


Statistical Thinking For Data Science And Analytics

Fraud risk assessments

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• Why Perform a Fraud Risk Assessment – Best Practice

COSO Component	COSO Principle
Control Environment	<ol style="list-style-type: none"> 1. Demonstrates commitment to integrity and ethical values 2. Exercises oversight responsibility 3. Establishes structure, authority and responsibility 4. Demonstrates commitment to competence 5. Enforces accountability
Risk Assessment	<ol style="list-style-type: none"> 6. Specifies suitable objectives 7. Identifies and analyzes risk 8. Assesses fraud risk  9. Identifies and analyzes significant change
Control Activities	<ol style="list-style-type: none"> 10. Selects and develops control activities 11. Selects and develops general controls over technology 12. Deploys through policies and procedures
Information & Communication	<ol style="list-style-type: none"> 13. Uses relevant information 14. Communicates internally 15. Communicates externally
Monitoring Activities	<ol style="list-style-type: none"> 16. Conducts ongoing and/or separate evaluations 17. Evaluates and communicates deficiencies

• Why Perform a Fraud Risk Assessment – Best Practice

Principle 1

- As part of an organization's governance structure, a fraud risk management program should be in place, including a written policy (or policies) to convey the expectations of the board of directors and senior management regarding managing fraud risk.

Principle 2

- Fraud risk exposure should be assessed periodically by the organization to identify specific potential schemes and events that the organization needs to mitigate.

Principle 3

- Prevention techniques to avoid potential key fraud risk events should be established, where feasible, to mitigate possible impacts on the organization.

Principle 4

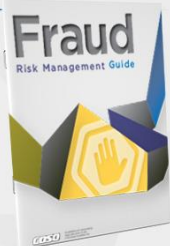
- Detection techniques should be established to uncover fraud events when preventive measures fail or unmitigated risks are realized.

Principle 5

- A reporting process should be in place to solicit input on potential fraud, and a coordinated approach to investigation and corrective action should be used to help ensure potential fraud is addressed appropriately and timely.

Fraud Risk Management Guide

A joint publication of COSO and the ACFE



● Polling Question #1

Does your organization perform a fraud risk assessment?

Yes

No

I don't know

• The Real Benefit - Why Perform a Fraud Risk Assessment?

Performing a Fraud Risk Assessment on a regular basis has a number of benefits, including:

- Improved communication and awareness about fraud;
- Hear from the people on the ground - not only the tone from the top – hear the message from the middle – and the buy-in from the bottom;
- Connecting with the front line people that are the first line of defense;
- Identifying where your company is most vulnerable to fraud and what activities put the organization at the greatest risk;
- Knowing which roles / functions put the organization at the greatest risk;
- Developing plans to mitigate fraud risk;
- Developing techniques to determine if fraud has occurred in high-risk areas;
- Assessing internal controls - provide a basis for Internal Auditing and continuous monitoring; and
- Demonstrating Audits' value in the organization and providing opportunities for consultancy and advisory services.

Annual Fraud Risk Assessment Process



Construction Industry Relevance

FIG. 20 What are the most common occupational fraud schemes in various industries?

INDUSTRY	Cases	Billing	Cash larceny	Cash on hand	Check and payment tampering	Corruption	Expense reimbursements	Financial statement fraud	Non-cash	Payroll	Register disbursements	Skimming
Banking and financial services	364	8%	10%	18%	9%	40%	8%	10%	10%	2%	2%	10%
Government and public administration	189	18%	5%	9%	4%	48%	17%	4%	17%	17%	0%	7%
Manufacturing	177	23%	5%	6%	8%	50%	20%	18%	23%	10%	2%	8%
Health care	145	33%	10%	10%	14%	40%	22%	14%	24%	15%	6%	10%
Energy	89	24%	6%	7%	6%	66%	11%	9%	25%	6%	1%	9%
Retail	89	22%	15%	15%	11%	37%	17%	6%	20%	11%	7%	15%
Insurance	82	24%	2%	5%	9%	43%	16%	11%	9%	5%	2%	6%
Education	82	30%	9%	13%	18%	30%	22%	7%	17%	13%	1%	22%
Construction	77	22%	13%	12%	17%	47%	9%	25%	13%	13%	4%	13%

How is fraud detected in US and Canada?

REGIONAL FOCUS UNITED STATES AND CANADA



FIG. 82 What are the most common occupational fraud schemes in the United States and Canada?

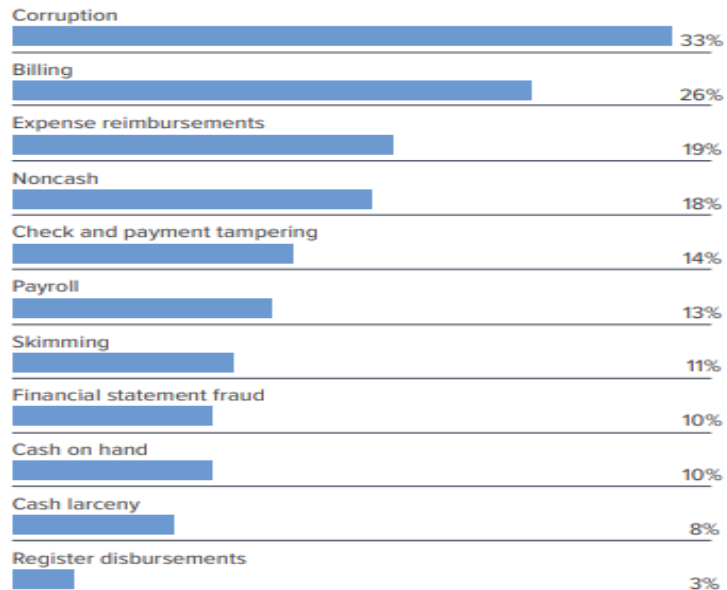
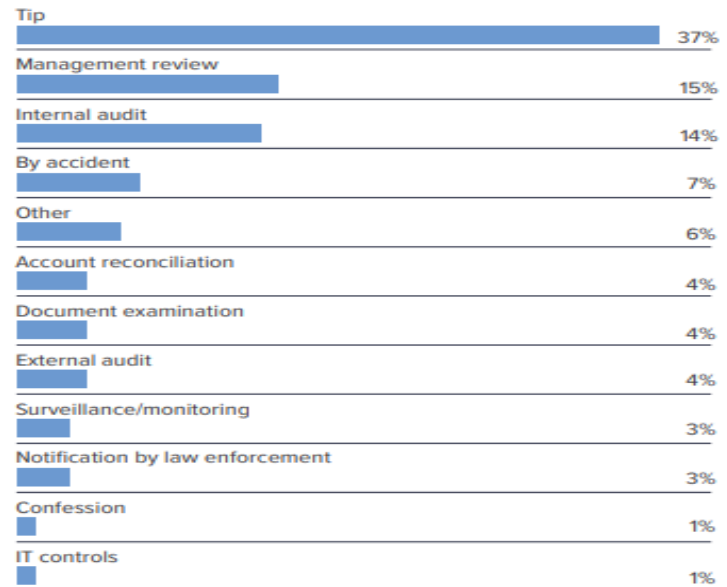


FIG. 83 How is occupational fraud initially detected in the United States and Canada?



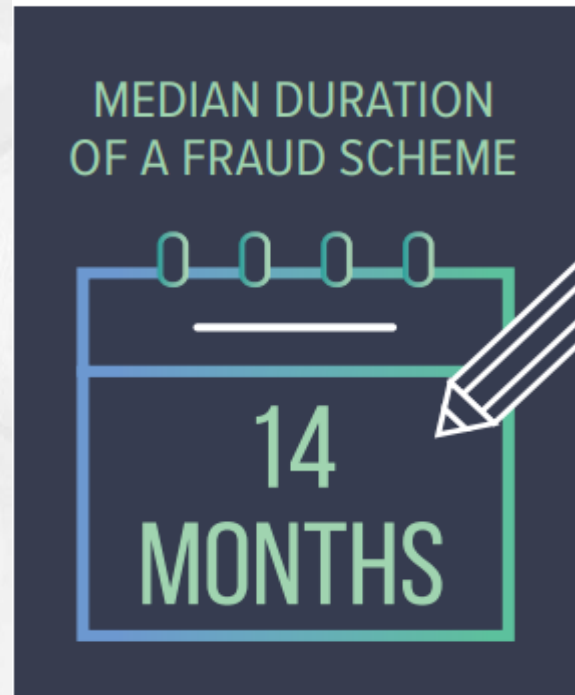
• Median duration of fraud per the ACFE

Even in the likely that some fraud will eventually occur.

fraud is vital potential

duration of a between when when it is detected—is 14

undetected, the losses



Not all fraud can be prevented. most secure organizations, it is type of employee

Consequently, quick detection of to protecting an organization from damage.

Research shows that the median fraud—that is, the typical time a fraud begins and months.

The longer a fraud remains greater the financial

So how do we identify fraud sooner?

● Fraud Risk Workshop = Information Pipeline



Organizations with
FRAUD AWARENESS TRAINING
for employees were
more likely to gather tips through



**FORMAL
REPORTING
MECHANISMS**

56% of tips with training

37% of tips without training

● Polling Question #2

Does your organization perform fraud risk workshops?

Yes

No

I don't know

• Fraud Risk Assessment Workshops – Hosts

Potential Hosts:

- Auditors
- Investigators
- Compliance Officers
- Lawyers

• Fraud Risk Assessment Workshops – Hosts

Required Skills:

- Engaging and fun
- Trust Builder – find something relatable to kick off the conversation
- Don't talk too much “corporate speak”
- Listen without judgement
- Use relevant examples

• Fraud Risk Assessment Workshops – Attendees

Potential Recipient Departments:

- Supply Chain
- Payroll
- Project Management
- Project Controls Teams
- Project Attest Teams
- Quality/Safety Personnel

Required Skills for workshop:

- Participate and share knowledge

If you perform your assessment from the highest tower, you may not see the chaos below



• Fraud Risk Assessment Workshops – Key Topics

- Attendees are a key part of our operations, and we want to hear from them!
- The definition of fraud and the difference from error, and the concept of intent
- The fraud triangle and explain each component with real life examples
- The fraud tree
- Brainstorming session



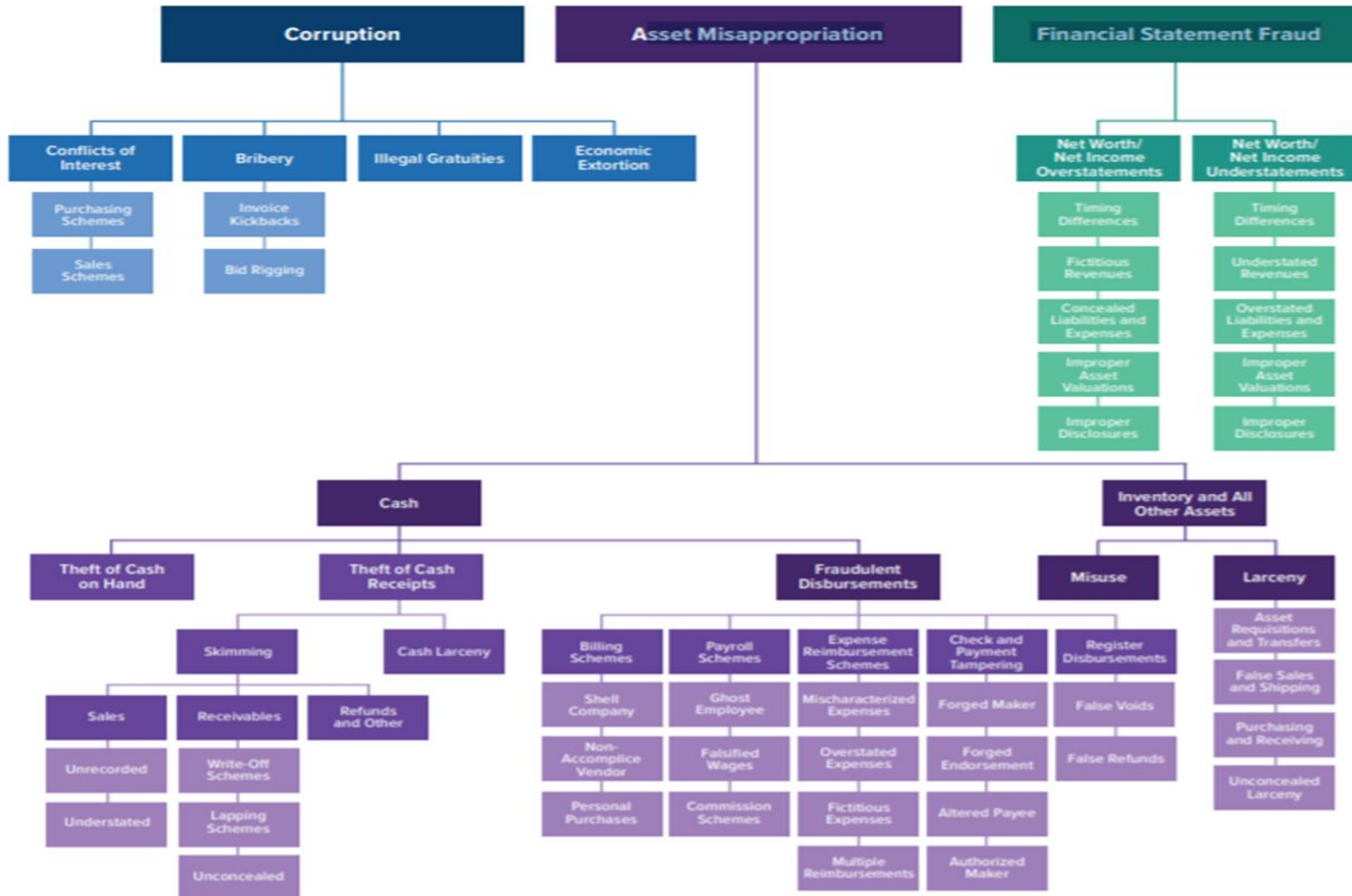
• The Fraud Triangle

Fraud can happen when three components leading to fraud are present, Pressure, Opportunity, and Rationalization.

This is typically illustrated as the “fraud triangle“, which was developed by Donald Cressey, a famed Penologist, Criminologist and Sociologist, who studied white collar crime.



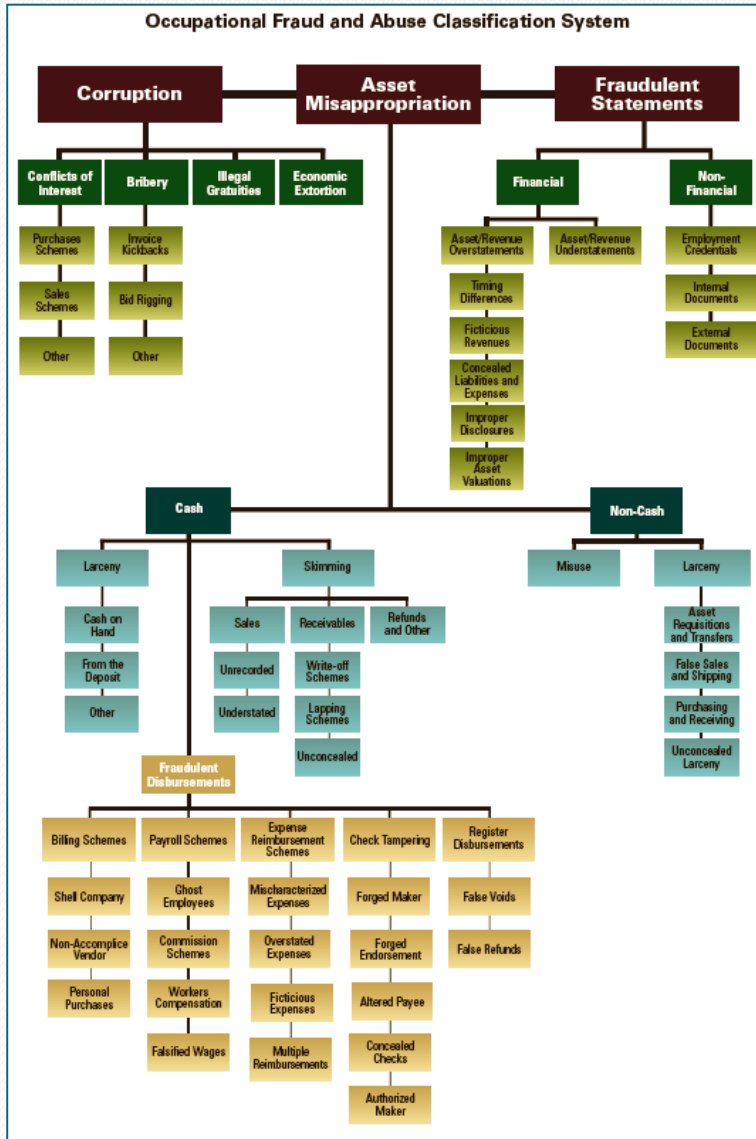
● Fraud Risk Workshop - FRAUD TREE



• Continuous Cycles of Fraud Risk Assessment

- The fraud risk assessment is a living, breathing process – use it to build the audit plan for each upcoming year
- Re-visit each year – assess the required audiences, the new risks
- Create relationships with your critical assets in detecting fraud – the people

Our Methodology for Assessing



- **Balanced Approach**

- We could not find real life methodologies from other institutions at that time.
- We decided on a perception-based model that would also serve to educate the campuses on fraud risk.
- We limited our scope to financial frauds.
- We based our list of fraud types on the ACFE's Framework.

Fraud Risk Assessment at Texas Tech



- Planning Our Engagement:
 - Resources:
 - Prepare resources and handouts to provide to risk assessment participants
 - Develop a “Glossary of Fraud Schemes” that explains the what and how of the fraud schemes for which you wish to gather their perceptions
 - Prepare “Real Life” examples of these frauds in action, using examples from your institution or others, when appropriate

Our Methodology for Assessing Risk

- Evaluation Criteria:

- Considerations

- Fraud typically has a far-reaching impact
 - Often institutions find they are affected by more than just the monetary cash / asset loss
 - Needed evaluation criteria to encompass more than just the material impact of the fraud

- Four-Tiered Approach

- Likelihood
 - Pervasiveness
 - Materiality
 - Risk to Reputation



Our Methodology for Assessing Risk



- Evaluation Criteria:

- Evaluation of Fraud Risks
 - Risk Groupings
 - We determined these evaluation criteria could fit into two broader risk categories:
 - Risk of Occurrence: Likelihood and Pervasiveness
 - Risk of Loss: Materiality and Risk to Reputation

Our Methodology for Assessing Risk



- Evaluation Criteria:

- Evaluation of Fraud Risks

- Scale

- Determine what scale for evaluation fits best for your institution
 - We used a scale of 1 to 4
 - This permits the participant to choose, but forces a choice above or below the median number

Our Methodology for Assessing Risk



- Evaluation Criteria:

- Evaluation of Risk of Occurrence

- Likelihood

- What is the probability that this type of fraud could occur at our institution?



- Pervasiveness

- Assuming this type of fraud could occur; is this a scheme that could only occur in a limited number of areas on campus or could the occurrence of this type of fraud be widespread?

Our Methodology for Assessing Risk



- Evaluation Criteria:

- Evaluation of Risk of Loss

- Materiality

- What would be the magnitude of this type of fraud in terms of dollars or value lost?

- Reputational Risk

- Should this type of fraud occurrence be covered by the media, what is the risk to the reputation or the brand of the institution? Does the institution risk a loss of public trust?

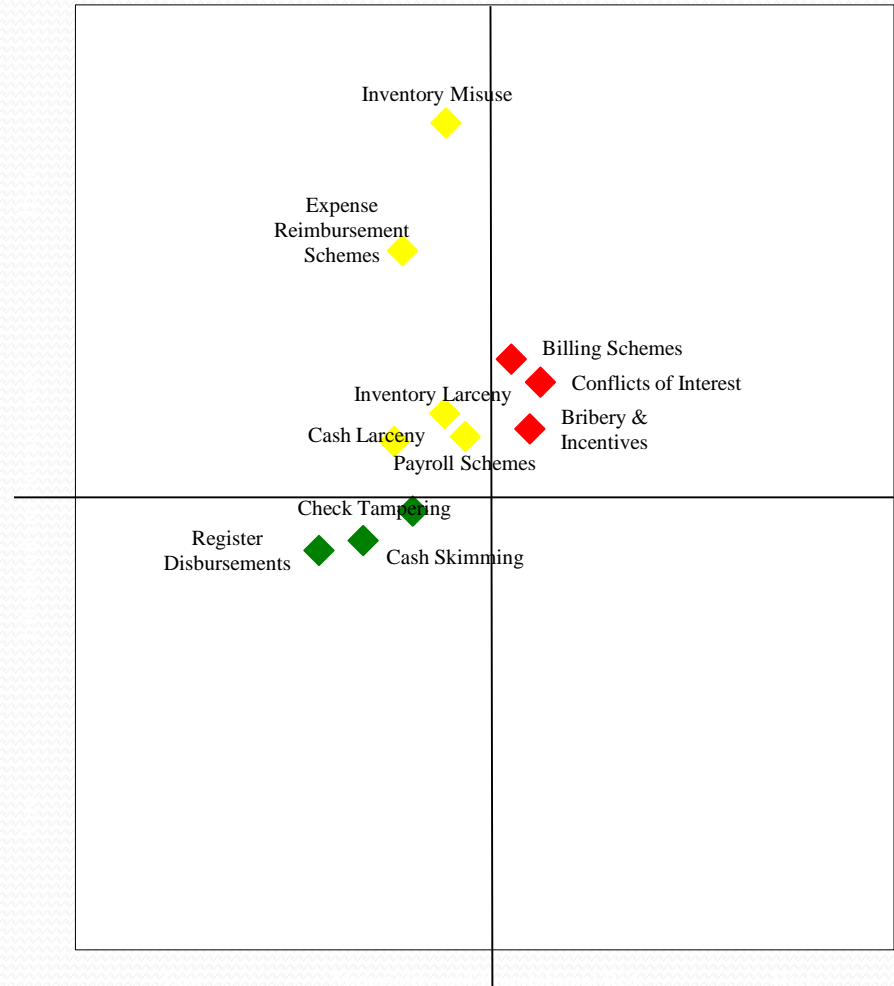
Fraud Risk Assessment at Texas Tech



- Gathering Perceptions:
 - Group Meetings with Polling Software
 - Turning Point by Turning Technologies
 - Gather perceptions from a variety of departments and units across the institution's campus
 - Finance and Administration
 - Fiscal Affairs
 - Procurement (Travel, AP, Purchasing, Contracting)
 - Payroll
 - Human Resources
 - Departmental Business Managers and Directors
 - Resist the temptation to just obtain perceptions from upper management
 - Ask upper management who they would like included to supplement your own list

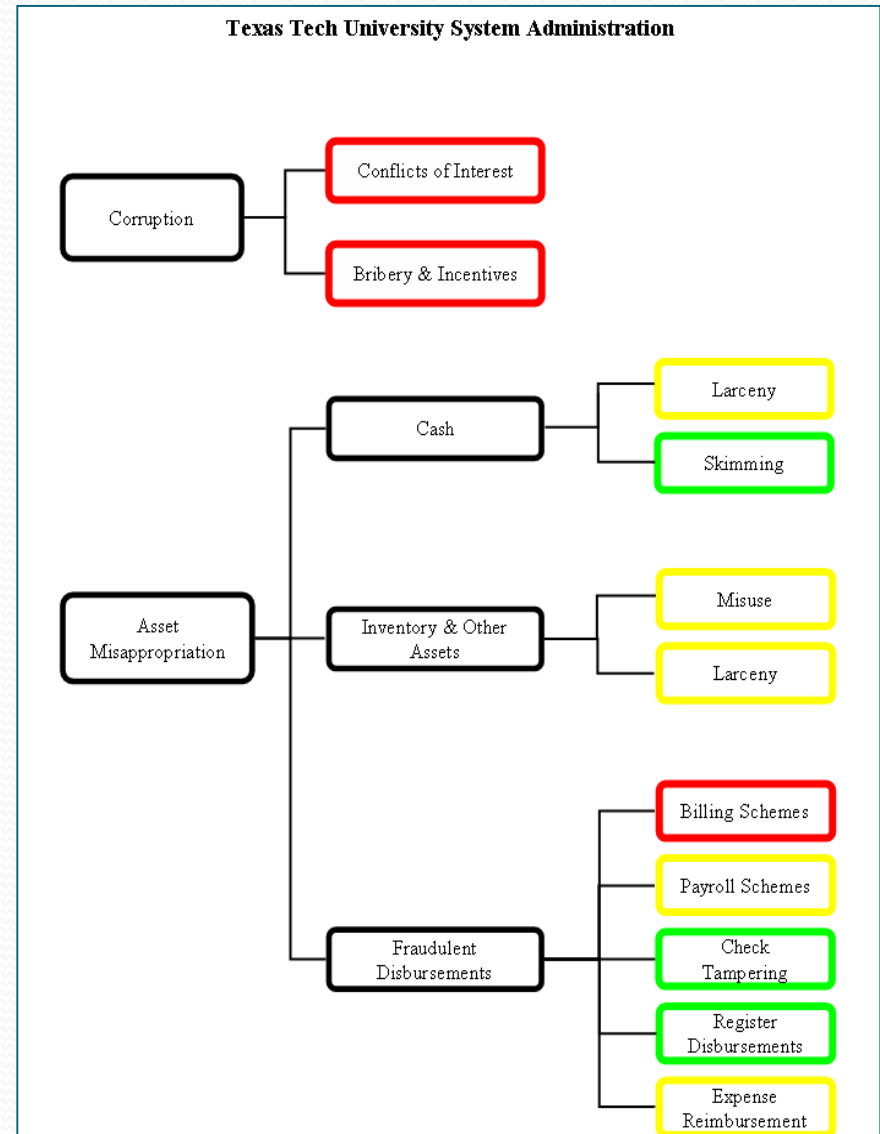
Reporting and Representing the Results

- Sharing the Results:
 - Graphical Representation:
 - Plotting the Data Points
 - Color-coded based on placement

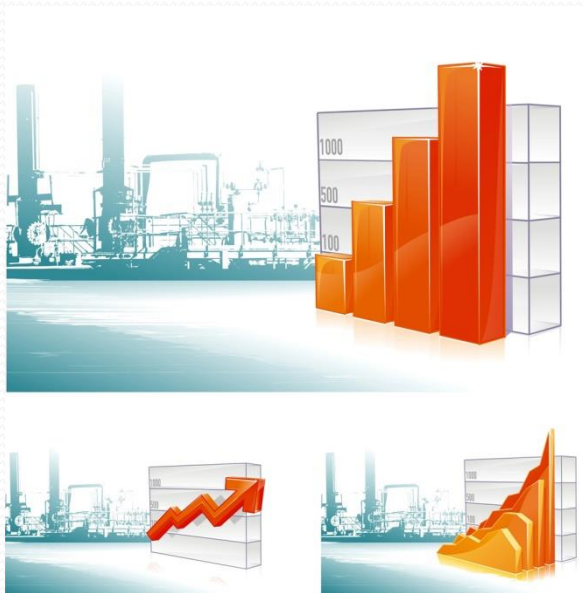


Reporting and Representing the Results

- Sharing the Results:
 - Graphical Representation:
 - Color-Coded Hierarchy



The Impact of the Fraud Risk Assessment



- What we did with the results:
 - Fraud Awareness Training
 - Increasing awareness and education
 - Audit Planning
 - Incorporating the results into your engagement planning
 - Annual Planning
 - Incorporating the results into your annual audit plan
 - Benefits to Texas Tech University System