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WHITEPAPER

The Future of Financial Investigations with AI and Machine Learning

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Contents

The speed at which AI is maturing and turning capable of working just like humans is creating ripples across domains. This ability of AI to mimic a human has attracted the attention of financial fraudsters.

Studies estimate that U.S. banking losses due to fraud could soar to $40 billion by 2027[1], a sharp increase from $12.3 billion in 2023, driven by the rise of AI-powered scams.

This use of AI by criminals has, in turn, forced the stakeholders of the financial ecosystem to combat them at their own game, leveraging AI for anti-money laundering (AML) and fraud management.

As AI continues to transform both sides of the financial crime equation, organizations must invest in AI-driven solutions to stay ahead of increasingly sophisticated threats. This whitepaper explores the role of intelligent automation using AI/ML, Generative AI, and Agentic AI in financial investigations, regulatory compliance, and AML/fraud detection.

Market Forces Shaping Trends in AI-Driven Investigations

Market Forces

Evolving Sophistication in Financial Crimes

(Increase in Digital Banking, new, unknown customers, Change in customer behaviors, Newer and more sophisticated ML & fraud tactics)

Heightened Regulatory Expectations

(Increased regulatory pressures and scrutiny, Fines and penalties, Reputational risk, Acceptance to emerging tech solutions)

Balancing Compliance with CX

(Millennial generation, expect instant outcomes, always ON, *on the go"; Seamless while being secure)

Technology Maturity

(AI/ML, Gen AI, Agentic AI, Agentic Business Automation, APIs, Advanced Analytics, NLP based narratives)

Strategies Banks are Adopting to Cope

1. Application of Intelligent Automation using AI/ML, Generative AI and Agentic AI to accelerate investigations
2. Leveraging Analytics to outsmart crimes with upstream detection and prevention using data sclence
3. Adopting a "Single Pane of Glass" approach with analytical aggregation for a 360-degree view of customer across accounts, transactions and channels

Financial institutions face several challenges that necessitate the adoption of AI-powered solutions:

1 **Sophisticated Financial Crimes** – Financial crimes are becoming more sophisticated with each passing day. Fraudsters and money launderers leverage AI to conduct cybercrimes. This forces financial institutions to employ equally advanced AI-driven solutions like predictive models. These models exploit techniques like anomaly detection and neural networks[2] to identify novel fraud patterns. It gives the companies an edge as these techniques reduce false positives while improving detection accuracy.

2 **Regulatory Pressures** – Increasing compliance requirements demand efficient Anti-Money Laundering (AML) and Know Your Customer (KYC) processes. AML noncompliance fines[3] that were imposed on banks worldwide by governments in 2023 amounted to a total of $6.6 billion USD.
AI can examine vast data sets in short periods to ensure that companies stay within the regulatory and compliance ambit.[4] Danske Bank of Denmark, after receiving flak for money laundered through its branches, implemented advanced AI-based AML technologies[5] to identify suspicious transactions.

3 **Operational Efficiency** – Banks and financial institutions struggle as the volume of financial transactions as financial crime cases rise. This puts enormous pressure on the resources and infrastructure available. AI automates repetitive tasks, improves accuracy, and speeds up processing thus driving up operational efficiency.

- Robotic Process Automation (RPA) automates compliance monitoring, loan approvals, and fraud detection activities
- Enhanced Fraud detection powered by AI works more effectively than manual methods due to its ability to process vast amounts of transaction data in real-time.

4 **Technological Maturity** – AI advancements provide institutions with tools to optimize workflows and enhance investigative capabilities. This allows them to leapfrog ahead in terms of crime and digital surveillance capabilities.

- HSBC has leveraged AI to process 1.35 billion transactions across 40 million customer accounts each month to catch financial crimes

5 Citi has launched a Global AI-powered AML Program to protect customers from the risks of money laundering, terrorist financing, and other financial crimes. Evolving Cyber Threats – The financial industry is a prime target for cybercriminals, necessitating AI-driven security solutions to identify and mitigate risks in real-time. Companies need to stay ahead of the scammers when it comes to dealing with evolving cyber threats.

6 **Customer Expectations** – As financial services move toward digital platforms, customers expect faster transaction processing and enhanced fraud protection. They seek frictionless omni-channel experiences with intuitive interfaces providing hyper-personalised experiences. However, these demands create additional opportunities for financial threats. This, in turn, requires companies to stay ahead of the curve to be in a position to anticipate threats.

AI Technologies Transforming Investigations

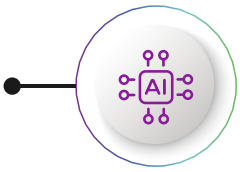
Know Your Customer (KYC) & Customer Due Diligence (CDD)	Transaction Monitoring & Fraud Detection	Regulatory Compliance & Risk Management
Automated Evidence Gathering - AI systems to collect evidence	**Real-time Anomaly Detection** – Identifies suspicious transactions and flags them for review.	**Predictive Analytics for Risk Assessment** - Early detection of fraud risk
Automated Identity Verification – AI verifies customer identities using biometric recognition and document validation.	**Behavioral Analytics** – AI analyzes spending patterns to detect irregular activities.	**Automated Compliance Audits** – AI-driven audits ensure adherence to legal frameworks.
Predictive Risk Scoring – Identifies high-risk customers during onboarding.	**Suspicious Activity Reporting (SAR)** – Automates reporting of flagged transactions to regulatory authorities.	**Sanction Screening –** AI scans watchlists to prevent transactions with blacklisted entities.
Enhanced Due Diligence (EDD) – AI-driven background checks assess customer risk profiles.	**Adaptive Fraud Scoring Models** – AI updates risk scores dynamically based on transactional behaviors.	**Regulatory Change Monitoring** – AI tracks legal updates and adapts compliance protocols accordingly
Customer Profile Enrichment – AI aggregates data from various sources to build a comprehensive risk profile.	**Cross-Channel Fraud Detection** – AI can track fraudulent activities across multiple banking channels, ensuring comprehensive fraud mitigation.	**Risk-Based Alert Prioritization –** AI ranks alerts based on their potential impact, helping compliance teams focus on critical threats.
Real-Time Document Authentication – AI verifies documents in real-time, reducing onboarding time for new customers.	**Multi-Agent Collaboration** - Suspicious transactions are resolved with collaborative agentic AIs	**Explainable AI for Regulatory Review** – AI models provide clear reasoning for flagged transactions, enhancing regulatory transparency.

Report Generation | Synthetic Data Creation | Automated Documentation | NLP for Legal Analysis

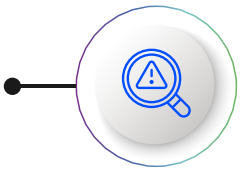
Generative AI-based productivity-enhancing tasks across all three facets

AI / ML | Gen AI | Agentic AI | Agentic Process Automation

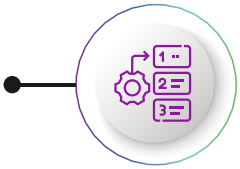
Intelligent Automation Using AI/ML



Predictive Analytics for Risk Assessment – AI models trained on historical data predict fraud risk levels, improving early detection. Visualize this – ACME Bank, which has implemented an AI-powered predictive analytics software, notices a huge deposit of money from an unknown overseas sender at 2 am to an account that has been placed under scrutiny. It flags the transaction that has tripped several red flags – the odd time of the transaction, the new anonymous overseas sender, the huge amount of money, and the receiver being a company with dubious transactions. This real-time detection allows the company to put the transaction on hold and talk to the stakeholders before clearing it or passing it to law enforcement agencies.

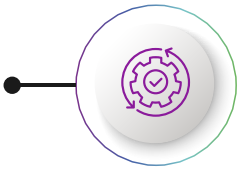


Anomaly Detection – ML algorithms identify unusual transaction patterns that may indicate fraudulent activity. Out of the blue, large transactions that involve amounts larger than usual transactions in customer accounts may be flagged as anomalies for further investigation. This helps companies assure customers that even if their accounts are compromised unknowingly, these are additional safety nets to arrest potential money losses.



Case Prioritization – AI helps rank investigations based on risk severity, ensuring critical cases receive immediate attention. Cases are prioritized based on several parameters, like the quantum of potential financial loss, the risk of brand value erosion of the customer, and other parameters to assign priorities to cases being reported in real time.

Automated Evidence Gathering – AI tools streamline the collection and categorization of evidence in fraud investigations, saving time and effort. AI systems can be pushed to collect evidence once the cases have been logged and the evidence required is listed. These automated evidence-gathering systems can ping other systems within and outside the company to request information. Once received, this evidence can be classified into financial information, IP addresses, and device information.



Enhanced Workflow Automation – Reducing reliance on manual processes enables investigators to focus on high-risk cases.

Generative AI Applications

Report Generation – Gen AI can help create reports on the fly and keep updating the reports in real time as new evidence and data become available. This saves a lot of manual labor and eliminates human-induced errors.

Scenario Simulation – The power of AI can be used to run simulations that assess financial crime threats and predict potential vulnerabilities. It can simulate a phishing attack to predict vulnerabilities in a bank's security system. Another simulation could model money laundering through cryptocurrency transactions. These provide rich scenario analyses for investigators to decipher crimes.

Synthetic Data Creation – Gen AI can be leveraged to produce synthetic data that simulates fraudulent behavior. This acts as fodder to train their systems to identify and flag suspicious transactions. Banks are also using artificially generated data that mirrors real-life transaction patterns. This aids the training of systems that can instantly detect deviations from these patterns in real life.

Automated Documentation – Investigative documentation can be offloaded to Gen AI, reducing human errors. It also ensures consistency.

Natural Language Processing (NLP) for Legal Analysis – Financial institutions can be deployed to analyze and summarize large volumes of regulatory documents. This can be a boon to help large financial institutions remain compliant.

Agentic AI for Advanced Investigations

Agentic AI refers to bots that are goal-driven and work with minimal human intervention toward completing a task.

Autonomous Case Management – AI bots can manage investigation workflows by collecting and processing data from varied sources to build a case.

Adaptive Learning Models – How about using AI bots to auto-update risk models continuously based on new fraud patterns? New fraud templates can be deployed on an ongoing basis to track newer fraud mechanisms. Similarly, Automated Regulatory Compliance can be achieved by using agentic bots to update the banking profile to stay in line with evolving financial regulations. Imagine the number of legal problems that get nipped right in the bud!

Multi-agent collaboration is another possibility wherein AI-powered virtual agents communicate and collaborate to cross-verify suspicious transactions. Think of it as a digital equivalent of investigative agencies cooperating for cross-border or inter-organizational resolution of financial crimes.

AI-Driven Use Cases in Financial Institutions

Here are sample use cases that showcase the kind of possibilities that open up with AI stepping up for advanced fraud management.

How can we help?

SLK Software enables organizations to hit the ground running with our ready-to-deploy AI accelerator tools. These give financial organizations the edge in AI-powered fraud management capabilities.

SLK's DExTr platform utilizes AI, ML, NLP, and OCR technologies to extract, organize, and summarize data from various document types with high accuracy.

DExTr's capabilities include

- **Data Extraction** from documents such as invoices, contracts, or financial statements,
- **Data Organization** to structured formats, making it easier to analyze and use.
- **Data Summarization** to provide key insights and reduce the need for manual review.

Overall, DExTr's integration of these technologies allows for efficient and accurate document processing, which is particularly beneficial in industries like banking, where large volumes of documents need to be processed quickly and accurately

SLK's Mithril platform uses AI to interact with documents through a conversational interface, providing fast and accurate insights. It supports multi-modal and multi-lingual processing

Stay a step ahead...

AI is a double-edged sword. As money launderers turn to AI to "devise and launch" increasingly sophisticated schemes on financial institutions, it becomes inevitable for organizations to use the power of AI to counter these threats. As AI/ML, Generative AI, and Agentic AI continue to mature, financial institutions that embrace these technologies will achieve superior fraud detection.

To remain competitive in an increasingly AI-driven landscape, financial institutions must:

- Invest in AI-driven fraud prevention tools to strengthen security measures.
- Collaborate with AI technology providers to implement cutting-edge solutions.
- Adopt a proactive AI governance strategy to ensure ethical and compliant AI adoption.
- Enhance employee training in AI-powered investigative techniques to maximize efficiency.

Have you prepped your organization to beat money launderers and fraudsters at their own game?

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Chandra is a digital transformation leader with over 25 years of experience driving innovation across global enterprises. He has held leadership roles such as Vice President and Global Head of Digital Experience and Transformation, delivering cutting-edge customer and employee experiences through emerging technologies like Metaverse, Web 3.0, AI, and Cloud. Chandra leads the company's digital and AI-led transformation strategy, focusing on business outcome-driven approaches. He champions platform-building, strategic co-creation with niche partners, and value realization for customers. He has successfully managed billion-dollar P&Ls, revitalized underperforming units, and enabled enterprise-wide transformation. Chandra is known for aligning technology with business strategy to unlock efficiencies and competitive advantage, making him a trusted advisor in the evolving digital landscape.

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About Us

SLK is a global technology services provider focused on bringing AI, intelligent automation, and analytics together to create leading-edge technology solutions for our customers through a culture of partnership, led by an evolutionary mindset. For over 20 years, we've helped organizations across diverse industries - insurance providers, financial service organizations, investment management companies, and manufacturers - reimagine their business and solve their present and future needs. Being A Great Place To Work Certified, we encourage an approach of constructively challenging the status quo in all that we do to enable peak business performance for our customers and for ourselves, through disruptive technologies, applied innovation, and purposeful automation. Find out how we help leading organizations reimagine their business at https://www.slksoftware.com/

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