SAP Fioneer

SAP Fioneer's practical guide to high-impact AI use cases in payments

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Executive summary

Payments leaders are accountable for a wide range of KPIs, from improving straight-through processing (STP) rates and lowering cost to serve (CTS) to reducing fraud loss. AI promises to uplift these run-rate KPIs by automating repairs, streamlining operations, and strengthening real-time fraud controls. In fact, according to research by KPMG, 80% of executives believe that banks embracing AI will gain a competitive edge over those that don't.

But not every AI use case will deliver the impact leaders need. With 70% of executives facing pressure from shareholders to show immediate ROI on AI investments, prioritization is critical. The challenge is that AI applications in payments are diverse – and it's not always obvious which ones will move the needle.

Curated by the payments experts at SAP Fioneer led by Carlos Figueredo, Global Head of Payments, this report outlines which AI use cases in payments are likely to deliver the biggest impact. It breaks down the top use cases, highlighting which are in early exploration, which have already been launched, and which are largely hype.

Top use cases for AI in payments

Here are the top use cases of AI in payments, according to SAP Fioneer experts. We've categorized them based on their maturity and practical impact, so leaders can prioritize with confidence.

Use Case	Category	
Liquidity management	Early exploration	
Conversational interfaces for payments users	Early exploration	
Risk and fraud management	Already launched	
Improve operational efficiency	Already launched	
Intelligent payment routing and optimization	Already launched	
AI payment messaging agents	Already launched	
Service differentiation	Already launched	
Transaction monitoring	Already launched	
Chatbots	Already launched	Hyped
Predictive personalization for payments	Already launched	Hyped
Payment reporting and insights	Already launched	
Anomaly detection in payment runs	Early exploration	
PCO/PPO analysis and resolution	Early exploration	

Early exploration

Liquidity management

Managing liquidity across multiple payment schemes is a constant balancing act. Treasury teams must ensure they have just enough funds for that scheme to avoid violations or penalties, but without overfunding scheme accounts. Today, this involves importing statements from clearing houses and checking positions multiple times a day. It's a labor-intensive process that still leaves gaps in visibility.

Praveen Dharmavaram notes that AI can change this by providing a

"smart, real-time view of the liquidity position for each payment system."

Instead of relying on periodic updates, the system can continuously integrate data, spot patterns, and better equip fund managers to manage liquidity.

Praveen Dharmavaram
Lead Technology Architect

Early exploration

Conversational interfaces for payments users

Conversational AI can be leveraged to create more accessible and intuitive interfaces for payment systems. In this context, it would act as an interaction layer on top of existing payment capabilities.

On the customer-facing side, AI agents could eventually initiate and authorize payments on a user's behalf. For example, you might tell an app, "Can you book a cab and pay for it?" While intriguing, experts are cautious. Its real business impact remains uncertain, and some applications risk veering into gimmick territory.

On the internal side, conversational AI has more immediate, practical potential. Voicebots could be used for payment inquiries, status checks, or assistance. **Mark Weiffenbach** highlights potential benefits as

"simplifying UIs and system interactions, increasing payment team efficiency, and enabling non-expert users to run ad-hoc reporting."

Mark Weiffenbach
Product Owner,
Payment Central

Already launched

Risk and fraud management

As real-time payment volumes surge, the window for detecting illicit activity has shrunk from hours to milliseconds. Traditional rules-based systems often struggle with this speed, whereas AI-driven models can analyze thousands of data points – including geolocation, device biometrics, and historical behavioral patterns – in real-time to flag anomalies with high precision.

Beyond security, AI drastically improves operational accuracy. In **transaction matching**, legacy systems rely on rigid "if-then" logic that fails to account for subtle data discrepancies, leading to high **false-decline rates** (which cost merchants and banks billions in lost revenue annually).

By utilizing supervised learning to analyze historical outcomes, AI-enhanced matching engines can "predict" correct pairings despite noise in the data, ensuring customer funds are cleared without manual intervention.

This use case represents one of the most mature applications of AI in finance. Industry data suggests that over **80% of top-tier banks** have already integrated AI into their fraud workflows to some capacity. As noted by **Sundar Devarajan**,

"immediate implementation is no longer optional; it is a prerequisite for operational efficiency and maintaining competitiveness in an increasingly frictionless payment landscape."

Sundar Devarajan
Director of Business Solutions

Already launched

Improve operational efficiency

Most large banks have what some call "spaghetti architecture" – a patchwork of legacy systems and temporary fixes that makes modernization difficult. Replacing the entire backend isn't feasible, but AI offers a smarter path forward.

One possible approach is an AI layer that sits on top of legacy cores. This layer would ingest data from multiple backend applications and learn from operational agents' actions.

Currently, large operations teams are monitoring and remediating payments, often under tight timelines. An AI layer can help shoulder much of this workload. It would optimize back-office operations and increase success rates while reducing the need for manual intervention. Here are a few areas this layer could make an impact:

Automatic repair of failed payments

Resolving failed payments is one of the most repetitive tasks for operations teams. Users often need to navigate various systems to trace a single payment and figure out what went wrong – a process repeated daily under tight timelines, especially with real-time payments.

AI can be trained on these users' repeated actions. As **Ashwin Felix** describes it,

"AI can continuously learn from how teams resolve payment failures and mimic those recurring actions – moving payments operations away from reactive firefighting toward more consistent, adaptive processes."

Over time, it can handle common repair tasks independently, freeing operational teams to focus on higher-value activities.

Ashwin Felix
Principal Banking Architect

Already launched

Improve operational efficiency (cont'd)

Exception handling

AI can also assist with exception handling by learning from patterns in operational decisions. For instance, if a payment is directed to a closed account, the AI could determine the appropriate action – whether to return it to the sender, place it in a pending state, or reroute it to an alternate account – by observing typical decisions made by human agents.

This approach builds on concepts like the intelligent account finder but goes a step further: instead of relying solely on pre-defined rules or historical data, the AI actively learns from human actions, adapting to nuanced decision-making and continuously improving its handling of exceptions.

Root cause analysis

Traditionally, identifying why an item ends up in exceptions requires teams to join calls and investigate, often repeating the same steps over and over. But as Ashwin Felix points out, "If there is a specific way an exception has historically been identified and resolved, AI can analyze that historical data to identify patterns and standardize corrective decisions.

For large retail banks processing millions of transactions daily, this can drastically shorten queues, speed up resolution, and reduce pressure on operations teams.

Self-healing orchestration

Temporary failures, network glitches, or technical timeouts traditionally trigger alerts requiring manual intervention. AI can detect error patterns and automatically resubmit jobs or reroute processing, mimicking what an operations user would do.

Christoph Markert describes the benefits:

"It makes operations smarter and smoother, which lowers the total cost of ownership by reducing time spent on manual tasks. This allows teams to focus on the areas where they create the greatest value."

Christoph Markert
Chief Technology Architect, Payments

Already launched

Intelligent payment routing and optimization

Traditional payment routing relies on table-based rules, where hundreds of thousands of what-if scenarios are manually configured. One change in a table can cascade into multiple updates elsewhere, making the process tedious and error prone.

AI can transform this process with dynamic, real-time routing. It can learn patterns from historical data and operational behavior and make split-second decisions based on nuances that static tables might have missed.

For example, a bank may configure routing rules so that payments above £1 million are sent via CHAPS, while lower-value payments are processed through Faster Payments. If the Faster Payments channel experiences disruption and transactions begin queuing, operations teams must manually override routing rules, perform rapid impact testing, and deploy changes under time pressure to divert traffic to CHAPS. This reactive process introduces operational risk, delays, and dependency on human intervention at precisely the point where speed and resilience are most critical.

Ashwin Felix explains how AI could help in that scenario:

"If we had AI-driven, dynamic routing intelligence embedded directly into payment orchestration, informed by live indicators and historical data, the intelligence can automatically select an alternate route. No manual intervention is required. This helps prevent queue build-up and remove a lot of the operational headaches, evolving routing toward a more adaptive and resilient capability."

This same intelligence can also extend into cost optimization and compliance.

Smart FX decisioning

AI can be used to route payments through a channel that reduces FX costs. **Carlos Figueredo** explains,

"By quickly rerouting a message based on certain characteristics of that payment, you can reduce the cost of that message based on smart FX decisioning that only AI could do."

Carlos Figueredo
Global Head of Payments

Already launched

Intelligent payment routing and optimization (cont'd)

ESG-aware routing and tagging

As sustainability regulations become more prescriptive, banks are increasingly expected to operationalize ESG commitments and reflect sustainability considerations within payment execution. The adoption of ISO 20022, with its richer and more structured data model, provides the foundation to integrate sustainability logic directly into payment flows.

According to **Ashwin Felix**, AI can

"evaluate the environmental and social impact of counterparties or transaction attributes and route payments through 'green' channels in real time to help banks align payments with sustainability goals and meet new ESG reporting requirements."

This approach helps banks to not just meet regulatory requirements but also create a more measurable and differentiated payment proposition rather than treating ESG purely as a separate disclosure activity.

Already launched

AI payment messaging agents

Traditionally, banks rely on pre-defined rules to format incoming and outgoing messages correctly for each payment system.
AI agents can now take over this work. They can automatically produce the right message format and even track version changes, so formats update themselves without manual intervention.

The impact includes reduced maintenance costs for integrations across multiple payment systems, fewer manual updates, and a faster path to new use cases enabled by ISO 20022, one of the richest structured financial messaging standards.

While adoption of ISO 20022 may be compliance-driven, SAP Fioneer experts emphasize its real advantage is the **quality and structure of the data it introduces**. Compared to the older, text-based 15022 standard, the XML-based ISO 20022 format enforces clean, validated, structured data. And better data means better AI.

The jump in available insight is substantial. **Vishal Shah** points out how:

"legacy MT103 contains roughly 10-20 useful data points. Its equivalent in ISO 20022, PACS.008, has over 200 structured data points."

Vishal Shah
Head of Embedded Finance

That difference materially changes what AI can analyze, hence why this is a use case that many banks are actively working on, and multiple have launched already.

Better, cleaner, harmonized data means better model inputs – and more accurate downstream use cases. Banks can use that data to strengthen transaction monitoring, improve anomaly detection, and even identify FX agents more precisely by leveraging geolocation or originator details that were previously inaccessible or unreliable.

Already launched

Service differentiation

AI can also help banks stand out by enhancing the customer experience through ***"smart operational agents,"*** as **Christoph Markert** describes.

For example, a bank may tier its retail customers, giving extra attention to its premium clients. A dedicated relationship manager would proactively engage with them, reaching out to offer tailored service: ***"You have direct debits coming up today, but it seems your card limit is close to being reached. Do you want us to help you?"*** The agent may then transfer funds, suggest an alternative payment method, or temporarily adjust their limit to make sure everything goes through smoothly.

Moving this function into the AI space can make it easier for banks to anticipate client needs and scale these proactive interactions. The result would be smoother operations for the customer, less friction in day-to-day banking, and a level of proactive service that stands out from what most institutions offer today. Multiple banks are already working on this, with many already offering it as a service.

Already launched

Transaction monitoring

AI transforms transaction monitoring from a compliance function into an intelligent decision layer embedded within payments. As monitoring becomes context-aware and predictive, banks can move from friction-heavy controls to adaptive trust models that continuously evaluate risk without interrupting the customer journey.

As **Sundar Devarajan** explains:

"The true power of AI in modern banking lies in its ability to balance vigilance with invisibility. By combining instant pattern recognition with real-time alerts – like verifying a foreign purchase or flagging an outlier transaction – we are able to strengthen security protocols while simultaneously minimizing friction for the customer's day-to-day spending."

Already launched Hyped

Chatbots

AI-powered chatbots are one of the most visible – and often overhyped – applications in payments. They're easy to implement and have low risk, which has supported widespread adoption. But in practice, their impact on core business metrics is limited.

Chatbots are typically confined to service desk tasks or basic customer engagement, enabling low-cost support but rarely influencing revenue or operational efficiency.

As **Praveen Dharmavaram** puts it, banks leverage chatbots

"to prove that AI indeed can reduce labor required to address customer queries. However, chatbots don't typically engage with the customer beyond a certain point. They hand over clients' queries to a human agent eventually and unable to fulfil the service end-to-end."

While useful for reducing routine support workload, SAP Fioneer experts argue that chatbots alone are not a game-changer for payments operations.

Already launched | Hyped

Predictive personalization for payments

AI-driven personalization in payments – like predicting when a customer will make a transaction, suggesting payment types, or recommending feasible budgets – is often promoted as a way to transform engagement. But in practice, these features rarely impact core payment KPIs.

Personalized nudges tend to have a limited effect on payment behavior at scale, and they rely on fragmented behavioral data that most banks have not fully integrated or harmonized. While they may enhance customer experience superficially, they do little to improve the levers that actually drive improvements in payments performance – such as transaction anomaly detection, which identifies unusual patterns and equips teams to react quickly to potential issues, or intelligent account finder, which moves payments based on smart suggestions to resolve user handling errors with minimal friction.

As **Wiebke Reinhart** says:

"Personalized nudges on their own rarely change behavior in a lasting way. To actually move outcomes, banks need automation, incentives, and real-time money movements behind the message – otherwise it's just advice without follow-through."

Wiebke Reinhart
Product Owner,
Behavioral Banking Engine

Effective AI applications in payments require good, harmonized data

Banks are increasingly looking to payments as a core driver of revenue, shifting away from reliance on traditional interest income. As **Praveen Dharmavaram** asserts,

"by adopting AI into payment schemes and products, banks can streamline their revenue models, continuously monitor and improve channels, and eventually grow their bottom line based on payment services."

AI can accelerate payment processing, reduce errors, and lower operational costs, while also strengthening compliance through real-time monitoring, fraud detection, and risk management. Realizing these benefits, however, depends on robust data foundations and disciplined data management.

Banks often face enormous volumes of data scattered across multiple systems and platforms, making it difficult to know what's available, filter it effectively, and structure it in a format suitable for AI. Legacy systems further complicate the process, requiring modernization so data can flow efficiently into AI models.

For any AI use case to be effective, banks need to harmonize and structure their data, ensure robust processes, and establish strong governance. Additionally, rather than focusing only on customer-facing AI use cases, leaders should dig deeper into the end-to-end transaction flow. This is where AI can deliver the greatest value: optimizing routing, pricing, liquidity usage, exception handling, fraud detection, reconciliation, and settlement.

As **Carlos Figueredo** puts it,

"By embedding intelligence within the transaction lifecycle itself, organizations can unlock measurable efficiency gains, reduce operational risk, and materially improve margins, not just enhance the user interface."

How Payment Central can help banks implement AI in payments

SAP Fioneer's Payment Central provides the orchestration layer required for banks to operationalize AI within payments. In many institutions today, AI initiatives struggle because payment processing remains fragmented across schemes, channels, and legacy systems, creating inconsistent data structures that limit meaningful automation. Payment Central addresses this by centralizing orchestration and harmonizing payment data, creating the structured foundation that AI models require to operate effectively.

At the core of Payment Central is a unified data model that normalizes payment information regardless of scheme or source. This harmonization is critical: AI models depend on consistent, contextualized data to generate meaningful insights and decisions. By abstracting complexity and standardizing payment events, Payment Central transforms disparate payment streams into a structured decision layer that AI can leverage for real-time risk assessment, routing optimization, and operational efficiency.

Running on SAP S/4HANA and connected through open APIs, Payment Central enables real-time data access and orchestration, allowing banks to apply AI-driven decisioning across the entire payment lifecycle rather than at isolated checkpoints. The true value is not AI as a standalone feature, but the architectural shift toward a platform where data, orchestration, and intelligence operate together.

This architecture is what makes the following use cases possible in practice – and what separates meaningful AI deployment from isolated experimentation.

Already launched

Payment reporting and insights

Because Payment Central normalizes events and maintains a consistent audit trail across schemes and channels, natural-language reporting becomes reliable rather than decorative. Operations and corporate users can move from a portfolio-level view down to a specific transaction without switching tools or reconciling conflicting signals. Source attribution and timestamps are preserved by design, so every answer is traceable – turning reporting from a surface-level feature into a dependable control layer.

"Payment reporting should act like an evidence ledger, not a black box. Natural language is the interface, not the logic – answers have to remain deterministic and auditable. That's the difference between a helpful assistant and a dependable control."

Johannes Forster
Senior Solutions Manager, AI Banking

Early exploration

Anomaly detection in payment runs

Payment Central's unified data model gives AI a stable baseline from which to learn what normal looks like for a given payment run – volumes, values, timing, counterparties. Because the data is structured and consistent, deviations are meaningful rather than artifacts of fragmented inputs. Analysts receive a ranked list of outliers with clear rationale before release, directing review effort where it matters and reducing avoidable escalations without adding headcount.

Early exploration

PCO/PPO analysis and resolution

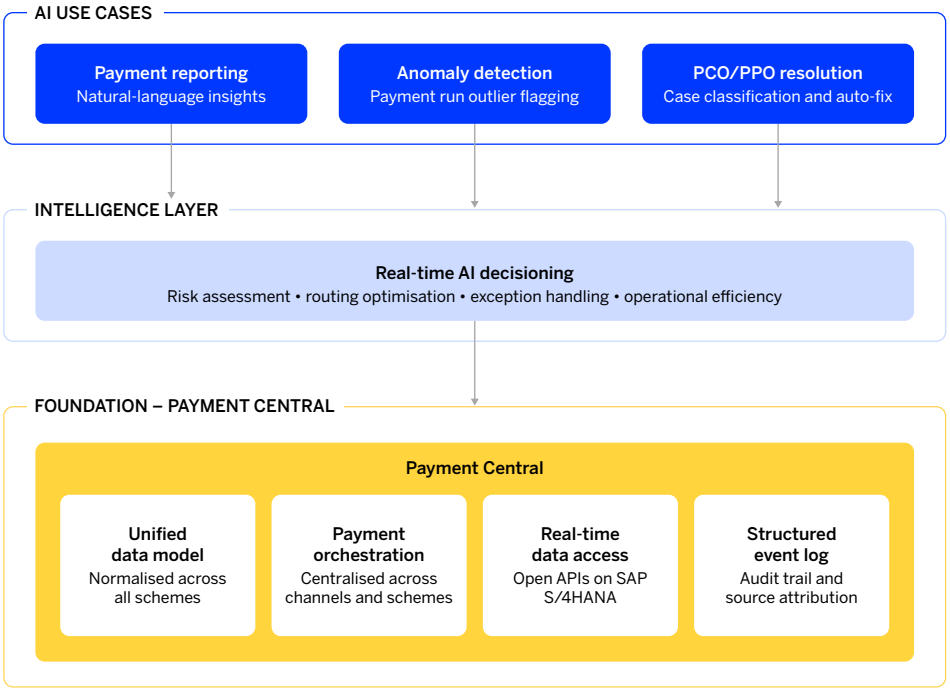
Centralizing orchestration means exception data flows into a single, structured layer rather than accumulating in disconnected queues. A case–centric AI layer can classify incoming exceptions, cluster similar patterns, and recommend — or under policy controls, auto-execute – next-best actions. Analyst feedback is captured to refine recommendations over time, improving first-time-right triage and shrinking backlogs as the system becomes more precise.

While many AI use cases in payments are still evolving, Payment Central provides a controlled environment where banks can experiment, validate, and scale AI capabilities incrementally. This allows institutions to move beyond static rule-based processing toward adaptive, intelligence-driven payment ecosystems – without introducing operational disruption.

Find out which use cases are right for your institution.

Speak to a payments expert at SAP Fioneer today

Use cases are enabled by the architecture — not added on top of it



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About Fioneer

SAP Fioneer provides software solutions for banks and insurance companies: built on rock-solid technology and bold creativity.

In 2021, a group of financial services experts at SAP realized their clients needed a faster, more flexible partner that could move at their pace, adapting to the fast-changing landscape. Joining forces with entrepreneurial investor DEDIQ, SAP Fioneer was born – a start-up with the weight of a global software company behind it.

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