

Procurement Integrity Powered by Continuous Data Monitoring

Getting predictive with analytics to prevent fraud



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Procurement Fraud Is Pervasive – and Incredibly Costly

Did you know that procurement-related fraud is the second-most prevalent type of fraud in the marketplace today? In 2017, global companies experienced more than \$7 billion in total losses.¹ When looking at data from the United States, four of the areas contributing to this \$7 billion figure are clearly tied to procurement: corruption, billing, expense reimbursement, and check and payment tampering (see Figure 1).

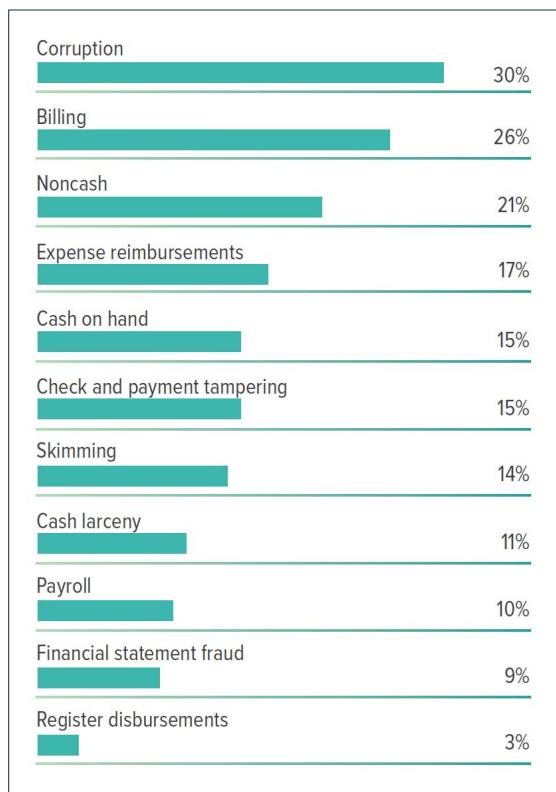


Figure 1: Most common occupational fraud schemes within US companies.

All in all, it's estimated that 5% of all procurement spending is lost due to fraud.² Consider that in the UK, the private sector suffers fraud-related losses of nearly £144 billion (about US\$187 billion) each year, of which approximately £127 billion is procurement-related. And in the public sector, procurement fraud cases increased by nearly 500% in the 12 months following April 2015.³

¹ 2018 ACFE Report to the Nations: <https://s3-us-west-2.amazonaws.com/acfepublic/2018-report-to-the-nations.pdf>

² <https://www.financierworldwide.com/procurement-fraud-an-old-fraud-flourishing-in-emerging-markets-and-costing-businesses-billions#.XL9OvzBKjUk>

³ The Chartered Institute of Public Finance and Accountancy's latest Fraud and Corruption Tracker

Take a closer look at typical procurement processes and systems, and the fact that procurement is linked to so many entry points for fraud is no surprise. Most companies have a significant number of employees who are authorized to make spending decisions, including who to buy from and what to pay, without oversight. Auditing of these transactions often happens after money has exchanged hands, so prevention is difficult at best.

Complicating matters is the fact that procurement fraud can involve employees you hired, colleagues you respect and vendors you trust. Successful fraud often involves collusion with someone in power – a procurement official, contract manager, a business manager or an executive, or even a vendor. This makes discovery of fraud even more impactful on corporate culture and teams. No one likes to assume such things about people they hire or work with.

For organizations using basic analytics to help uncover fraud, it's typically used on historical data, so it can't prevent fraud – only reveal it after payments have been made. On average, companies discover fraud X years after it occurred, making recovery of financial losses extremely difficult. In addition, analytical tools generate many thousands of fraud alerts that are not prioritized or weighted. As a result, alerts end up being distractions rather than valuable insights into where to go after fraud.

These realities illustrate why so many otherwise well-intentioned employees may feel tempted to commit fraud – and end up being successful for so long. They start small – for example, by approving duplicate invoices – and no one notices. This leads to larger and more frequent fraud efforts over time. There simply aren't sufficient controls in place to detect and deter them.

The question is, how can you change this – and can you afford to wait? Business leaders and auditors increasingly being held accountable for growing financial losses resulting from fraud, not to mention the reputational risk that accompanies it.

The Bigger the Budget, the More You Have at Risk

Studies show that most procurement fraud is due to weak controls and detective measures. When controls aren't strong – especially within large organizations – fraudulent activity can get lost in many thousands of transactions. Generally, the bigger your organization is, the easier it is for employees to commit fraud without detection.



Consider how lack of controls cost one large US government institution more \$300 million in procurement fraud over the course of several years. After a high-profile procurement fraud incident made national headlines, senior management wanted to know how it happened – and if it was indicative of a larger problem. SAS consultants analyzed all procurement data – payments, invoices and orders – across the enterprise for the last three to four years, which involved data on 17,800 suppliers, 25,000 employees and 700,000 payments.

Increasing regulatory pressures are putting procurement fraud in a bright light. Currently, 81 companies are currently under investigation for violations of the Foreign Corruption Practices Act (FCPA).

SAS® analytical tools revealed alarming findings:

- 2,500 employees had a financial interest in one or more of the 17,800 outside suppliers doing business with this government body. While not all were defrauding the government, these relationships represented potential risk.
- There was employee collusion with one large supplier that had been paid in excess of \$300 million. Forensic analysis found multiple invoicing and split invoicing activity with this supplier that, if prevented, would have saved more than \$16 million.
- The analysis identified ghost employees – employees that didn't or no longer existed and yet were continuing to be paid – as well as payments for supplies/goods that were never received.

The story illustrates the huge risks associated with traditional fraud detection methods such as manual audits and periodic data analysis. As this SAS customer learned the hard way, to prevent fraud, you need continuous monitoring of all procurement-related data using a wide range of analytical tools.

An Integrity-Based Approach Powered by Continuous Data Monitoring

Continuous monitoring of all procurement-related data is the foundation for an integrity-based approach that detects potential fraud early – before payments go out. An integrity-based approach combines typical controls and processes with a “continuous monitoring” type of review so banks can identify and act on issues as they occur. This approach maintains the integrity of the procurement process by avoiding mistakes or wrongdoings, thereby ensuring the organization remains stable and solvent.

To deliver on this value, procurement integrity solutions need to include:

- **Aggregation of information** from different systems, agencies and third-party data sources to augment knowledge about suppliers, people, products and contracts.
- **Resolution of entities through a variety of means**, including name variations; use of common addresses, phone numbers or bank accounts; and through business ownership monitoring.
- **Early detection using analytical techniques** such as clustering, segmentation, pattern recognition, associations and business rules to determine or predict the overall risk posed by each payment, invoice, supplier or purchase order.
- **Pre-award stage content analysis** that looks at bids, communications, selection outcomes and relationships in order to be on the front end of corruption or fraudulent activity and mitigate risk prior to contract award.
- **Aggregated, entity-level alerting** to reduce false positives and prioritize the tens of thousands of transactional-based alerts being generated by analytics. This frees investigators to focus their time and effort on the most critical and high-value fraud activity.
- **Improved investigative capabilities and decision making support** by integrating data from all financial and contractual systems into one environment and supporting a workflow that reflects organizational objectives. Reporting should provide information to key decision makers in the form of dashboards or portals, mobile reporting and risk insights across the procurement environment.

How SAS Operationalizes Procurement Integrity

SAS achieves procurement integrity using analytic solutions that deliver artificial intelligence through automation, natural language processing and machine learning, alongside other advanced analytic capabilities. These solutions continuously analyze diverse data sets to deliver deep insights into contracting, billing and payment processes, effectively identifying overpayments and potential fraud while meeting procurement mandates and compliance with internal controls. SAS' expertise, which is based on years of experience identifying suspicious activities in the procurement domain across many industries, is built into every aspect of the solution.

The result is a proactive approach to procurement integrity that shifts the focus from fraud detection to prevention and procurement integrity – all while vastly reducing the potential for financial losses, reputational damage, operational disruption and legal action. This approach also improves the bottom line by eliminating the need for the traditional “pay-and-chase methodology” that typically results in recovery of funds in less than half of the cases.

SAS' expertise, which is based on years of experience identifying suspicious activities in the procurement domain across many industries, is built into every aspect of our solution.

Delivering the Right Technical Capabilities Across the Analytics Life Cycle

SAS achieves procurement integrity using powerful analytic solutions that deliver the right technical capabilities at every step in the analytics life cycle – from data aggregation to discovery and deployment.

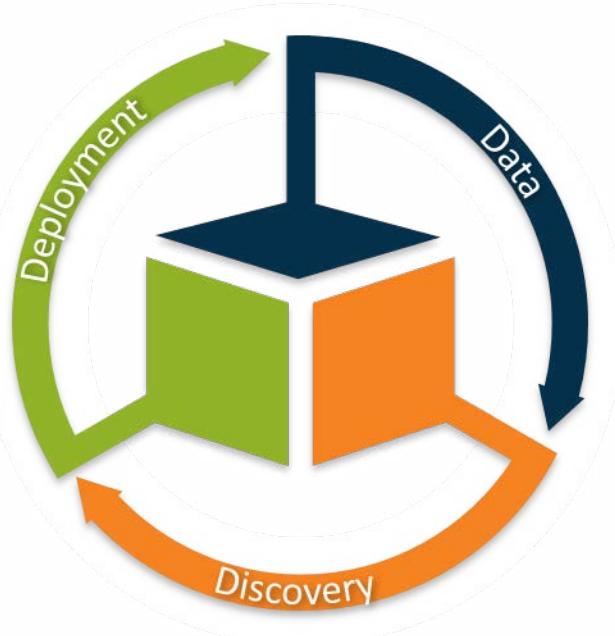


Figure 2: The analytics life cycle steps supported by SAS.

By using predefined risk indicators and behavioral detection for potential fraud, SAS gives auditors, risk managers, investigators and contracts executives critical, risk-related insights within an organization's existing processes and workflows. Even SAS' interfaces are preconfigured yet modifiable, so they can be seamlessly integrated into existing processes to support an organization's unique decision-making cycle.

Most importantly, SAS software's predefined fraud scenarios and advanced analytics can accurately identify fraudulent behavior in complex networks that exist within procurement. Our solutions combine data management; proven models and rules that drive risk scoring at the transaction, purchase order and supplier-based levels; and a triage environment.

Let's take a closer look at how SAS delivers this value.

Data Aggregation

Before procurement-related data can be analyzed continuously, it must be aggregated from disparate sources – both internal and external – using a common data model that facilitates deep and continuous data analysis. SAS does this by layering in external data from different systems (such as HR systems), agencies and third parties, so you can augment knowledge about suppliers, people and products and then resolve entities.

Our analytics look at all data relevant to procurement such as orders, invoices, payments, vendors and suppliers, and even HR's employee data (which it uses to detect collusion by identifying potential links between employees and suppliers).

Discovery

SAS applies advanced analytical techniques to predefined and custom fraud scenarios to surface issues – including data quality concerns – and improve data within the system of record. For example:

- **Text mining** identifies patterns in unstructured data, such as reports and employee communications. For example, analysis of company emails might show that a procurement officer who makes \$65,000 a year has suddenly bought a 10,000-square-foot house and an 80-foot boat – spending that's not in line with his income and should be investigated.
- **Advanced analytics** such as predictive modeling can be used to build models that identify attributes or patterns that are highly correlated with known fraud, even complex and emerging patterns of fraud. Analytics can answer questions that manual or ad hoc methods would miss. For example, does this pattern look like patterns of vendors known to be bid riggers, or those known to deliver counterfeit or substandard parts? Does this series of invoices, stair-stepping up and down in dollar value, indicate a vendor trying to find the threshold of scrutiny?
- **Artificial intelligence and machine learning** use data-driven insights derived through deep learning or other complex and computationally complex methods of sifting through data points to identify variables of interest. By allowing the data to drive analysis, you find additional insights that subject matter experts may overlook or haven't encountered previously.
- **Associative linking or link analysis**, which identifies relationships among entities based on static attributes in the data (such as phone numbers, addresses or bank accounts) or transactional attributes (such as business relationships and referrals).
- **Vendor/supplier scoring** by running various scenarios against the data, identifying any networks in the data, and providing a scored approach to looking at your vendors based on transaction volume and total purchases, entity level, and relationships to employees and suppliers.

- **Drill-down functionality** that enables you to identify and investigate the root causes of problems such as the need for more advanced controls, process changes or reporting standards that can improve the purchasing process while reducing risk.
- **Geo mapping** that makes it easy to understand exactly where you have a problem in your procurement space.
- **Network scoring** to identify collusion in the procurement space – both with employees and with other vendors.
- **Fraud rules**, which are applied to make use of weighting, resulting in a scored approach with ranked alerts, suppliers and employees that help investigators know where to focus their efforts.

Together, these capabilities empower procurement officials to triage payments before they go out the door, provide more accurate views on the fiscal status of the organization, and assist auditors in their ongoing duties. At the same time, management and fraud teams are always aware of the true state of their purchasing department at any point in time.

Intelligent Investigation and Exploration

SAS solutions operationalize the investigative workflow, ensuring that investigations focus on the biggest threats. In addition, they deliver powerful reporting tools that provide key information to decision makers using dashboards, portals, web and mobile analytics, and more. These tools make the process of reviewing risk indicators much more efficient for audit and investigators, as they can quickly find weaknesses in their control systems and address them to identify more fraud going forward.

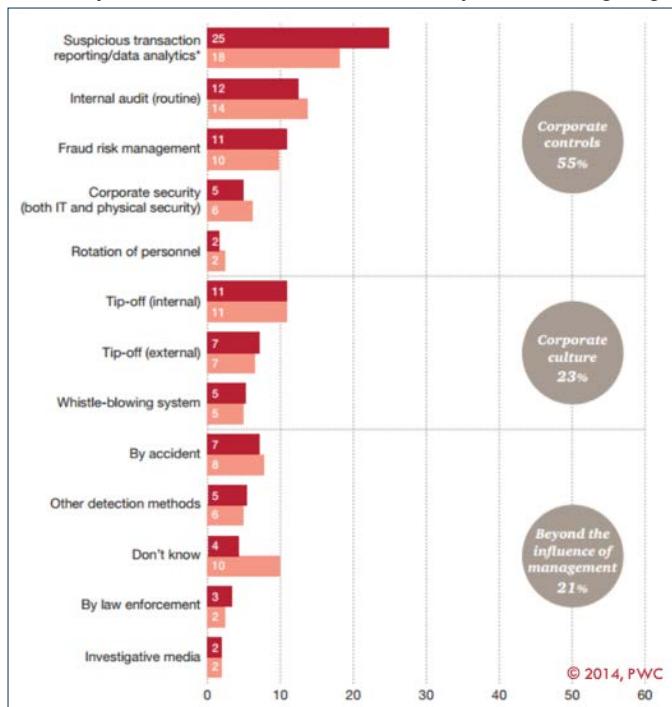


Figure 3: Adding analytics doubles the rate of fraud detection offered by other methods.

With automation in data management, triage and workflow, operations are streamlined so that analysts can make fast decisions via an easy investigative interface. You can link cases by specific common factors, capture incidents reported to the fraud hotline, attach electronic case evidence, and provide integrated management dashboards and reports. Go beyond individual invoice or payment views to analyze all related activities and entity relationships at a network dimension. Once linkages are established, you can factor them into risk-scoring models.

The Benefits of an Analytics-Driven Approach to Procurement Integrity

SAS' data analytics-driven approach to procurement integrity, which is based on continuous data monitoring, is the key to safeguarding the process of free and open competition and motivating employees to do the right thing – even when vendors try to induce their participation through bid rigging, price fixing, change orders, product substitutions and inflated invoices. Now you can:

- **Identify issues faster and earlier**, which significantly reduces fraud losses – more than any other method of detection.
- **Get predictive and implement preventative measures**, as the software immediately generates an alert when something is going wrong. You get early detection.
- **Investigate fraud smarter and easier**, because rather than randomly deciding which vendors and employees are a risk or which alerts to investigate, you can use a scored, prioritized list that helps you know where the biggest potential threats are to your business, right now.
- **Reduce false positives** that distract limited investigative resources so people focus on real problems, detect fraud earlier and stop it before money exchanges hands.

The SAS Approach at Work

To understand the real power of SAS for Procurement Integrity, consider how a SAS customer – a financial institution with a huge procurement spending volume – recently benefitted from the implementation of SAS Analytics. In this case, they used SAS Analytics to identify 21 employees, some of whom held executive-level roles, as having a direct financial interest in some of the vendors the company did business with. For example, some had a spouse working for a vendor, or who was a stockholder or even key management personnel working for that vendor. In some cases, they were high-ranking employees with procurement decision-making authority.

In this case, further analysis of all procurement-related data revealed:

- **A significant pattern of duplicate invoices** – that, when addressed proactively using SAS solutions, would result in immediate, bottom-line savings.
- **Supplier collusion and sharing information** – which meant that the business was potentially losing out on the opportunity to negotiate a better contract pricing due to collusion.
- **Waste and abuse** – through circumvention of controls for open and fair competition, overpayment for goods or services, and even lower-quality substitutions of products.

All in all, SAS Analytics identified more than 100 suppliers that needed further investigation. And the client had validation of SAS software's ability to detect and prevent future fraud, as a preceding event prompted this client to engage SAS. Management wanted to know if SAS Analytics could have detected the fraudulent activity and prevented it. This particular supplier was ranked fifth on the list of suppliers related to risk, which proved the effectiveness of the SAS approach.

Are You Ready to Prevent Procurement Fraud?

SAS is uniquely able to operationalize procurement integrity because of our:

- **Ability to hit the ground running with out-of-the-box capabilities.** We offer more than 80 prebuilt procurement models that identify anomalous behaviors and red flags, accelerating your time to value. These models provide data-driven risk indicators to identify noncompliant processes, unusual invoicing or payments and circumvention of controls, so you can reduce risk, attain compliance and minimize financial losses.
- **Decades of forensic audit expertise embedded into the platform.** Applying the experience of forensic auditors over the course of an aggregate 40 years of experience working with clients of all types from around the world, coupled with advanced analytic methodologies that surface subtle anomalies to detect new and emerging trends, the SAS solution helps organizations incorporate the knowledge and expertise of hundreds of experiences into the risk and fraud mitigation efforts within your own organization.
- **Ability to customize organization-specific models.** Every organization is different, despite purchasing processes being similar across industries. With SAS, you can also customize specific risk models that are unique to your business and internal controls, as this can help drive compliance and integrity across your organization's policies.

To find out your procurement risk and how to mitigate it, contact your local SAS representative, or visit sas.com/fraud to learn more.

To contact your local SAS office, please visit: sas.com/offices

