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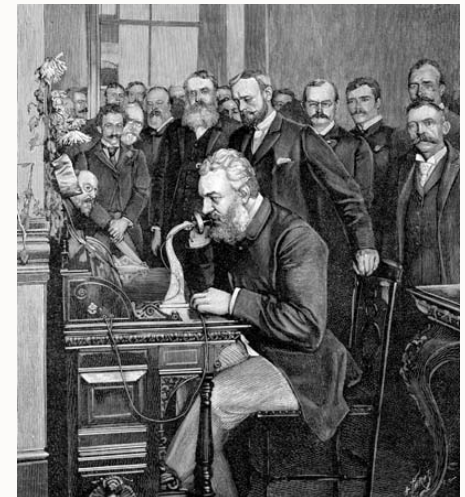
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Changing the Narrative: *Managing Risk in the Era of Fintech*

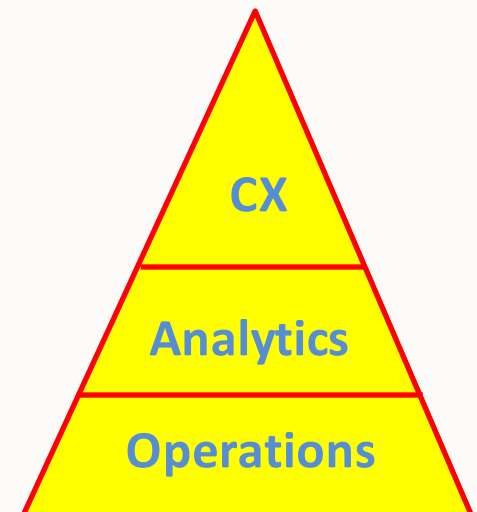
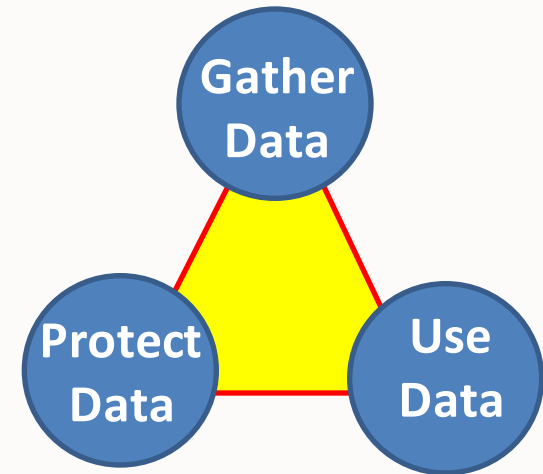
Agenda

- ❑ Introduction
- ❑ Advanced risk analytics,
operational risk & risk culture
- ❑ Fintech maturity
- ❑ New risk paradigms
- ❑ Presenter panel discussion
- ❑ The way forward



Introduction

- ❑ The Fintech revolution
- ❑ Innovation and disruption
- ❑ Opportunities and risks
- ❑ Stakeholders



Quick Poll Question

1. In which of the following industry sectors are you primarily employed?

56%

a. Financial services

11%

b. Government regulation

17%

c. Information technology

17%

d. Consulting

0%

e. Education/research/non-financial industry

Managing Risk in the Era of Fintech calls for (among other things):

- ☐ Managing Risk in Stress Markets
- ☐ Managing Risk Return Tradeoffs
- ☐ Managing Operational Risk
- ☐ Developing a Risk Culture Framework



[Caple Cartoons](#)

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Fintech Challenge: Managing Risk in Stress Markets

Solution: Construct Relevant Stress Scenarios (e.g. Reverse Stress tests)

Example: Historical Stress Test (e.g. 2007/2009 Financial Crises)



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Fintech Challenge : Managing Risk Return Tradeoffs

Solution 1: Construct Risk Adjusted Performance Measures by scoring bucket

Example: Select optimal cutoff point (C) for a consumer loan based on RAROC and harmonize solution with other measures

Cutoff Point	Bucket	Bucket ENP Per Transaction	EV	TP%	FP%	P(B S)	RC(\$)	RAROC
G1B1:C=9	9-10	-0.056	0.930	97.72%	50.00%	21.8183%	0.1828	-0.3064
G1B1:C=10	10-11	0.021	0.773	84.13%	15.87%	4.2364%	0.0966	0.2212
G1B1:C=11	11-12	0.037	0.452	50.00%	2.28%	0.6918%	0.0313	1.1821

Optimal cutoff point at C=10
RAROC at C=10 > 15% hurdle rate

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Fintech Challenge : Managing Risk Return Tradeoffs (continued)

Solution 2: Deploy Anomaly Detection Algorithms

Example : Select optimal cut off point for a consumer loan based on weighting True Positives (TP) & False Positives (FP) and harmonize solution with other measures

Cutoff Point	Bucket	Bucket ENP Per Transaction	EV	TP%	FP%	P(B S)	RC(\$)	RAROC
G1B1:C=9	9-10	-0.056	0.930	97.72%	50.00%	21.8183%	0.1828	-0.3064
G1B1:C=10	10-11	0.021	0.773	84.13%	15.87%	4.2364%	0.0966	0.2212
G1B1:C=11	11-12	0.037	0.452	50.00%	2.28%	0.6918%	0.0313	1.1821

Optimal cutoff point at C=10

Gain from TP% change > Cost of FP% change from C=11 to C=10

Gain from TP% change < Cost of FP% change from C=10 to C=9

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Solution 2: Deploy Anomaly Detection Algorithms (continued)

Example: “Gather, Protect and Use data” to discover “Unknown Unknowns”

Goal:

Model a normal profile for the data & point out anomalies along with the exact parameters that triggered them. Anomalies can be:

- accurately detected with high TP and low FP percentages.
- scored on their degree of deviation from normal, say on a scale of 1 to 100.

Fundamental Pillars :

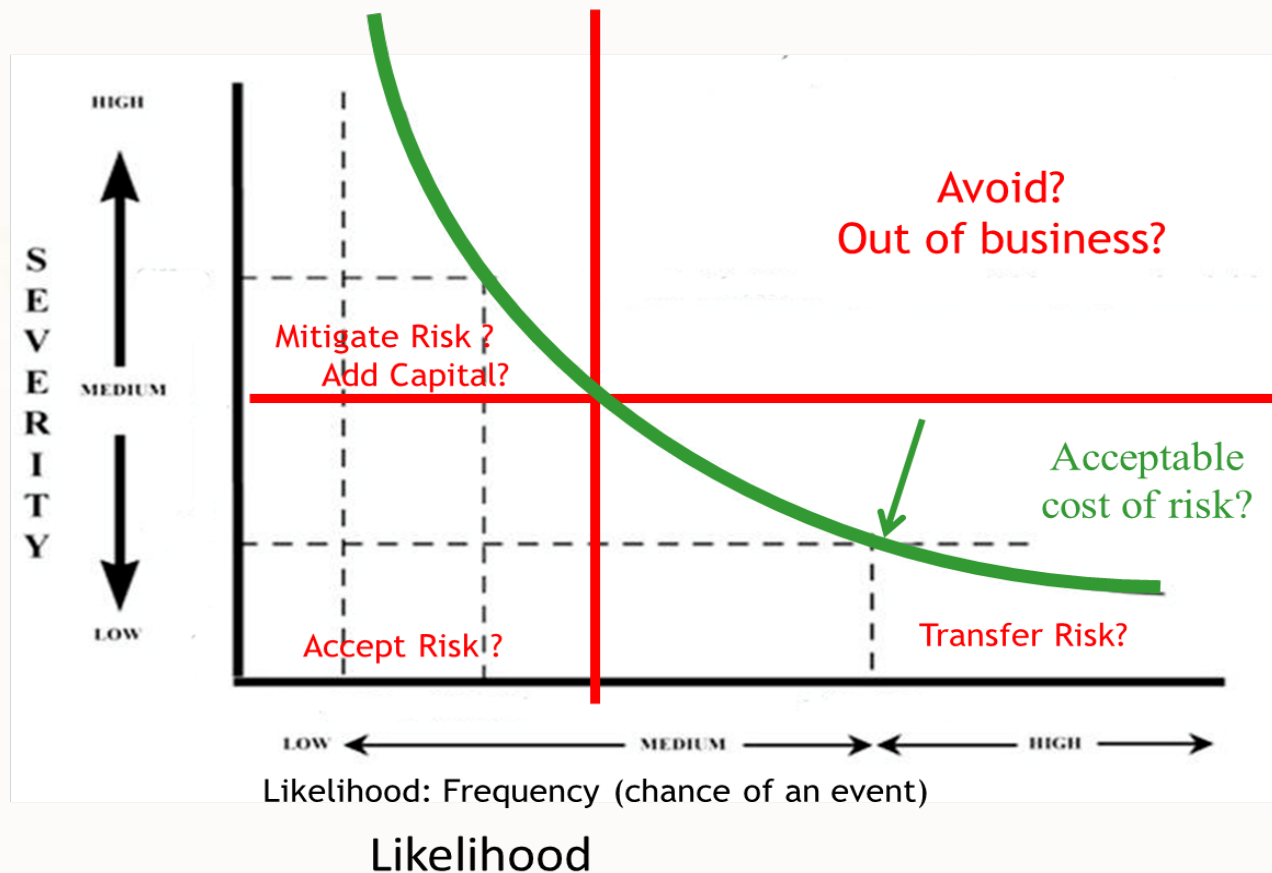
- Data-driven unsupervised approach to detect sophisticated intrinsic patterns.
- Fast processing with low memory consumption to enable real-time processes.
- Accurate data reduction to handle big data sets at low cost but with high reliability (i.e. high TP% & Low FP%)

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Fintech Challenge: Manage amount of Operational Risk

Question 1 : What is acceptable cost of cyber risk?

Solution: Construct Likelihood and Severity measures (Need relevant data)



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Fintech Challenge: Insure Operational Risk

Question 2 : What is acceptable cost of legal and regulatory compliance risk?

Solution : Construct Likelihood and Severity measures (Need relevant data)

(See: Crouhy, Galai & Mark, "Insuring vs Self-Insuring Operational Risk", Journal of Derivatives, 2004)

Table : Likelihood and Severity (In 12 months) of an event table

Select operational risk category <input type="text" value="Other"/> 							
Operational risk type	Internal dependencies			External dependencies	Overall assessment	Severity (\$million)	
	People	Process	Technology				
Outsourcing <input type="text" value="Appraisal"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
Privacy <input type="text" value="Collection"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
DFA Compliance <input type="text" value="Ability to Pay"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
Fraud <input type="text" value="Appraisal"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
Faulty Paperwork <input type="text" value="Foreclosure Docume"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Foreclosure Documents"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Recorded Documents"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Reps & Warranties"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Securitization Issues"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="TILA Disclosures"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Title Issues"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Other"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
<input type="text" value="Governmental Demai"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text" value="Select"/>	<input type="text"/>	<input type="text"/> - <input type="text"/>	
Overall assessment							

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FinTech Challenge: Develop a Risk Culture Framework

Solution: Establish & Metric Characteristics & Dimensions

(See: Blanco, Hinrichs & Mark, "Creating A Risk Culture Framework," Risk.Net, July/August 2014)

Characteristics and dimensions of an integrated risk culture framework



Quick Poll Question

2. Which of the following best describes your use of advanced analytics in your current work?

41%

a. It is essential to my current work

24%

b. I use it occasionally and could use it more

24%

c. I don't currently use it but it would significantly improve my work if I did

12%

d. It's not relevant to my work

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Summary Risk Assessment:

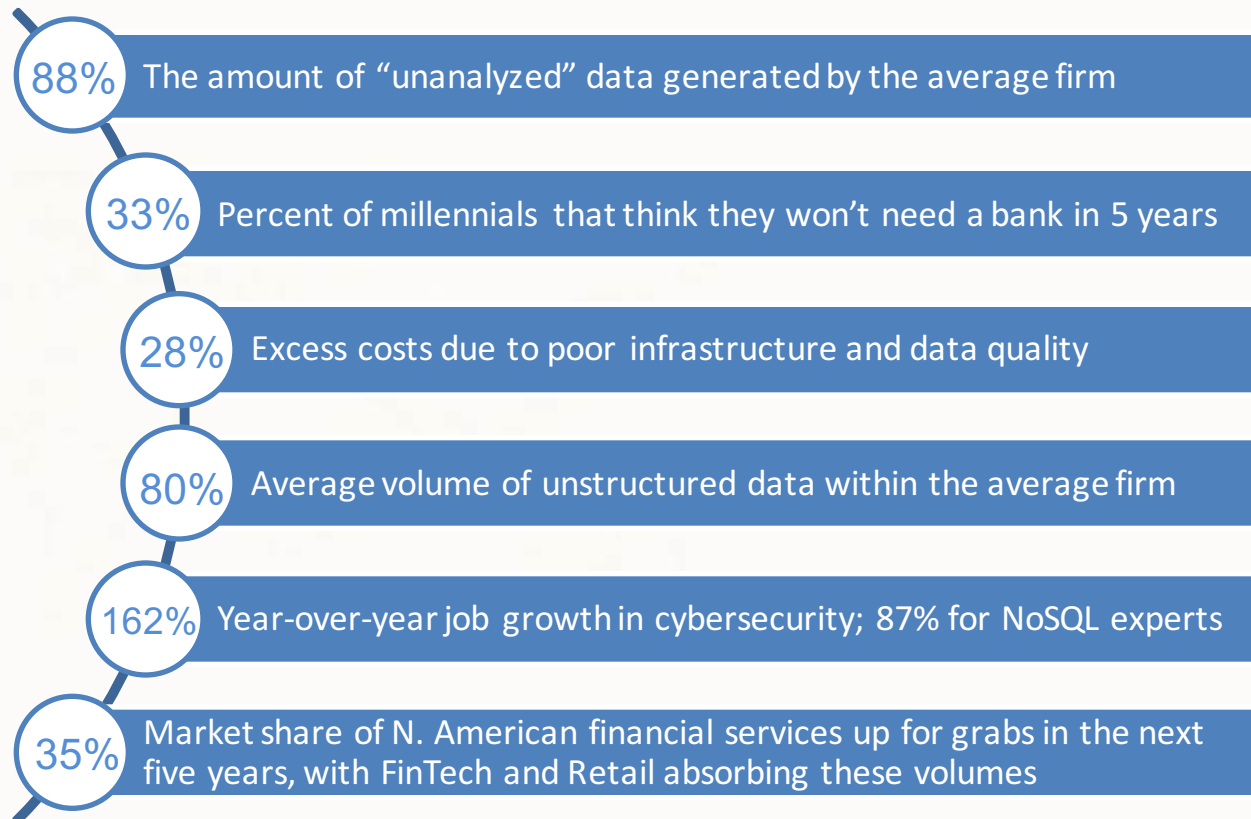
High? Medium? Low?



Changing the Narrative: Managing Risk in the Era of Fintech



- Profound changes for risk management, firm culture, and competitive stability
- **Key question:** *What does the future demand of the present?*



Source: Information Week, June 2014

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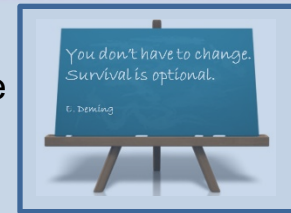
Question: Given the “utility” nature of banking and finance, how does the rapid evolution of FinTech, and broader trends in technology, impact business strategy?

Culture	Risk Management	Technology Adoption	Business Model
<div>Needed Posture</div> <ul style="list-style-type: none">• FinTech/VC mentality• Innovation and “experiment rich” mindset• Increased operational responsiveness <div>Barrier to Entry</div> <ul style="list-style-type: none">• Consensus driven mandates.• Penalties for “failures”• “Not the way we do things here”• Less “connected” leadership	<div>Needed Posture</div> <ul style="list-style-type: none">• Deep understanding of technology<ul style="list-style-type: none">✓ Big data, analytics, and AI• Systemic risk analysis• Domain “fusion” <div>Barrier to Entry</div> <ul style="list-style-type: none">• Skill gaps, particularly amongst “tenured” resources• Compliance and regulatory anchors• Lack of industry resources	<div>Needed Posture</div> <ul style="list-style-type: none">• “My banker is an algorithm”• Bias toward automation and efficiency• New base architecture <div>Barrier Entry</div> <ul style="list-style-type: none">• Religious adherence to outmoded infrastructure• C-level misunderstanding of franchise risks• Tyranny of vested interests	<div>Needed Posture</div> <ul style="list-style-type: none">• “We are a technology firm, not a bank”• “Banking is essential. Banks are not.” (quote)• Agile, learning, service, & socially conscious <div>Barrier to Entry</div> <ul style="list-style-type: none">• Organizational structure(s) (functional, operational, and legal)• Board and Sr. Mgt• Investor relations• From “utility” to “tech” finance

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Project Plan:

1. Step-1: Develop an Internal Assessment and Rigorously Describe True Organizational Agility and Technological Sophistication.
2. Step-2: Improve. Move Faster.



Competitive Landscape: Some Themes

Competitive Posture

External and internal threats
Shifting culture and growth modalities
Quantum evolution / "leap-frog" skills
Impacts of revolving, perpetual trials



Technology Vision and Capabilities

Digital banking
Unsupervised learning
Big data
Real-time "everything"



Risk Management

Scenario analysis – not just financial; not just CCAR, CLAR, and related
Emerging threats. Opportunity Costs.
"Swarming" skills. Risk "Wiki". Robo-Risk.



Quick Poll Question

3. Which of the following best describes the Fintech maturity of your company?

24%

a. Our business model is built around the use of big data and advanced analytics

35%

b. We have started using and plan to increase our use of big data and advanced analytics

24%

c. We are lagging behind our peers in the use of big data and advanced analytics

18%

d. We have no plans to develop big data and advanced analytics

The era of Fintech introduces new paradigms in:

- ❑ Data infrastructure
- ❑ Product risks
- ❑ Systemic risk
- ❑ Role of risk managers



Fintech data infrastructure – a painful transformation

- ❑ Fragmented and legacy systems
- ❑ Poor state of archives
- ❑ Low priority given to analytics
- ❑ Dysfunctional data governance



Fintech product risks – uncharted waters

- ☐ Model risk
- ☐ Complexity risk
- ☐ Reputation risk
- ☐ Service provider risk
- ☐ Privacy and data security risk



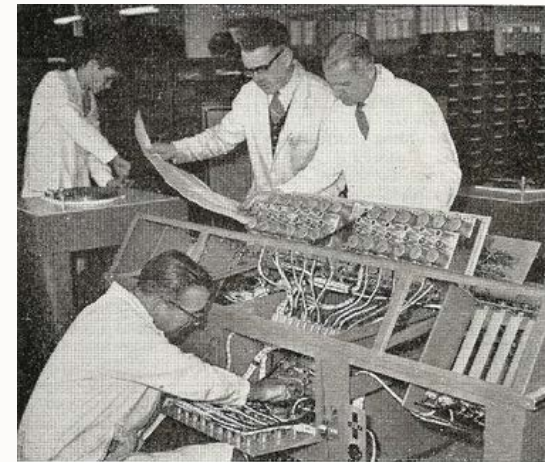
Fintech systemic risk - financial crisis déjà vu?

- ☐ Groundbreaking profit dynamics
- ☐ Low barriers to entry
- ☐ Mass adoption of new products
- ☐ Unexplored micro- and macro-risks
- ☐ Under-developed risk management
- ☐ Trailing regulation



Fintech roadmap for risk managers

- ☐ IT literacy
- ☐ Mastery of big data analytics
- ☐ Mastery of behavioral economics
- ☐ Defend enterprise survival
- ☐ Contribute to sustainable profits
- ☐ Reclaim influence on business decisions



Quick Poll Question

4. Which of the following best describes your company's data and risk management infrastructure strategies?

14%

a. Our data and risk management infrastructures are equipped to meet the demands of Fintech

71%

b. We are updating our data and risk management infrastructures to meet the demands of Fintech

14%

c. Our data and risk management infrastructures are ill-equipped to meet the demands of Fintech

0%

d. Fintech will not have any impact on our business

Presenter Panel Discussion

1. Which current uses of Fintech analytics do you expect to have the most transformative impact on the financial services sector?
2. Which among the emerging Fintech businesses do you consider most likely to become established players in the financial services sector?
3. Are there examples of other industry sectors which have successfully transformed their data and risk management infrastructures to meet the demands of new technology?

Changing the Narrative: Managing Risk in the Era of Fintech



US Airline Industry Transformation 1974-2014 Largest US Carriers by Enplanements

		2014		2004		1974
1	↑	Delta	↑	Southwest	←	United
2	↓	Southwest	↑	Delta	←	American
3	↑	United	↓	American	X	Eastern
4	↓	American	↓	United	X	TWA
5	↑	US Airways	X	Northwest	←	Delta
6	↑	Jet Blue	↑	US Airways	X	Pan Am
7	↑	ExpressJet	X	Continental	X	Northwest
8	↑	SkyWest	X	America West	X	Western
9	↑	Alaska	X	American Eagle	X	Braniff
10	↑	Envoy	↑	Alaska	X	Allegheny

Quick Poll Question

5. Which of the following best describes your posture towards Fintech before today's webinar?

- 56% a. The Fintech revolution is here and I'm determined to play a part in it
- 44% b. I'm observing the impact of Fintech on the financial services industry and interested in playing a part in it
- 0% c. I'm skeptical that Fintech will have any long-lasting impact on the financial services sector
- 0% d. Fintech will not have any material impact on my business

Presenter Panel Discussion

- 1. Which future uses of Fintech analytics do you consider have the greatest potential to disrupt the financial services sector?**
- 2. What changes in risk management practice do you see as most critical to the alignment of risk management with the Fintech era?**

The way forward:

Create a forum to “change the narrative” towards finding solutions to going-forward risk challenges. These include:

- Benchmarking Quality of Risk Management
(e.g. Policies , Methodologies and Infrastructure)
- Making Risk Transparent
- Pricing Risk (e.g. Pricing insurance for operational risk)
- Proactively using risk models for :
 - Competitive advantage (e.g. Selecting an optimal cutoff point)
 - Stress testing (e.g. Reverse Stress Tests)

The way forward (continued):

Create a forum to “change the narrative” towards finding solutions to the going-forward risk challenges. These include:

- Incorporating Behavior Dynamics into Risk Models
- Managing Model Risk
- Incorporating big data infrastructure and associated analytical solutions into our risk models (e.g. Anomaly Detection algorithms)
- Developing a Risk Culture framework (e.g. Metric Characteristics and Dimensions)

Core Principles of “Changing the Narrative”

- 1. The disruptive impact of big data and advanced analytics is a common theme across all industry sectors**
- 2. The next generation of analytical tools will be very different from the current one**
- 3. Real-time data-flow analysis and dynamic feedback will replace traditional regression analysis of archived data**

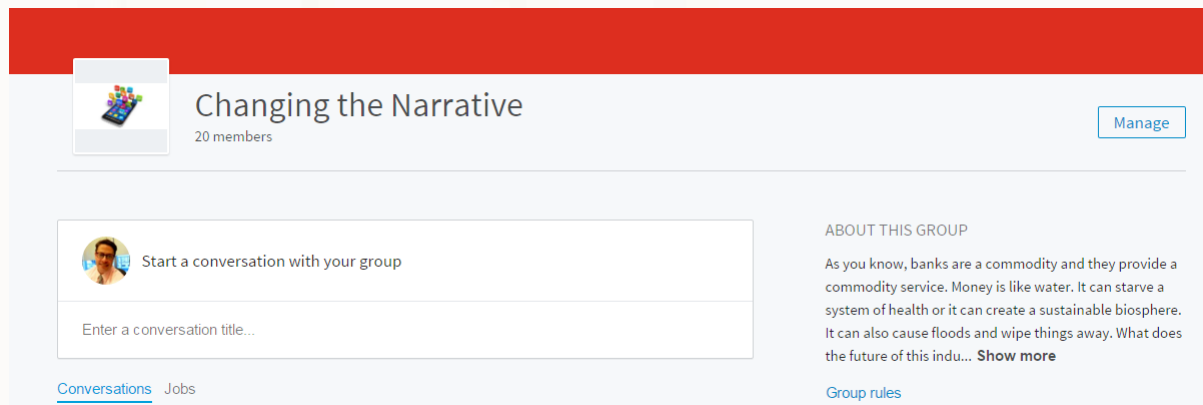
Changing the Narrative: Managing Risk in the Era of Fintech



Thesis:

To stay current on the fast-paced change in the field of banking and finance, today's risk professional must make recurring "knowledge" investments across a wide range of subject matter domains. Topics around big data, the cyber-economy, predictive analytics, automation and behavioral finance are all converging to motivate rapid change throughout the industry. We need to **collaborate**. We need to **learn** how diversity of technology adoption across industries might inform to **accelerate** transformation. We need cyber-security and cyber-privacy. We need new ways to consume information important to the radical **transformation** of finance currently underway. We need to consistently be "changing the narrative".

<https://www.linkedin.com/groups/7023845>



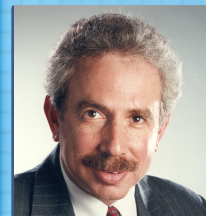
Join the discussion

- Collaborate
- Learn
- Accelerate
- Transform

Questions for the Presenter?



Send them via the Question Pane in the webinar utility panel on the right hand side of your screen



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