



# Leveraging AI Agents in Banking, ATMs & Tellers

## Redefining customer experiences and AI-empowering financial services

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# Flow of Discussion

- Understanding the concept of AI agents and why they matter in Banking?
- Challenges & Opportunities: Identifying current challenges in traditional banking setups / and Exploring opportunities for AI
- Implementation & Innovation – Discovering real-world examples and potential adoption steps
- AI vs HI – Personalization vs. Privacy
- Looking Ahead – What's Next



Flow of  
Discussion

**Understanding the concept of AI  
agents and why they matter in  
Banking?**

# Introduction to AI agents



## What They Are

- **AI agents** are software programs that use **machine learning** and **data-driven** logic to perform tasks autonomously
- They act like **digital co-workers**, handling **rules-based processes** and data-driven tasks while **adapting** to new information



## Why They Matter

- Offer **24/7** availability, reducing **staffing** bottlenecks
- **Ensure consistency** in decision-making, free from fatigue or oversight
- **Improve customer experience** through faster responses and personalized interactions
- With recent advances in LLMs, **reasoning capabilities** are far better than before, enabling **more sophisticated** decision-making



## Key Technologies

- **GPT-based models**, enabling near-human **conversation** capabilities
- **Agentic AI** is ideal for integrating with **internal systems and external APIs** and managing **multi-step workflows** such as KYC checks or loan approvals. It also leverages **memory to retain context** across multiple interactions, enabling more consistent, personalized, and intelligent customer experiences over time.



Flow of  
Discussion

**Challenges & Opportunities:**  
**Identifying current challenges in**  
**traditional banking setups / and**  
**Exploring opportunities for AI**

# Current challenges in traditional banking

## Manual processes

- **Multiple forms** and handoffs **slow down** routine **tasks** like account opening or loan requests
- **Excessive paperwork** and in-person verifications delay customer onboarding

## Compliance issues

- **Fraud detection** relies heavily on human vigilance, increasing **error potential**
- Legacy systems make **regulatory updates** and security enhancements **cumbersome**



## High operational costs

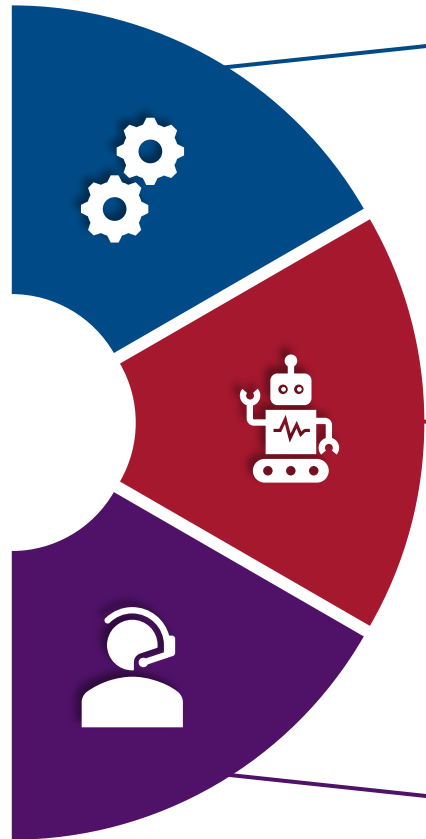
- Staffing, **maintenance**, and **security** overheads are constant drains on resources
- **Branch operating hours** limit convenience for many customers

## Impact

- **Long wait times** harm customer satisfaction
- **Competitive gap widens** as digital-first banks innovate faster
- Inconsistent service leads to **reputational risk** and **missed revenue opportunities**



# The opportunity with AI



## Key drivers

- Growth in **machine learning** solutions that **streamline routine processes**
- **Demand for faster services** as customers seek convenience and on-demand experiences

## Business benefits

- Using **RPA** (robotic process automation) to **streamline repetitive data entry and approvals**
- RPA can **dynamically create** or **map forms on the spot**, evolving beyond simple one-to-one mappings
- **Enhanced operational efficiency** through real-time data checks and approvals

## Customer experience

- **24/7 self-service channels** reduce dependence on branch hours
- **Real-time approvals** and personalized offers elevate satisfaction and loyalty

# Benefits for ATM & kiosk operations

## Cost savings

- **Reduced branch staffing**, allowing reallocations to higher-value customer engagements
- **Predictive maintenance alerts** for kiosks/ATMs, **minimizing downtime** and repair costs

## Improved satisfaction

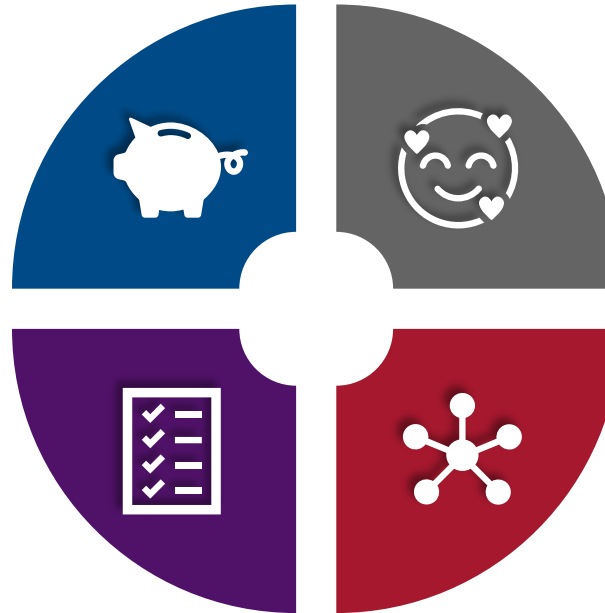
- **Fast self-service capabilities** appeal to tech-savvy customers
- Natural language interactions make processes less intimidating and more intuitive

## Security & compliance

- AI-based fraud detection **spots anomalies in real time**
- Ensures **standardized compliance** checks for every transaction

## Scalability

- Ability to **handle high volumes** of account openings or loan applications without bottlenecks
- **Rapidly adapt** to market growth or seasonal transaction spikes







Flow of  
Discussion

**Implementation & Innovation –  
Discovering real-world examples  
and potential adoption steps**

# Implementation roadmap

## Pilot

- Select **low-risk, high-impact areas** (e.g., kiosk-based account opening)
- Collect data on **transaction speed**, user acceptance, and error rates

## Measure

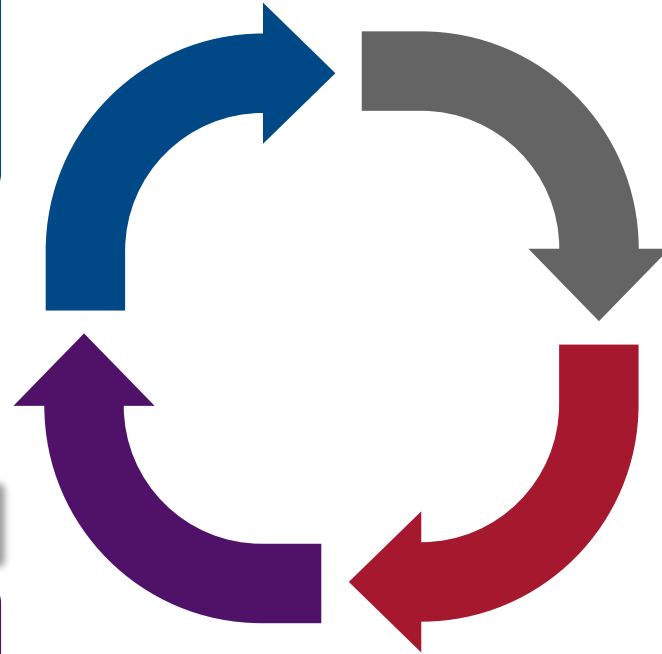
- **Compare operational costs and service performance** to pre-AI benchmarks
- **Monitor user feedback** for insights on ease of use and trust

## Refine

- **Use real-world data** to tweak AI algorithms for risk scoring, compliance, or user flows
- **Continuously update the LLMs** with new patterns and insights

## Expand

- **Train staff to handle escalations** and interpret AI-driven decisions
- **Deploy to more** ATMs, kiosks, and possibly digital **channels** like web or mobile apps



# Real-world scenarios

## AI-empowered self-service

### Instant account opening

- Customer wants a new checking account at a kiosk
- AI scans ID, verifies against watchlists, and instantly sets up the account
- Customer leaves with a digital confirmation on their phone

### Micro-loan approval

- User selects “apply for a micro-loan” on the ATM screen
- AI retrieves credit history, generates a risk score, and decides within seconds
- Funds are deposited immediately if the score meets preset thresholds

### Cheque encashment with advanced verification

- Customer inserts or scans the check at a kiosk
- AI uses image recognition to detect micro-text, verify ink authenticity, and spot possible alterations
- If the check is validated, encashment proceeds; suspicious checks escalate to a teller

## Hybrid self-service with teller support

### Investment account upgrade

- Customer starts an investment account at a kiosk, providing basic financial info
- AI checks for suitability (age, risk tolerance, net worth)
- If flags appear (e.g., unusual risk profile), the system prompts a video chat or in-person advisor to finalize

### Mortgage pre-qualification

- Customer enters income and property details at an ATM
- AI calculates approximate loan eligibility, giving a ballpark figure
- For a full application, the user is directed to connect with a mortgage specialist or schedule a branch visit

### Complex check deposits

- Customer attempts to deposit a large check exceeding normal thresholds
- AI compares transaction data to previous deposit history
- If deemed high-risk, the system calls for a remote teller or branch manager to review and approve

### High-value withdrawal

- Customer requests an unusually large withdrawal from an ATM
- AI detects potential fraud based on account activity patterns
- The transaction is paused until a human supervisor confirms identity (e.g., via video chat or callback)

# AI agents for cheque encashment



## Intelligent cheque analysis

- Utilizes **AI-driven OCR** on scanned images
- Extracts and **validates** fields (date, amount, payee) **in real time**
- **Enhances clarity** of scanned data to **reduce manual errors**



## Microtext & ink detection

- **Detects** hidden or **micro-printed text** not visible under normal scanning
- **Validates ink authenticity** to catch forgery or tampering
- **Flags abnormalities** (altered amounts, faded printing) for closer review



## Fraud checks & alerts

- **Cross-checks cheque details** (account status, watchlists) against bank databases
- Generates **real-time risk scoring** based on anomalies or repeated patterns
- Initiates **immediate alerts** to reduce potential losses



## Human review & compliance

- **Routes suspicious** or high-value cheques to tellers/supervisors **for final approval**
- Provides **clear audit trails** for disputes and regulatory compliance
- Ensures that **critical decisions** still involve a **human in the loop**

# AI agents for account opening



## Real-time onboarding

- **ID scanning** and **verification** against watchlists within seconds
- **Immediate** checks on **address validation**, **employment info**, or other required fields



## Compliance and KYC

- **Consistent risk assessment** based on bank-defined rules
- **Ensures consistent compliance** checks while allowing for **human oversight** on edge cases
- RPA can input **customer data into forms** that didn't previously exist, simplifying **on-the-fly compliance** data entry



## Instant account creation

- **Generate account details on the spot**, with digital or printed confirmations
- **Error-free logic** that avoids missed signatures or incomplete fields



## Error reduction

- AI strictly follows **procedural rules**, removing guesswork
- **Audit trails** provide clear **accountability** in case of any dispute

# AI agents for loan approvals



## Steps in the process

- **ATM/kiosk prompts** user for **baseline** financial **data** (salary range, ID info)
- **AI agent** retrieves **credit** history, applies **risk** scoring, and **cross-checks existing loans**



## Role of AI agents

- Provide **rapid preliminary decisions** for simpler, lower-risk loans
- **Flag borderline cases** for human review, ensuring compliance without slowing everything down
- All higher-risk or borderline loans can **seamlessly transition to human review**, ensuring final checks by a lending officer



## Efficiency gains

- **Faster turnaround** reduces queue times and customer frustration
- **Minimizes** back-office **workloads**, cutting operational costs



## Risk management

- **Real-time fraud analysis** thanks to pattern detection and external data sources
- Ensures **consistent approval criteria**, preventing biases or human error





Flow of  
Discussion

**AI vs HI – Personalization vs. Privacy**

# Replacing tellers – without losing the personal touch

## AI-driven maker-checker

- AI-driven **maker-checker with RPA** can **reduce manual errors** and free staff for higher-value tasks
- **AI ensures consistency** by following the **same approval workflows**, preventing crucial steps from being missed
- **Faster throughput** as AI runs continuously, handling high volumes without fatigue
- **Reduced compliance risk** with clear audit trails and traceable decision logic

## Preserving human value

- **Human staff** dedicate time to **complex issues** like mortgage advice or wealth management, boosting customer satisfaction
- **Increases customer trust** by offering **specialized help** for unique or high-stakes scenarios
- **Improves staff morale** by shifting employees away from repetitive tasks to more meaningful, skill-based roles
- **Enables upskilling** so employees can become experts in areas where personal guidance truly matters

## Building customer trust

- **Transparent processes** give customers insight into how decisions are made, making AI less intimidating
- **Still get human interaction** when needed, ensuring people feel valued and supported in major decisions
- **Greater consistency** across all channels (ATMs, kiosks, online), **reducing confusion** about policies or procedures
- **Enhanced loyalty** as shorter wait times for routine tasks improve overall satisfaction and build confidence in the bank's capabilities

# LLMs and Agentic AI

## LLMs 101

- GPT and similar models excel at **language understanding and real-time generation**
- Provide **natural, conversational flows** without the awkwardness of traditional chatbots
- **Adapt to user context** by referencing prior messages in a conversation
- Serve as a **foundation** for personalized experiences, helping to interpret and respond to a wide range of customer queries
- Modern LLMs show vastly **improved reasoning compared** to earlier models, enabling them to handle more **nuanced banking inquiries**

## Agentic AI

- **AI Agents** connects AI to **internal APIs** or data sources (customer records, credit bureaus)
- **AI Agents** coordinates **multi-step tasks** like complex identity checks or layered approvals
- **Streamlines integration** between large language models and existing banking systems, reducing manual coding
- **Ensures consistency** in workflows by defining clear rules for how and when data is accessed or validated
- **Time travel**: Using historical states or data and applying them in new interactions, allowing cross-checking older transactions or older forms

## Advantages for banking

- **Context-aware interactions**: the AI remembers previous steps or user preferences, improving continuity
- **Scalability**: easily adjust to handle more transactions or new services without massive infrastructure changes
- **Reduced development time**: frameworks like LangChain, CrewAI minimize custom coding and accelerate deployment
- **Future-proofing**: banks can update or swap out AI models as technology evolves, maintaining a modern customer experience

# Looking Ahead

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## Key Takeaways

- AI agents **significantly reduce** human-driven **workloads** and **error risk**
- **Real-time** data checks **accelerate** transactions and **improve** customer satisfaction



## Future Innovation

- Potential for **advanced fraud alerts**, **predictive** analytics, and in-depth **personalization**
- AI-driven financial advice could **expand offerings** with **minimal staffing** impact
- AI-driven financial advice and RPA for data movement can **expand offerings** with **minimal extra staffing**, while still **involving humans in critical steps**



## Next Steps

- Start with a **small pilot**, gather performance metrics, and refine the approach
- As confidence grows, **scale** across more locations and services to fully realize the benefits



Q&A

Thank you!