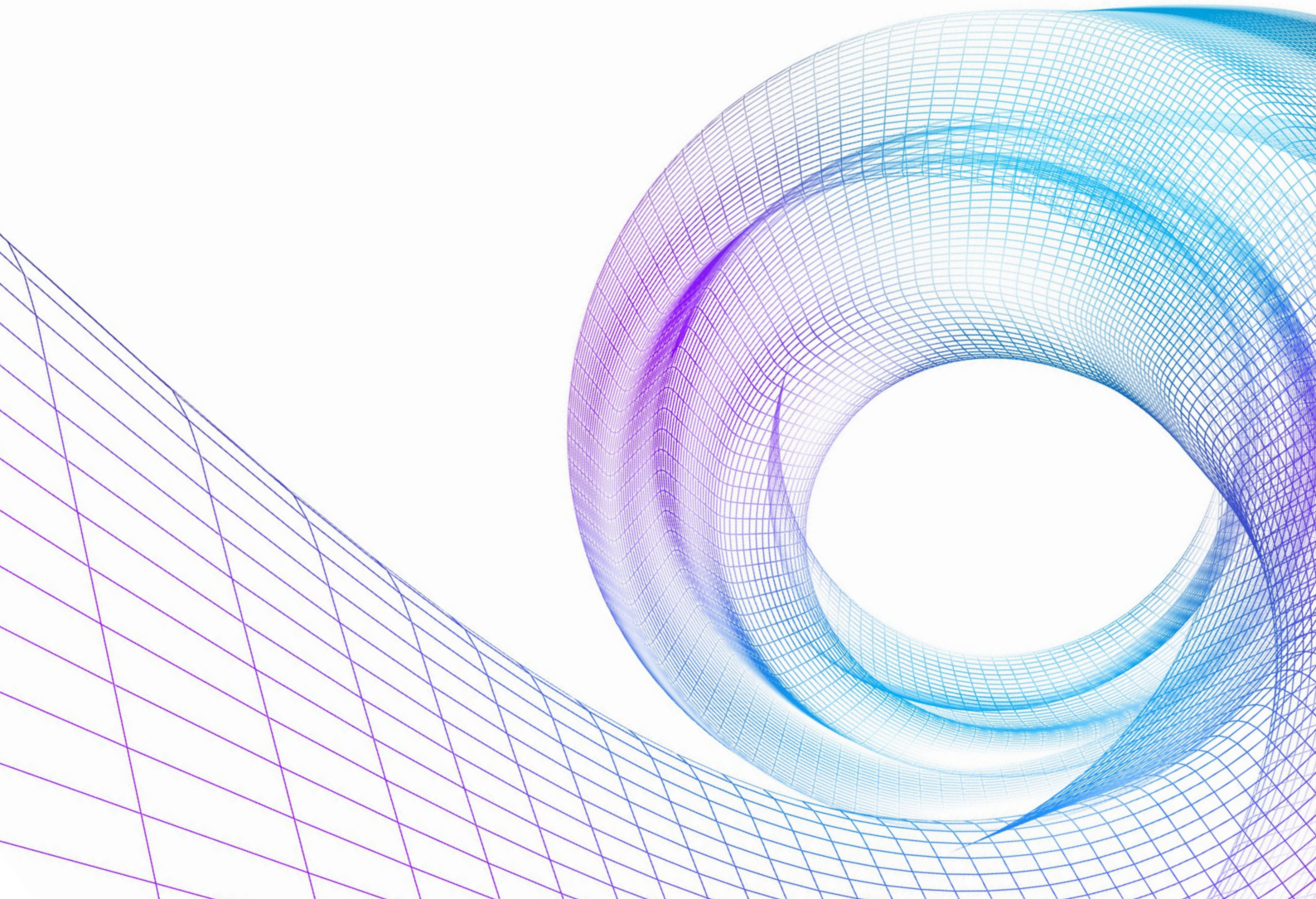# GET COST SAVINGS INFORMATION TODAY.

The oil and gas industry uses new data mining tools to reveal procurement savings in minutes – not months

Data mining is a whole new ballgame

Data mining has been around for a long time. What's different today are the tools for doing it.

Incredible advances in artificial intelligence (AI), machine learning and statistics now make it possible to see critical procure-to-pay information in minutes, not months. The yesterdays of long, arduous reporting are over.

Imagine how the rules of the game would change if the procurement and finance teams had real-time insight—across the entire organization—of:

• Inbound documents: invoices, product orders, tax forms and return orders

• Mismatches between orders, acknowledgments, and invoices, tax forms and quarterly / yearly statements, contracts and invoices

• Processed payments

• Purchases across categories

• Calculated taxes

• Vendor statements

• Bank balances

This is not a matter of 'if' savings are untapped. Value is locked in these unwieldy processes. New data mining tools dig out the information.

Let's look at why

In technical terms, procure-to-pay is a highly manual process. Getting at the information is laborious and often requires scores of people to sift through data. And then the data sits on spreadsheets.

Yet the copious amounts of data embedded within procure-to-pay is literally a 'mine of opportunity.' For example, mining the data derived from the procure-to-pay process could be used to identify opportunities to optimize processes, reduce human error, highlight tax exposures, and measure global footprint; which ultimately lead to reduced costs and increased shareholder value.

The time that procurement spends today on manually analyzing its data to reach these opportunities would be reduced significantly. Additionally, many companies may not have a centralized procurement organization, causing differing processes and inconsistencies across the various procurement offices.

Data mining and automation enable the processes in place to be analyzed and help identify streamlining opportunities across different systems. Thus, data mining and process mining enable standardization, which leads to cross-workplace efficiency and cost savings in procure-to-pay functions.

Did you know?
Data mining is the process of collecting, searching through and analyzing a large amount of data in a database to discover patterns or relationships.

The oil and gas industry is ripe for this change

From the smallest independents to the supermajors, margins are under pressure for oil and gas companies. Now is the time for companies to look across upstream, downstream, chemicals and regional units to instantly dig through vast amounts of data to reveal savings.

An example of data mining for the oil and gas industry could be through the extraction of implicit unknown data and deeper analysis of available data. Oil and gas companies can mine data that would enable advanced statistical analysis, which would be aided by commercially available visualization tools (such as PowerBI / Tableau). The back- and front-end of the analysis from data mining could empower machine learning capabilities within an organization.

For the oil and gas industry, data mining would enable the following:

- **Discover** previously unknown and possibly useful relationships in data, thus improving the understanding of the plant equipment, systems, operations, people, etc.

- **Forecast** usage patterns and determine sustainable modes of operations at a granular level. This helps with accurate modeling, estimating and calculating plant throughput.

- **Track and predict** oil and gas demand by using macro indicators, such as weather and production units / volume at a given time period.

- **Provide** an objective, concrete, consistent and repeatable approach to analyzing the data continuously.

Data mining works to reveal savings

Oil and gas companies can use data mining to realize a plethora of savings. As mentioned above, data mining uses various data sources to provide insights not previously enabled.

Here are some use cases for oil and gas companies to consider:

• **Perform analysis** to uncover patterns and modes of operation for any forthcoming critical events. This can enable predictive maintenance and prevent large upkeep costs, which feeds back into procurement decision-making.

• **Identify typical patterns** in daily, weekly, monthly or yearly consumption as a baseline capability. More advanced organizations can identify phases such as primary recovery, secondary recovery and enhanced recovery, and the best extraction modes for each phase in a more efficient manner.

• **Identify all the stable modes of operation** from the monitored data and develop a baseline extraction model with the ability to detect critical events that may occur. Such a model can be used for budgeting and planning purposes, as well as uncover typical patterns and modes of operation within the various phases.

Considering the volatile nature of the energy market, oil and gas companies are shifting focus from top-line growth to margin enhancement through internal operations and shared services.

Specifically, in procure-to-pay, there is an opportunity to realize savings. Having clean and reliable data creates the foundation to turn that data into value. Consider these scenarios:

Vendor performance analytics
Have highly detailed and highly informed discussions with your vendors using highly accurate and real-time information about processes and pricing negotiations.

Transactional analytics
Simplify the entire process for requisitioning goods and services to become more efficient and enhance throughput. When an organization is heavily dependent upon its suppliers for complex services and critical equipment to perform day-to-day operations, data mining allows procurement to go beyond the traditional should-cost model and be more strategic in their sourcing.

Invoice compliance analytics

Know with certainty, and without delay, if a vendor's invoice is compliant to their contract. Data mining can help procurement organizations not only know if vendors are compliant, but also understand the cost implication on an enterprise-wide scale.

Payment terms analytics

How can working capital be optimized? When organizations have multiple contracts spanning multiple systems, ensuring the best terms can seem impossible, especially when payment terms tend to be time sensitive. By ensuring favorable payment terms, companies can unleash even more working capital for production, planning and maintenance projects.

Payment analytics

In real time, track the accuracy of all payments in process, ensuring there are no duplicates.

Value tracking

Within minutes, not months, have a simple, compiled document reporting on realized and forecasted savings.

Put data mining tools to work

Before considering and implementing data mining, an organization must define their business goals and target areas to understand which data to leverage. To do so, a data and analytics assessment may be conducted. This assessment comprises multiple key stakeholder interviews to discuss the organization's vision and challenges to identify opportunities.

Following leadership interviews, a diagnosis is shaped through surveys and workshops across various groups. In addition to the diagnosis, benchmarks are set based on industry peers and other market sources. This assessment process ultimately leads to a business case, which helps to align leadership.

Once the organization decides to unlock the benefits of data mining, all data must be collected, prepared and stored data in a data warehouse. Once the data is accessible via in-house servers or the cloud, the company can determine how to organize this data for an application software to sort through and create various categories of information and impactful illustrations.

Did you know?
More than ever before, companies are dealing with significantly larger sets of data with more varied content, and therefore, need a big data strategy.

Process mining gets to the truth faster

Process mining plays a crucial role in digital transformation. In the old days, all-day workshops and multiple time-consuming interviews were conducted to understand how processes are performed. With process mining, data can be extracted out of IT systems while employees perform their duties without interruption. In addition to saving time, companies can identify and diagnose problems based on factual evidence rather than subjective data and human intuition lacking holistic insight.

Did you know?

Process mining tools read a company's event log and visualize processes as they occur in real-time. This creates transparency and reveals bottlenecks, common paths, deviations, long throughput times, and other roadblocks and dependencies.

Put process mining tools to work

When companies adjust processes to address pain points, they are able to see immediate effects. Rather than waiting weeks to validate if a process improvement will produce the intended results, process mining can provide this data within hours or days. With the ability to see process improvements more quickly, businesses can be proactive in making more thorough and accurate decisions and realize value at a greater speed.

Process mining helps procurement organizations bring full transparency and more efficiency to their complex workflows. Consider these scenarios:

Automated identification and diagnostics tools
Automate the analysis of process models, exceptions and instances within business processes and combine the analysis with quantitative frequencies and statistics. Automated identification and diagnostics tools can help companies document workflows greater than 100 steps and generate a detailed process document for the development team.
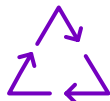
Process mining tools
Log events, touchpoints and basically any interaction. This enables automated discovery and analysis of customer interactions, as well as alignment with internal processes. With this analysis, process mining tools provide detailed documentation and eliminate repetitive meetings.

Process analysis
Understand human and digital perspectives on operations, not just a holistic process perspective. Too often organizations think 'extremely digital' and want to automate everything or, on the flip side, would like to keep the human interaction in all aspects. Process mining allows the correct and adequate amount of technology to be utilized. This aids human interaction and optimizes business processes. By having a person on the other side, client satisfaction increases due to the personal touch, and technology ensures the pace and quality are enhanced by the digital tools used by both parties.

Process mining dashboards
Monitor key performance indicators using dashboards in real time. These dashboards consist of different process models that interact with each other in a single process mining panel. The dashboard is a 'one-stop shop' for all process mining and automation discovery needs.

Process visualization
The dashboards mentioned above can also support the visualization of how processes contribute to business value (such as business operating models); the processes are contextualized.

By analyzing processes via the tools mentioned above, effective cooperation between the business units and IT organization is obtained by gathering event logs from information systems to gain visibility into how business processes are performed. This allows full transparency and reduces conflicts based on deadlines. Due to the time savings of delivering before or at a deadline, the operations improve and directly affect the bottom line.

Process mining enables the analysis that helps finance and procurement organizations realize the following benefits:

- **Identify** root cause of delays in shipment, by pinpointing incorrect address postings due to human error, mistyped payment terms, etc.

- **Uncover reasons** for and reduce maverick spending by analyzing workflow documentation created by process mining tools, and not the biased explanations provided in meetings.

- **Process** mining tools identify steps within the purchasing process that are rework activities based on the analysis of correct use cases.

- **By analyzing** log of events, touchpoints, etc., process mining helps identify bottlenecks due to manual invoice processes and present a case to automate:

    o Invoice matching

    o High volume of paper invoices (present a case for e-invoicing)

    o High volume of non-purchase-order invoices

- **Identify** ways to improve supplier visibility into invoice or payment status, improving supplier relationships.

- **Highlight** need for automatic exception handling due to amount of time spent on exception process

In conclusion: Mine the opportunities

Digital disruption is sweeping across industries, and companies are moving beyond manual, tedious tasks. Companies are now embracing digital transformation in key business areas, including the procure-to-pay process. Data mining allows organizations to move from descriptive analytics of the past to predictive analytics––to make more accurate and meaningful decisions. Process mining formalizes the organization's processes and workflows.

Data mining is the 'what?' and process mining is the 'how?' for the finance and procurement teams to release untapped savings in the procure-to-pay process.

Learn more

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