Reinvention
- Culture and talent improvements to support digital
- New skills around technologies, data acquisition, mining, modeling and analysis

**New Focus**
- Enterprise data commonality
- Predictive models
- Connection of front and back office
- Application of analytics and cognitive computing to enterprise decision making for profitable growth

**New Ways to Work**
- Digital technology foundation
- Analytics, cognitive computing, process automation and blockchain for processes
- Leading practices for order-to-cash (O2C), procure-to-pay (P2P), record-to-report (R2R) processes
Finance organizations need to envision, create, deepen and orchestrate

Envision: Use design thinking to understand business partners, brainstorming ideas and visualizing scenarios

Create: Create pilots using agile development, test them, and deploy them

Deepen: Augment capabilities and continue to build and deploy applications aligned to the target operating model and strategy

Orchestrate: Build a robust team to guide the program, and ensure embrace of holistic reinvention, not a series of point solutions
Pressure is on for Finance organizations to digitally reinvent

1. **Long-term, incremental transformation no longer sufficient**
   - Finance should rapidly transform cost structures and allocate more resources to digital technologies and capabilities.

2. **Business as usual does not change the thinking about data and being analytically nimble**
   - Finance should address the pace of innovation, data complexity / volume growth and business expectations through the integration of data.

3. **No sacred cows - nothing is off the table**
   - Finance should objectively evaluate all transformation levers with shift to digital.
Capabilities Needed to Modernize Your Data Strategy

• Make Data Simple and Accessible
• Build a Trusted Analytics Foundation
• Scale Insights On Demand
Make Data Simple and Accessible

• Gain Value From Your Data Without Limits
  • Adapt current data management to changing business needs
  • Leverage data of all types and sources with hybrid data
  • Embrace open source technologies and data more securely
Build a Trusted Analytics Foundation

• Know Your Data, Trust Your Data, Use Your Data
  • Build confidence in your data
  • Data integration, replication and quality
  • Enable information driven insights
Scale Insights On Demand

• Transform Data Into Business Outcomes
  • Empower Teams
  • Gain Insights
  • Drive Innovation with Analytics
Data Science and Business Analytics makes data simple, accessible and actionable

*Descriptive, Diagnostic, Predictive, Prescriptive to plan a course, monitor the business, predict the future, and change the outcome*

Grow Revenue
Grow, Retain, and Satisfy Customers
Better understand customer behavior

Reduce Cost
Increase Operational Efficiency
Streamline operations

Mitigate Risk
Mitigate and Manage Risks
Identify high risk signals

Drive Innovation
Drive Innovation with Analytics
Validate business decisions with data
Cognitive businesses will redefine how decisions are made

**AI is the system of the future.**
People will define what is to be learned.
System will learn how to learn it.

- Interactive decision making, learning and evidence-based explanations
- A range of techniques including natural language processing, knowledge and planning
- Statistical prediction analysis and pattern recognition to make highly data-driven decisions
Bringing together *man and machine* to help us make better, smarter decisions.

**Humans excel at**
- Common Sense
- Dilemmas
- Morals
- Compassion
- Imagination
- Dreaming
- Abstraction
- Generalization

**AI Systems excel at:**
- Pattern Identification
- Locating Knowledge
- Machine Learning
- Eliminate Bias
- Endless Capacity
- Natural Language Understanding
Today’s world is data rich but insights poor
Focus and Plan

Build a Data Strategy

Utilize Proven Architectures

The “AI Ladder”

Data

Analytics

Machine Learning

AI
How Companies Work

Analytics lifecycle

- PLANNING: What is our plan?
- DESCRIPTIVE: What happened?
- DIAGNOSTIC: Why did it happen?
- PREDICTIVE: What will happen next?
- PRESCRIPTIVE: What should we do?
1. Missing data
2. Incorrect data
3. Misrepresented data
4. Misleading data
99% say their firms are trying to become insights-driven, but only one-third report succeeding.

NewVantage Partners, “Big Data Executive Survey 2018 Executive Summary of Findings”
“Since 2000, 52% of the Fortune 500 have either gone bankrupt, been acquired, or ceased to exist. “

Capgemini Consulting, "When Digital Disruption Strikes: How Can Incumbents Respond?"

“In 2017, we saw some major businesses across Canada and around the world fail, while others have entered the market in business areas and locations where Co-op operates.”

Dusty MacDonald, President/Chair of the Board, Federated Co-Operative Limited
2017 Annual Report
Decisions
Your data has outgrown the analytics capacity of your average business user.
Governance
Analytics governance must be in place to ensure executives are making decisions based on true, accurate, & consistent information.
Visuals masquerade as evidence
Dashboards are a common interface to analytics for most users.

“The greatest danger in using ungoverned dashboards for decision making is in misattributing causality when comparing elements on the dashboard”

Joel Shapiro, “Three Ways Data Dashboards Can Mislead You” – Harvard Business Review
http://www.tylervigen.com/spurious-correlations
Three Ways
Data
Dashboards
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You

- Harvard
Business
Review
“The greatest danger in using dashboards for decision making is in misattributing causality when comparing elements on the dashboard.”

Three Ways Data Dashboards Can Mislead You

- Harvard Business Review
Business users with only basic analytics skills could conduct analysis yielding misleading or incorrect insight.
“Today’s BI technologies are hitting the wall with how to interpret rich data visualizations.”

- AI Unlocks The Business Intelligence In BI

Forrester Research
Only **13%** of data and analytics projects reach completion, and of those that do, only **8%** of company leadership report being completely satisfied with the outcome.

--CIODive
Start with the end in mind.
Machine Learning
THIS ISN’T ABOUT SEARCHING FOR BETTER ANSWERS
IT'S ALL ABOUT SEARCHING FOR BETTER QUESTIONS
“Judge a man by his questions rather than by his answers.”

Voltaire
There is a gap between you and AI.
There is a gap between you and AI.

It’s time you got over it!
Four misconceptions
AI is for them...not me.
AI helps free us from the mundane so we can do the things that matter!
AI is hard to understand.
AI is hard to understand.

Effective cognitive systems think a lot like you do.
AI is not business ready.
Human and Machine > Human or Machine
AI is not business ready.

AI was made for today’s business environments.
I should wait to see what happens
All learners begin at day one.
With earlier technologies you might have waited to start your journey.
With AI, every day you wait, you’re one more day behind.
I should wait to see what happens.

If you’re not moving forward you’re backing up.
Integrating Business Values with AI/ML

What happens when business goals conflict within decision-making?
How can analytics and optimization deal with conflicting goals?
AI/ML/Cognitive allow people to make more informed decisions.

It’s not Man vs. Machine
It’s Man and Machine!!

AI: Augmented Intelligence
Thank you!

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