Healthcare Predictive Modeling Summit: Prepayment Fraud Detection

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AGENDA

- Healthcare Fraud & Abuse Background
- Prepayment Fraud Detection – A fundamental paradigm shift
- Results
- Elements for Success
- Questions & Answers

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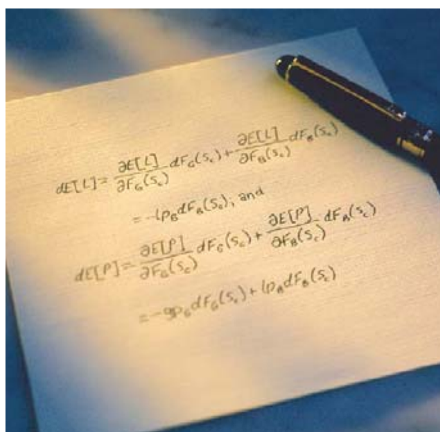
Healthcare Fraud & Abuse Background

- Predictive modeling
- Healthcare fraud/abuse problem description
- Unleashing the power of predictive analytics

Predictive analytics background

The Beginnings: Credit-risk Scoring



- Explosive growth of the consumer credit industry following WWII
- Increased competition among lenders
- The "Judgmental Process"
- Growth of computer science, mathematics, and operations research
- Rise to industry standard

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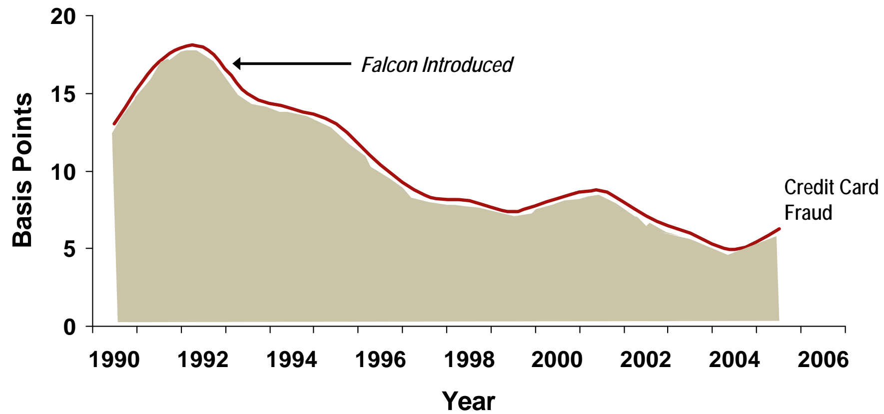
Impact of predictive modeling on fighting credit card fraud



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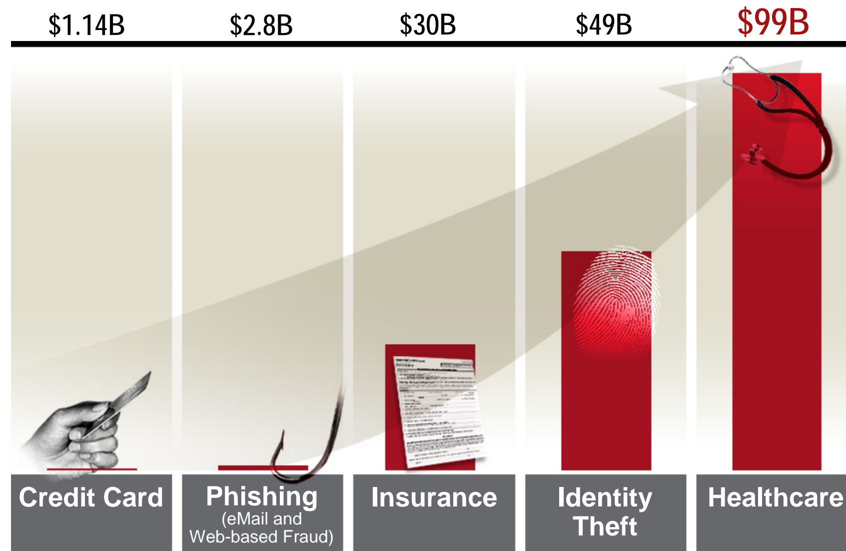
Estimated amount of annual losses caused by different types of Fraud/Abuse (U.S.)



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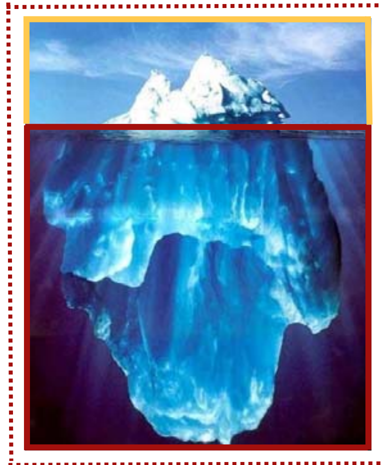
Predictive analytics complement existing fraud detection methods



Queries/Rules

Simple schemes and billing errors

Known fraud and abuse patterns

Predictive Analytics

Simple schemes and billing errors

Known fraud and abuse patterns

AND

Complex fraud and abuse patterns

Undiscovered schemes

New and emerging issues

Organized Fraud

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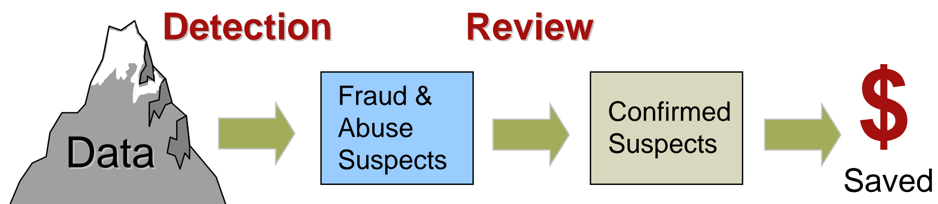
The fraud-fighting process: Detection and Review



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Tackling the detection challenge head-on – Understanding key domain issues

- Lack of historical examples of fraud
- Previously unknown, newly emerging, schemes
- Fragmented data
- Context matters (Interacting entities)
- Transactional profiling
- Huge volumes
- Peer comparison
- Time-lags / Out-of-order
- Complexity of acting on detection results

Key pillars to success

- *Domain expertise*
- *Solution Development*
- *Technology*

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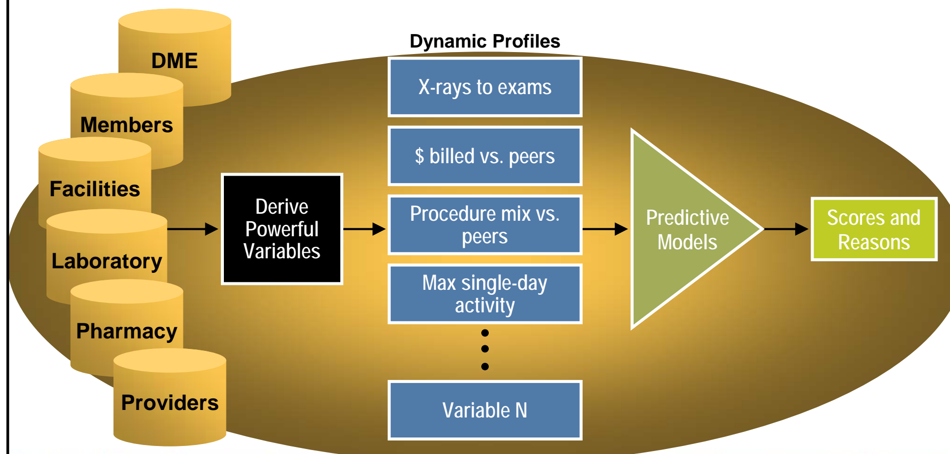
Predictive modeling greatly improves quality of retrospective Provider assessment

Advanced predictive analytics recognize patterns that would be undetectable using conventional methods, delivering actionable results via automated detection



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Prepayment Fraud Detection – A fundamental paradigm shift

- Shifting from pay-and-phase to payment-avoidance
- Scoring claims prior to payment

Wouldn’t it be great if ….

… we could identify fraudulent claims before they were paid?

- *Emphasize fraud avoidance and early intervention*
- *Avoid pay-and-chase … consider it more about risk management*

It turns out that, to a significant degree, we can!

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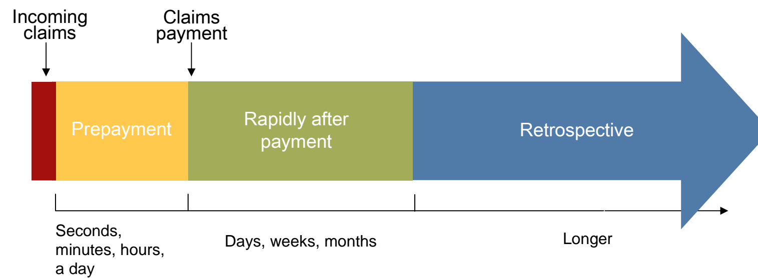
Pinpointing Fraud/Abuse as soon as it manifests itself

Claims management process provides multiple opportunities



CLAIM LEVEL

- Avoid pay and chase
- Faster response to risks
- Soft shaping of behavior
- Identify systemic issues

PROVIDER (ENTITY) LEVEL

- Stable data
- Delayed response to risks
- Identify broad patterns of abuse
- Enables definitive, legal actions

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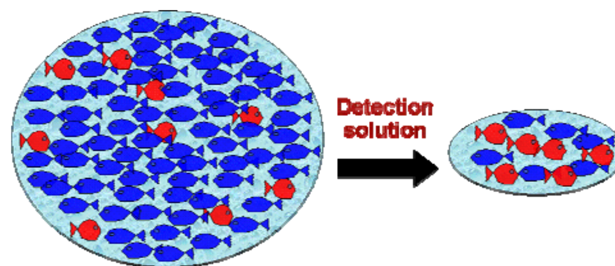
Requirements of effective prepayment detection

- ***Detection***: Isolate potential "bad" activity



- Prepayment detection need not be real-time, but must occur relatively soon after claim is received
- While a claim is being scored, relevant context should be considered
- Actionable results: Within a couple of minutes, claims reviewer should be able to make decision on pended claims

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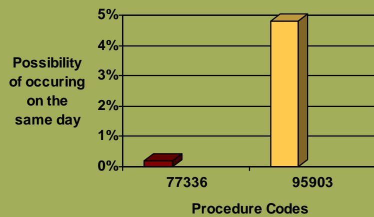
Prepayment analytics are very different from rules you see in an editing system

- Context matters
  - When scoring a claim, profiles of the *Patient* and the *Provider* provide context
  - We also build data-driven profiles of other entities, such as *Procedure Codes*

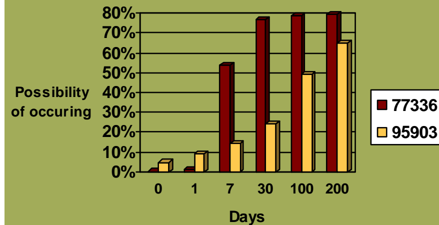
Example 1: Same patient, same day

- Repeating a procedure on a patient on the same day is more unusual in some cases than in others
  - 77336 – Physics consultation including assurance
  - 95903 – Nerve conduction, amplitude, and latency



Example 2: Typical days until the next visit

- E.g. 54% of time, 77336 will occur again on same patient within 7 days



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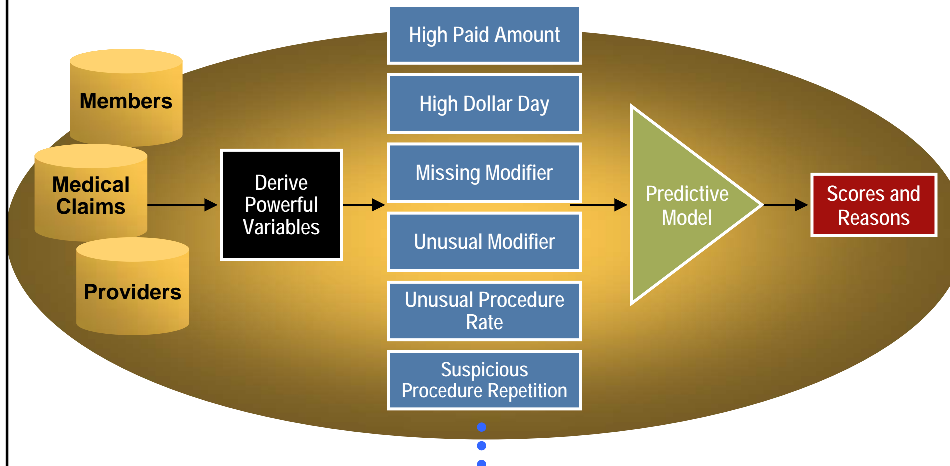
Scoring medical claim lines

- Data-driven lookup tables provide key norms against which activity on a given claim is compared



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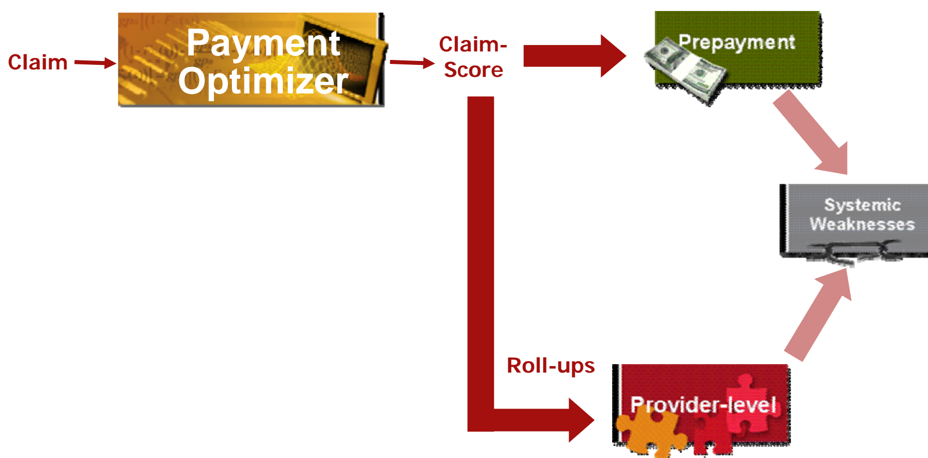
Results

- Savings categories
- Concrete examples of finding
- Putting it all together into an overall value-proposition

Claim-level scoring leads to 3 categories of significant savings



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Claim-level savings – Identifying claims with overpayment issues

- Each claim-line receives a score in a 0-1000 range
- Those satisfying configurable criteria (e.g. scoring above a certain threshold) are *pended* for review
- Post-adjudication, pre-payment

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Claim-level savings – Identifying claims with overpayment issues

Examples

- $163K in over-billing from claims with modifiers for less-intensive or aborted procedures where discounts were not taken
- Over $1M in 15 months from duplicated lines within the same claims
- 10 7-day prescriptions of Zyprexa being filled 1-4 days apart
- Duplicate claims from a physicians group for the same patient and day, from different locations and submitted under different tax IDs
- A delayed claim from a hospital urology department duplicating a claim submitted earlier—both for unusual billed amounts
- Duplicate claims for vaccination on the same day or within a week
- A physical therapist billing more than 24 hours of PT procedures for a single day

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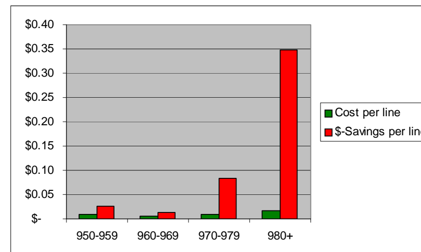
Claim-level savings – Identifying claims with overpayment issues

- **Case-study**
  - Averaged $31.05 per claim line reviewed
    - Over $0.30 per claim line in savings across all lines (~1% review rate)
  - Review effort costs less than 2 cents / line reviewed



Quantifying the value proposition

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Large (Provider) Cases – Rolling up claim scores

- **Providers are scored based on an inordinately high propensity of high-scoring claims**
- **“Rapid Response”**
- **Roll-ups can also occur to *entities* other than Providers**

Edit Queues | Assign Case | Go To Case | Maintain Users | Options | Resources
Claims Review | Entity Review | Search | Reports | Logoff | Help

View
Filter
Sort
Layout
Export

Repeat Activity Scores For Provider, scored on 20040102

Row	Provider ID	Specialty	Rank	Score	Total Paid	Paid Claims	Claims, Level 1,2,3
1	75273XXXX	70	2	996	$6,145.90	282	95
2	08033XXXX	03	3	992	$3,291.79	71	45
3	75273XXXX	30	4	991	$6,645.18	65	47
4	76823XXXX	22	4	991	$4,323.83	292	89
5	85833XXXX	——	4	991	$30,351.12	93	29
6	59333XXXX	02	8	985	$35,368.60	277	101
7	75223XXXX	18	9	984	$3,730.44	215	76
8	81053XXXX	08	9	984	$24,715.48	287	42
9	52113XXXX	——	11	982	$4,889.16	230	54
10	74123XXXX	22	11	983	$1,686.39	123	35
11	54093XXXX	22	11	982	$4,677.96	463	77
12	31113XXXX	92	14	981	$13,644.76	151	26
13	47073XXXX	——	15	980	$8,289.09	536	59
14	52113XXXX	——	15	980	$11,405.71	156	26
15	72093XXXX	22	15	980	$2,358.22	269	69
16	F0003XXXX	FP	18	979	$6,962.57	191	81
17	52203XXXX	11	19	978	$52,297.62	289	39
18	59333XXXX	22	19	978	$8,241.15	118	59
19	61083XXXX	22	19	978	$3,242.68	318	87
20	11273XXXX	07	22	976	$7,609.00	129	45

Rows 1 through 20 of 98

Next >>

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Large (Provider) Cases – Rolling up claim scores

Example

- **Ranked #1 for Drug Rate (*too frequent*)**
  - 58% of patients were receiving their prescriptions far too frequently
  - *Example:* For one patient, this pharmacy billed for 10 prescriptions of Zyprexa (anti-psychotic). While each was for a 7-day supply of medication, the prescriptions came in 1-4 days apart.
- **Ranked #1 for Excess Days (*too much*)**
  - 53% of patients were receiving excess supplies of medications
  - *Example:* For one patient, the pharmacy billed for 8-months supply of Epivir (anit-viral AIDS/HIV drug) in a 5-month period.
- **Ranked #2 for Drug Duration (*too long*)**
  - 53% of patients were receiving specific drugs for unusually long durations

This large pharmacy has been suspended from the program

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Large (Provider) Cases – Rolling up claim scores

Example

- A top-scoring pediatrician
  - Repeat Procedure (same patient) concerns
  - No standard E&M office visits over 1-year
  - Extensive billing of "well patient" codes (99391 through 99395) during same time period
    - 1,577 occurrences = total of $80,858 billed
  - Services are all unusual for a pediatrician
- Of the top 20 scoring providers, 17 exhibited this behavior
  - Some primary care givers in NY are billing well patient visits (99391-99395) instead of standard E&M office visits on patients.
  - E&M visits fully capped in NY

$14M annual savings potential associated with this fraud pattern

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Systemic Weaknesses

Systemic Weaknesses – Discerning patterns in the high-scoring claims

- **Types of Systemic Issues**
  - Policy weaknesses
  - Edit-system gaps
- **How to identify?**
  - Opportunistically, as an artifact of claims (or provider) review
  - Targeted, via review of homogenous high-scoring claim-batches

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Systemic Weaknesses

Systemic Weaknesses – Discerning patterns in the high-scoring claims

Examples

- Existing Dup Edits that require PIN's to match: Some should be tightened for suspicious scenarios even when PINs don't match.
- Adding modifiers to inappropriately allow claims with certain procedures to bypass system edits.
- $3M exposure over 18 months from providers repeatedly billing consultations, even though plan policy restricted them to one every 6 months
- More than $1.5M in excessive charges due to provider contracts that allowed E&M and physical therapy codes to be reimbursed as a % of charges. Providers inflated their billing amounts.
- $1.4M annual exposure from pathologists billing professional components for automated lab tests that required no professional review.
- $400K annual exposure from physicians billing multiple preventive visits for the same patient on consecutive or closely spaced days

Case Study, from a large commercial payer:

$12m in annualized leakage/savings identified in review of 2 weeks of high-scoring claims

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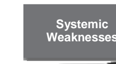
Quantifying the savings potential

- **Claim-level (Prepayment)**
  - Claim fraud, abuse and error payment prevention
  - Savings Potential: 30+ cents per claim-line savings averaged across entire book of professional claims, based on 1% review

- **Provider Cases**
  - Provider fraud and abuse detection
  - Overall savings potential for a payer on same order of magnitude as claim-level

- **Systemic Weaknesses**
  - Policy vulnerabilities, edit gaps, loopholes
  - Overall savings potential can even exceed prepayment savings



What can a complete, integrated, suite mean?

Payer

1% reduction in overall claim payments

Industry

20% reduction in F/A losses, or $10B's

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Elements for Success

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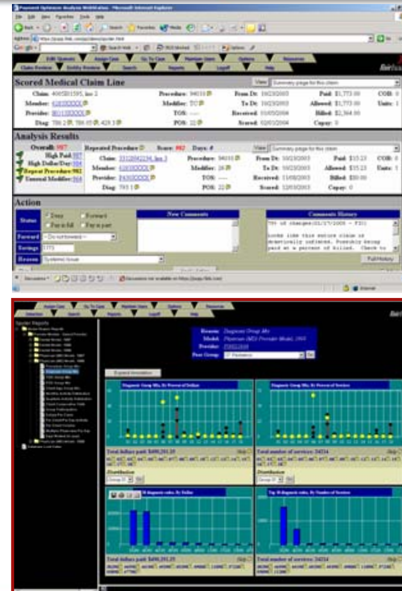
Actionable Results – Supporting the Review Process

- Scores
  - Rank-order all activity by degree of suspicion
  - Control volume that gets reviewed, optimizing efforts
- Reason Codes
  - Point to what looks most suspicious
- Review support tools
  - Case-management
  - Work-flow
  - Reports
  - Drill-down



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Considerations towards a successful implementation

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Summary of thoughts

- Predictive analytics offers a compelling approach to healthcare fraud-fighting efforts
  - Improved automated detection
    - Complexity of analysis hidden from user
  - Supports prepay detection
  - Actionable Results
- Proven approach
  - Fully embraced in financial services
  - Success of early adoption in Healthcare & Insurance
- 3 pillars of success
  - Technology, Domain, Operationalize
- Fighting fraud should be viewed as a strategic issue

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Questions & Answers

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