Data Analytics
What’s With All the Hype?
Jennifer Geis, Sr. Strategic Initiatives Analyst
Jack Henry & Associates
## Points of Discussion

<table>
<thead>
<tr>
<th></th>
<th><strong>WHO AND HOW</strong></th>
<th><strong>WHICH AND WHERE</strong></th>
<th><strong>WHY AND WHAT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>01.</td>
<td>Who is forming modern analytics solutions and how did we arrive where we are today</td>
<td>Which modern financial service technologies rely on data and where are they being utilized</td>
<td>Why financial institutions should establish a data strategy and what to do now</td>
</tr>
</tbody>
</table>
2,083,333 snaps

$68,493 P2P transactions

3,877,140 searches

4,333,560 YouTube videos

12,986,111 texts

3,138,420 GB of internet data

Source: Data Never Sleeps 6.0 Report, Domo, 2018
Data Builds Amazon's Payment Ecosystem

SOURCE: AI for an Improved CX, Digital Banking Report, February 2019
Factory in China has replaced 90% of its human workers with robots

June 21, 2019

AI Could Replace 40 Percent of Jobs

February 11, 2019

Robots may replace 800 million workers by 2030

December 5, 2018

Replacing Humans: Robots Among Us

July 9, 2019
Traditional Data Collection is Insufficient

<table>
<thead>
<tr>
<th>Manual <em>just-in-time</em> approach:</th>
<th>Consumer-led data harvesting:</th>
<th>Bank-generated sensing/awareness:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer data is added manually</td>
<td>Consumer data is harvested from digital footprint</td>
<td>Harvested data is used to predict what the consumer needs, when they will want it.</td>
</tr>
<tr>
<td>Consumers are passive</td>
<td>Consumer accepts sharing private data</td>
<td>Consumer provides prior consent—no formal engagement</td>
</tr>
</tbody>
</table>
Modern Methods of Data Collection Emerge

Predictive business use cases underlie the popularity and rise of data lakes

1. Descriptive
   - Generate reports to inform business decisioning
   - Feed into dashboards, e.g. visualization of target customer segments for CRM

2. Associative
   - Find associative rules in data, e.g. for rule-based decisioning
   - Identify the key success factors to drive uptake and KPIs, e.g. for sales empowerment

3. Predictive
   - Enable use cases involving automated document analysis and recognition
   - Increase impact and accuracy through micro segmentation for marketing

4. Live/Real-time
   - Support core processes such as straight-through account management with on-demand modelling
   - Move from risk coverage to risk prevention – e.g. with live notifications

Nature of output

<table>
<thead>
<tr>
<th>Backward looking</th>
<th>Forward looking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of processing power</td>
<td>Type of data supported (need unstructured as well as structured)</td>
</tr>
</tbody>
</table>

Constraint

SOURCE: Swimming in Data: Data Lakes in Banking, Celent, June 2019
Forward-thinking organizations in all industries are gathering, analyzing, and acting on increasing amounts of insight to improve the overall customer experience on a daily basis.

“The potential of advanced analytics grows exponentially over time. Each iteration, additional data source and performance measurement results in learning that enhances the accuracy of the predictive models.”

“Traditional analytics provides a great “rear-view mirror” perspective of what has happened. Advanced analytics provides a “GPS” perspective of opportunities ahead.”

Innovative Data Collection Needs a Data Lake

da·ta lake

/ˈdaʊtə,ˈdɑːtə/ /læk/ noun

- a consolidated store of both structured and unstructured data. Provides the flexibility to use the data stored, whatever its format
- a common data repository, that breaks down siloes of knowledge throughout any organization
Data Lake

- Storage is relatively easy since the data is not pre-processed, stored in its native format.
- Accepts structured and unstructured data.
- Typically a flat data model, but hierarchical solutions exist.
- Offers flexibility until the time of use.
- Multi-tenant capabilities.

Data Warehouse

- Storage is more difficult. User must define schema.
- Data must be structured.
- Data model is complex to design.
- Purpose must be fully designed prior to construction.
- Single tenant only.
Points of Discussion

01. WHO AND HOW
Who is forming modern analytics solutions and how did we arrive where we are today

02. WHICH AND WHERE
Which modern financial service technologies rely on data and where are they being utilized

03. WHY AND WHAT
Why financial institutions should establish a data strategy and what to do now
AI: Broad and Often Misused Term in Financial Services

Commonly referenced forms of AI in financial services

**Machine learning (ML)**
- Supervised ML is fed data and told what to look for
- Unsupervised ML detects patterns itself

**Natural language processing**
- The ability of software to understand human language

**Cognitive computing**
- A system specifically designed to help people make better decisions, rather than deciding for them
AI Is Increasingly Included in Banking Strategy

Banks Considering Or Implementing AI Strategies

- Asset size: below $100 billion
  - Being implemented: 46%
  - In pilot: 12%
  - Currently evaluated: 8%
  - Not planned: 15%

- Asset size: above $100 billion
  - Being implemented: 75%
  - In pilot: 13%
  - Currently evaluated: 5%
  - Not planned: 12%

SOURCE: AI in Banking, BI Intelligence, June 2019
SOURCE: Accenture, Digital Banking Report, September 2018
AI Leads the 2019 Top Ten Retail Banking Trends

Q: What do you think will be the three most important trends for the retail banking industry in the upcoming year?

- Use of Big Data, AI, Advanced Analytics and Cognitive Computing: 54%
- Removing friction from the customer journey: 50%
- Use of APIs and Open Banking: 37%
- Improvements in Integrated Multichannel Delivery: 32%
- Building partnerships between banking and fintech firms: 27%
- Expansion of digital payments: 24%
- Investments in innovation initiatives: 20%
- Emergence of new challenger banks: 14%
- Exploring advanced technologies (IoT, Voice): 13%
- Finding and/or training new talent: 11%

Source: Retail Banking Trends and Predictions, The Digital Banking Report, December 2018
Tangible AI Use Cases Are Being Utilized

<table>
<thead>
<tr>
<th>More mature</th>
<th>Payments</th>
<th>Banking</th>
<th>Capital markets</th>
<th>Investment management</th>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less mature</td>
<td></td>
<td></td>
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</tbody>
</table>

- **Front Office**
  - Chatbots
  - Voice assistants
  - Authentication and biometrics
  - Monitoring
- **Middle Office**
  - Anti-fraud risk
  - KYC/AML
  - Complex legal and compliance workflows
- **Back office**
  - Credit underwriting
  - Alternative data in trading and asset management
  - Risk underwriting
  - Smart contracts infrastructure

**SOURCE:** AI in Banking, BI Intelligence, June 2019

**Estimated U.S. banking industry cost savings, projected 20% reduction in operating expenses by 2030**

$447B

**Source:** Capgemini Financial Services Analysis, 2018
Significant Cost Savings Can Be Achieved

**USES OF AI IN BANKING**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Front office</th>
<th>Middle office</th>
<th>Back office</th>
</tr>
</thead>
<tbody>
<tr>
<td>$199B</td>
<td>$217B</td>
<td>$31B</td>
<td></td>
</tr>
</tbody>
</table>

**Size of cost savings opportunity**

- **Conversational banking**: AI biometrics technology, Personalized insights
- **Anti-fraud & risk**: Anti-money laundering/Know-your-customer
- **Credit underwriting**: Smart contracts infrastructure

**SOURCE**: Business Insider Intelligence, Autonomous NEXT, 2019

**SOURCE**: AI in Banking, BI Intelligence, June 2019
Use Cases in Data Analytics

**Fraud Prevention**
- Transaction monitoring
- Identity validation
- AML/KYC

**Credit Risk and Underwriting**
- Credit risk management
- Loan optimization

**Customer Experience**
- Chatbots
- Personalized insights
- Mobile optimization

**Marketing and Sales**
- Churn reduction
- Next best action
- Deepening relationships
Fraud Prevention Is the Dominant Use of AI in Payments

Worldwide card fraud is expected to reach $32 billion by 2020.

Fraud Means:
- Disruptive customer experience
- Loss of reputation
- Incurred fines and loss of revenue

SOURCE: Feedzai Acquirers Playbook, April 2018
Compliance and Anti-Money Laundering Lead as Most Disruptive

**Banks' View Of AI's Disruption Potential**

Q: How significantly will the following commercial banking practices be disrupted by AI during the next five years?

- **Compliance/AML/Fraud**: 52% Transformed, 32% Seriously disrupted, 13% Somewhat disrupted, 3% Unchanged
- **Payments processing**: 35% Transformed, 34% Seriously disrupted, 26% Somewhat disrupted, 5% Unchanged
- **Relationship management**: 29% Transformed, 29% Seriously disrupted, 37% Somewhat disrupted, 5% Unchanged
- **Advisory**: 28% Transformed, 34% Seriously disrupted, 36% Somewhat disrupted, 2% Unchanged
- **Derivatives**: 26% Transformed, 30% Seriously disrupted, 39% Somewhat disrupted, 5% Unchanged

**SOURCE: AI in Banking, BI Intelligence, June 2019**
RTP Require Real-Time Fraud Prevention

Data prevention/protection

Step one: identity check

Step two: eligibility and fraud risk

Step three: transaction monitoring

SOURCE: Feedzai Acquirer Playbook, 70+ Processes Banks have Already Improved Using AI, Mercator Advisory Group, June 2019
Financial Regulations Benefit Greatly from AI

AML and KYC

Initiative:
Deploy a platform to deliver improved and contextual intelligence to better inform financial crime investigations.

Solution:
• Detection of potential illicit activity.
• Reduced investigation time.
• Efficiency gains.
• Higher confidence in risk profile.


Global Social Network Analytics (GSNA) Platform

AI in payments fraud: EXAMPLE
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Data Insights in UX Are Difficult to See

SOURCE: The Role Of AI In Customer Experience, Pointillist, June 2019
Many Customer Experience Strategies Neglect the End Customer


70% of FI customers say they spend more with banks or credit unions that offer effortless digital experiences.

28% of digital transformation initiatives start with customer needs as the priority.

Organization of digital transformation activities by industry:

- **Integrated**: 29% centrally managed/funded/implemented, 29% single coordinated effort, corporately managed/funded/implemented, 27% 24%
- **Co-ordinated**: 43% centrally funded, 42% led by different departments, 41% discreet initiatives, 35% 49%
- **Siloed**: 11% individually funded, 9% 13%
- **Unstructured**: 5% a combination of all or some of the above, 17% 15% 18%
Customer Experience Is the Root of Digital Transformation

Chatbots and voice assistants
Happy Birthday, Claire!
AI Can Generate Insights, Anticipate Needs

Personalized insights

Did you expect an increase?

Hi there.

I noticed G & L Energy charged you $140.40 this month on your account ending in 1234. That’s $70.20 more than last month.

Your Monthly G & L Energy Charges

- **JULY**
  - $70.20
- **AUGUST**
  - $140.40

Did you make both purchases?

- COZYSHOPS.COM
  - Sunday, June 10, 2018
    - $40.00
    - $40.00

Your virtual number is ready

If your payment info didn’t autofill, drag and drop the highlighted areas below.

Music Subscription

- VIRTUAL CARD NUMBER: 1234 5678 9876 5432
- SECURITY CODE: 999
- EXPIRATION: 07/26

Linked to Quicksilver...3321

Give Feedback

Close
AI Is Used to Enhance Customer Experiences

Mobile optimization

![American Express Mobile Banking Example](image-url)
Use Cases in Data Analytics

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**Credit Risk and Underwriting**
Confirmed Business Value of Real-time Analytics

74%
Reported significant increases in customer retention & loyalty.

54%
Realized a deeper understanding of customer journeys.

55%
Reported significant increases in growth and revenue generation.

SOURCE: Harvard Business Review Analytic Services, February 2018
The banking organization of the future will interact in similar ways to Amazon® and Google™, gaining insight and getting smarter with each interaction.
Churn reduction

• Reasons for churn
• Competitive positioning
• Anticipate and manage future risk

Channel segmentation

• Channel underutilization or overutilization
• Best channel routing
• Channel agnostics
Next best action marketing

- Lifestyle habits
- Lifecycle changes
- Purchases
- Deposits

Deepening relationships

- Product personalization
- Reward/loyalty eligibility
- Life event prediction
- Niche segmentation
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Financial Institutions Manage and Comply with Multiple Types of Risk

<table>
<thead>
<tr>
<th>Risk governance, risk appetite, conduct risk, model risk, stress testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial risk</td>
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<tr>
<td>Credit risk</td>
</tr>
<tr>
<td>• Default</td>
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<tr>
<td>• Counterparty</td>
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<tr>
<td>• Credit portfolio concentration</td>
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<tr>
<td>• Credit rating migration</td>
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<tr>
<td>• Sovereign</td>
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<tr>
<td>• Credit origination/underwriting risk</td>
</tr>
<tr>
<td>Market risk</td>
</tr>
<tr>
<td>• Commodity</td>
</tr>
<tr>
<td>• Interest rate (trading book)</td>
</tr>
<tr>
<td>• Equities</td>
</tr>
<tr>
<td>• Credit spreads</td>
</tr>
<tr>
<td>• Foreign exchange</td>
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<tr>
<td>Liquidity/ALM risk</td>
</tr>
<tr>
<td>• Liquidity</td>
</tr>
<tr>
<td>• Interest rate (banking book)</td>
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<tr>
<td>• Exchange rate (foreign currency translation risk)</td>
</tr>
<tr>
<td>Fraud risk</td>
</tr>
<tr>
<td>• Operational</td>
</tr>
<tr>
<td>• Internal</td>
</tr>
<tr>
<td>• Payments</td>
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<tr>
<td>• Check</td>
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<td>• ACH</td>
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<tr>
<td>• Deposit</td>
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<td>• Bill pay</td>
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<tr>
<td>• Wire</td>
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<tr>
<td>• Card</td>
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<tr>
<td>• Channels</td>
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<tr>
<td>• Cyber crime</td>
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<tr>
<td>• Counter surveillance</td>
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<tr>
<td>• Trade/conduct surveillance</td>
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<tr>
<td>Compliance risk</td>
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<tr>
<td>• BSA/AML</td>
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<tr>
<td>• KYC/Customer review</td>
</tr>
<tr>
<td>• Customer due diligence/Enhanced due diligence</td>
</tr>
<tr>
<td>• Politically exposed person screening</td>
</tr>
<tr>
<td>• Sanctions</td>
</tr>
<tr>
<td>Information security risk</td>
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<tr>
<td>• Data management</td>
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<tr>
<td>• Infrastructure threat management</td>
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<tr>
<td>• Cybercrime</td>
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<tr>
<td>• Operational</td>
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<tr>
<td>• Vulnerability mgmt.</td>
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<tr>
<td>• Identity and access management</td>
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<tr>
<td>• Encryption</td>
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<tr>
<td>• Physical security</td>
</tr>
<tr>
<td>• Legal</td>
</tr>
<tr>
<td>• Procurement</td>
</tr>
<tr>
<td>• Third party management</td>
</tr>
<tr>
<td>• SaaS/Cloud</td>
</tr>
</tbody>
</table>

Source: Robotic Process Automation in Risk and Compliance, Celent, August 2018
AI Can Significantly Improve Credit Risk

Credit risk management

Traditional problems:

• Small amount of data
• Only structured data
• Slow to determine results

Modern solutions:

• Credit model based on 26B data points
• Any data type
• Extremely fast and reliable
AI Analyzes Commercial Loan Agreements

Loan automation

Contract Intelligence (COiN)

JPMorgan software does in seconds what took lawyers 360,000 hours.

Reduced loan-servicing mistakes often attributable to human error in interpreting 12,000 new contracts/year.
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To make the most of this powerful technology, banks need to develop a three-pronged AI strategy

Considerations for financial institutions developing an AI strategy

1. Understand the benefits and limitations of AI
2. Socialize realistic expectations among senior leadership
3. Solve problems using AI only when it has clear advantages over alternatives
Building Blocks for Successful Analytics/AI Implementation

SOURCE: AI in the UI: Adoption, Use Cases, and Business Cases, Celent, May 2019
Steps to Establish a Data Strategy

1. Look at what industry leaders are doing with analytics to better understand potential capabilities and opportunities

2. Determine one or two best use cases suited for your FI that match your organization’s business objectives

3. Secure the right talent, build a team with executive support
Steps to Establish a Data Strategy

4. Research FinTech partners that can help leverage and customize analytics for your particular needs

5. Access internal processes and infrastructure to enable easy access to, and utilization of, cross-business raw data

6. Ensure that a well-defined strategy and a clear roadmap are in place
Questions?
Read my blogs on JHA’s Strategically Speaking:
http://discover.jackhenry.com/strategicallyspeaking/author/jennifer-geis

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