Automate to elevate

*Unlocking the value potential of
AI-powered process mining*

In collaboration with

APQC®

Unlock hidden value

Why do some of the world's most valuable
discoveries initially wind up on a trash heap
instead of in a treasure chest?

Take for example the shiny nuggets that were called "little silver" by Spanish explorers and discarded as by-products of gold mining—now known as platinum. It wasn't until the 1850s, when torches could reach the 1768.3 °C melting point of platinum, that its intrinsic value could be tapped. Platinum became a precious metal, now used for drugs, catalytic converters, fine jewelry and other high-value products.

Today, data is the new platinum. The maturation of digital technologies enables businesses to extract more granular, timely and valuable insights from data. And by integrating big data into processes and workflows, organizations can dig deeper into how their businesses work and embark on a continuum of digital process improvement.

The continuum begins with using data-driven insights to improve specific business processes. As organizations advance, the scope expands to developing intelligent workflows that integrate processes more efficiently. It culminates with intelligent automation, where AI, robotics, virtual agents and digital twins accelerate business improvement through self-learning, self-correction, and self-action.

A new era in digitally powered process improvement is here, fueled by a combination of rapidly advancing AI and improved access to the enormous enterprise resource planning (ERP) and customer relationship management (CRM) datasets—repositories that generative AI and foundation models rely on. It's called process mining, and it has profound implications for business transformation.

The big picture

Process mining "mines" event logs produced when users interact with systems, or when a system performs an automated task. It applies AI to spot inefficiencies and areas for improvement. Virtually any system that creates a digital trail can generate data for a process mining project.
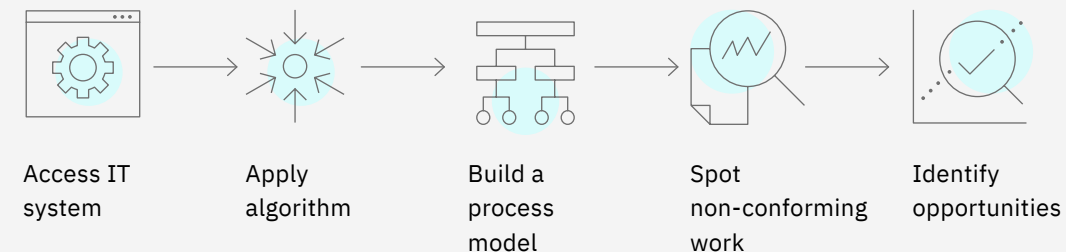
In technology terms, a process mining project looks like this:

– Access ERP, CRM or other IT system event log data that has been hidden or dispersed throughout the enterprise.
– Apply an algorithm or advanced AI to the data including the latest innovations in foundation models and generative AI, to uncover trends in the data.
– Build a process model from these trends to visualize workflows.
– Spot root causes of variations from norms to reveal if unintended or non-conforming work is being done.
– Identify opportunities to optimize work processes, re-allocate resources or launch automation initiatives (see Figure 1).

Businesses are increasingly using process mining to improve specific business processes. For example, a large automotive original equipment manufacturer (OEM) used the tool to assess car maintenance workflows. After generating a process model from ERP system data, the organization compared the reference model to the actual process. In 15% of cases, technicians skipped key best practice diagnostic steps. Process mining enabled the OEM to take corrective measures and improve the processes with greater speed and ease than would otherwise have been possible.[1]

FIGURE 1

Process mining map

Access IT system → Apply algorithm → Build a process model → Spot non-conforming work → Identify opportunities

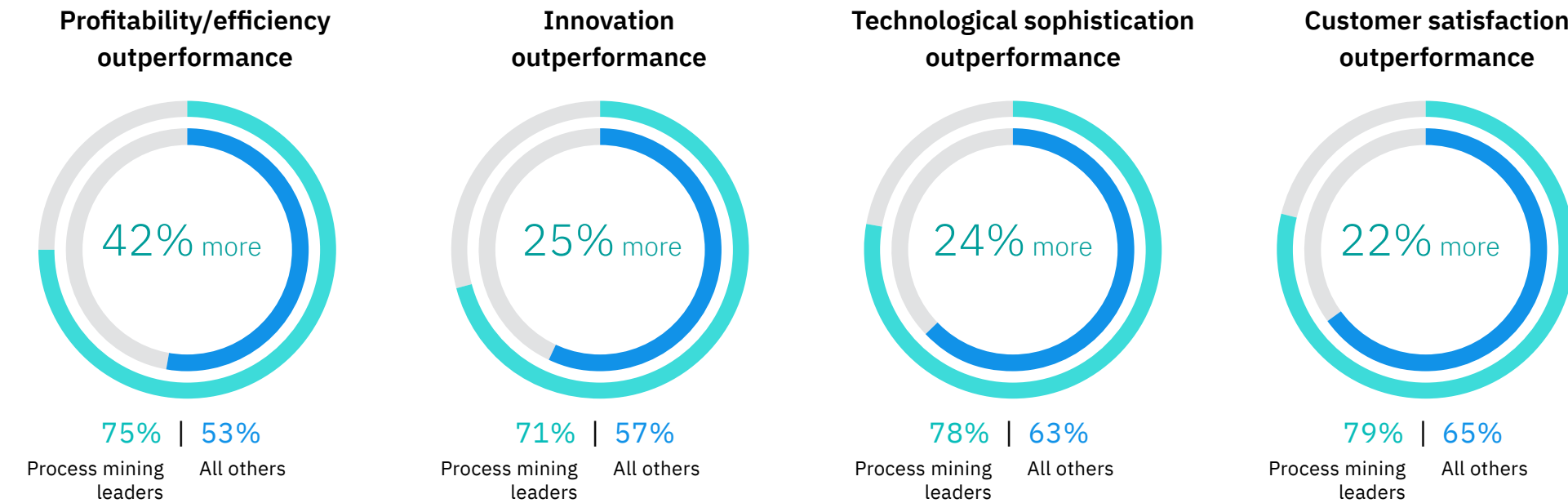*Source: IBM Institute for Business Value and APQC analysis.*

Process mining and competitive advantage

Using a survey of 2,000 C-suite executives across 13 countries and 22 industries, conducted in collaboration with Oxford Economics, the IBM Institute for Business Value and the American Productivity & Quality Center (APQC) conducted a deep analysis.

This revealed that organizations adopting process mining approaches outperform non-adopting peers across a broad range of business metrics, including profitability, innovation, agility, customer satisfaction, and technological sophistication (see Figure 2).

FIGURE 2

Process mining and business performance

**Profitability/efficiency
outperformance**

42% more

75% | 53%

Process mining
leaders

All others

**Innovation
outperformance**

25% more

71% | 57%

Process mining
leaders

All others

**Technological sophistication
outperformance**

24% more

78% | 63%

Process mining
leaders

All others

**Customer satisfaction
outperformance**

22% more

79% | 65%

Process mining
leaders

All others

*Source: IBM Institute for Business Value and APQC analysis based on a global survey of 2000
C-suite executives conducted in collaboration with Oxford Economics.*

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When we asked C-suite executives about the benefits they see from adopting process mining, their conclusions correlated closely with what we found statistically. Process mining actually delivers the benefits business leaders expect from it (see Figure 3).

FIGURE 2

Benefits C-suite executives expect from process mining

To what extent has process mining improved your organization's performance in the following areas?

Area	Percentage
Operational efficiency	72%
Operational cost	72%
Employee engagement	65%
Customer satisfaction	63%
Innovation	62%
Agility	61%
Technological sophistication	61%
Profitability/efficiency	58%
Revenue/effectiveness	54%

*Source: IBM Institute for Business Value and APQC analysis based on a global survey of 2000
C-suite executives conducted in collaboration with Oxford Economics.*

Through process mining initiatives, one large US-based manufacturer discovered process deviations in its workflow that dramatically extended procurement cycles and increased costs. Informed by these insights, the manufacturer automated 75% of delivery activities, which sharply reduced order reworking and delivery costs.[2]

When process mining insights inform intelligent workflows by adopting AI approaches, including generative AI and foundation models, organizations typically see an incremental 8% of annual revenue growth.

In another recent example, Asian Paints, a large retailer in India, used intelligent automation to simplify and accelerate the execution of 20,000 trade promotions per year to more than 60,000 dealers. The retailer also applied intelligent automation to reduce tax complexity and avoid paying excess tax or tax penalties.[3]

Process mining can provide tools that calculate the return on investment, such as the automation of a specific task. Advanced process mining tools can also be integrated with RPA to generate and manage intelligent bots that can understand the data to help augment talent and improve efficiency and experience across the board.

Increasingly, process mining is also being used to develop digital twins. These digital models mirror assets, services, or processes, simulate different scenarios, and analyze "what if" possibilities. Process mining software can also be linked directly to digital twinning systems that circumvent manual processing and use system resources more efficiently.

Our survey revealed that as recently as three years ago, process mining was limited to only a few core functions, such as finance and IT. But business leaders are increasingly adopting process mining across many more functions, including ecosystem engagement (with expected more than 300% growth by 2025) and sustainability (with expected growth of approximately 150% by 2025). Similarly, 77% of supply chain executives say they are at least at the implementation stage of applying process and task mining to their core systems.

Business leaders also see strong synergies between benchmarking and process mining. For example, 69% see greater integration between process mining and benchmarking as an opportunity to increase value, and 73% see expanding access to big data analytics systems and software to derive greater value from benchmarking activities.

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04
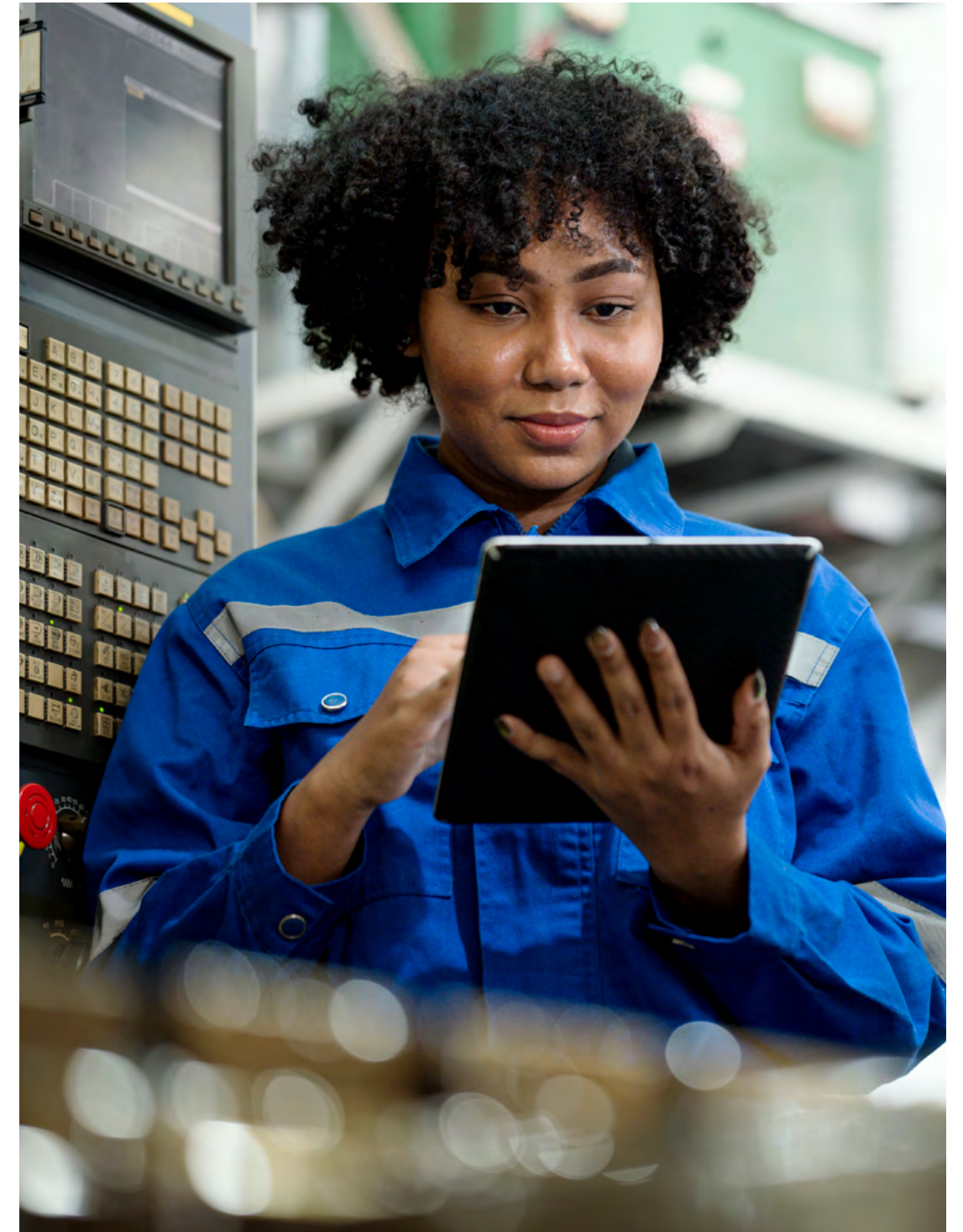
Take action

To demonstrate immediate value, process mining adoption typically starts with a proof of concept for a single use case in which inefficiencies are hard to identify with manual processes. Here are four actions to guide your process mining efforts.

Just like advances in industrial technology turned a curious mining byproduct into the highly valuable industrial asset that platinum has become, advances in digital technology can turn process mining into an invaluable digital transformation tool.

01

Charter a formal project that defines the purpose and goals of your process mining efforts.

Define the problem you intend to solve. Determine scope and process flow, note gaps in process indicators, and develop project objectives and research questions. Determine which process mining applications address your needs, including process discovery, conformance checking, process re-engineering, performance management, and root cause analysis.

02

Prepare and standardize data and processes.

The high cost of collecting, accessing and applying data is often cited as the biggest obstacle to using process mining. Inadequate common process frameworks, definitions and language are also seen as barriers. To clear these hurdles, locate and extract data from IT systems. Analyze data quality and clean the data as necessary. Event log data should, at a minimum, have a case ID, activity, and time stamp. Ensure standardized processes are used across your organization and with ecosystem partners.

03

Analyze and visualize the process.

First, look at the processes and figure out what should be automated. Process mining helps do this by applying data science to discover, validate, and improve processes and extended workflows. Feed quality data into the process mining tool to visualize the current-state process and identify automation candidates. Then apply rules to verify compliance, analyze process performance and findings, and identify root causes of process problems.

04

Infuse AI with decision services.

By infusing AI with decision services, the power of prediction can be used to help increase quality workflow decisions and yield higher returns. Combine prescriptive business rules and predictive models to execute intelligent operational decisions and enhance workforce experiences. Improve work quality by minimizing the risk of human error and empower your teams to focus on high-value tasks by employing predictive analysis and insights.

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Methodology

The IBM Institute for Business Value and APQC, in cooperation with Oxford Economics, surveyed 2,000 C-level executives in first half of 2022 from 13 countries in all major geographies and across 22 industries. Respondents employed benchmarking in their organization and were very familiar with financial and performance metrics. The IBV and APQC implemented an in-depth analysis of how organizations use benchmarking and process mining tools, the benefits they gain from use of these tools, and how they anticipate using them in the future.

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About APQC

APQC helps organizations work smarter, faster, and with greater confidence. It is the world's foremost authority in benchmarking, best practices, process and performance improvement, and knowledge management. APQC's unique structure as a member-based nonprofit makes it a differentiator in the marketplace. APQC partners with more than 500 member organizations worldwide in all industries. With more than 40 years of experience, APQC remains the world's leader in transforming organizations.

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Notes and Sources

1. Based on IBM client information.

2. "Advantage AI—how to visualize and optimize workflows." IBM case study. March 2022. https://www.ibm.com/case-studies/multinational-manufacturing-company

3. "Cutting process friction for sales teams to help drive revenue growth." IBM case study. February 2023. https://www.ibm.com/case-studies/asian-paints-limited

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