FT5002 – Digital Transformation at Financial Institutions

Individual Assignment

BUSINESS PROPOSAL

Bank ABC

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EXECUTIVE SUMMARY

Bank ABC, a trusted corporate banking expert, is here to bolster your business, addressing the needs of your multi-regional offices:

- Account Opening & Onboarding
- Account Management
- Payables & Receivables
- Payroll Payment
- Tax & Statutory Payments
- FX Investments

The advantages of our solutions:

- Quick Account Opening
- Seamless Connectivity (Web, API, Host-to-Host)
- Efficient Payables & Receivables (BaaS, Blockchain)
- Enhanced Compliance (Government APIs)
- AI-Powered FX Investment
- Automated Reconciliation

Build lasting client partnerships with us for shared growth. Discover more about our tailored digital banking solutions to supercharge your business.

BACKGROUND ANALYSIS

In the realm of digital banking and cash management solutions, a thorough assessment of the current market offerings is essential. Leading banks like DBS and Standard Chartered have made significant strides in the digital banking sector, offering a wide array of APIs to seamlessly integrate with clients' systems and deliver streamlined banking services.

DBS (n.d.), for instance, categorizes its APIs into three main groups, designed to facilitate both information exchange and transaction services. On the other hand, Standard Chartered (n.d.) boasts a secure and user-friendly platform known for its rapid global money transfer capabilities.

These platforms exhibit robust structures and architectures, ensuring efficiency and user-friendliness. However, there's room for improvement in fully harnessing the latest cutting-edge technologies.

Types of Cash APIs

Informational APIs

APIs that provide bank information direct to you

- Inward credit notification
- Intraday credit confirmation
- Bank account verification
- Transaction status enquiry
- Account data enquiry
- Account balance enquiry
- FX rate enquiry
- FX bulk rates enquiry

Transactional APIs

APIs that allow you to perform transactional banking services

- Real-time payments
- Real-time collections
- DBS MAX collections
- Refunds
- Account credit transfer
- Static Virtual Account
- Telegraphic Transfers
- FX rate booking

Our instant payment APIs are available in all key markets, and integrate directly with real-time clearing systems. e.g. FAST, FPS, ATM Bersama, UPI to name a few.

Workflow APIs

APIs that allow customers to seamlessly connect to and integrate with multiple systems

- Direct debit authorisation setup
- DBS MAX invoice generation
- DBS MAX QR code generation

Figure 1 DBS Digital Banking Solution

Features

Transfer your funds with ease

Instantly transfer up to S$200,000 each time to recipients with FAST via our S2B service.

Global coverage, local access

Straight2Bank lets you enjoy seamless access to all your accounts with us, anytime, anywhere, across multiple countries.

Simple, customisable and easy to use

Our comprehensive and flexible reporting tools provide visibility over your accounts and facilities, allowing you to better manage your working capital and risk.

Improved efficiency and risk management

Optimise your transactional workflows through online file conversion and bulk upload capabilities with Straight2Bank.

Security

Added security with Straight2Bank, it supports dual control on changes to beneficiaries, multi-level authorisation matrix, and a comprehensive audit trail.
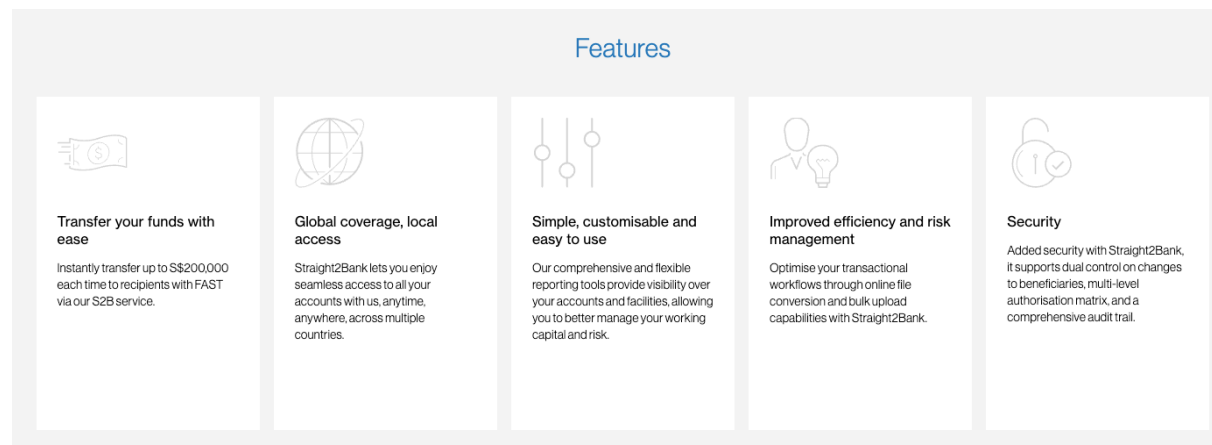
Figure 2 Standard Chartered Digital Banking Advantages

WHY BANK ABC?

At Bank ABC, our commitment to innovation drives us to explore cutting-edge technologies such as blockchain and IoT. This forward-thinking approach empowers us to deliver a solution that surpasses current offerings in the market.

Our digital banking platform seamlessly connects with your servers and ERP system through APIs and Host-to-Host (H2H) interfaces. This integration allows your ERP system to efficiently transmit operation commands to our system while ensuring swift and dependable data transfer through H2H connectivity. Furthermore, your finance department can easily access the web portal to review your bank accounts, providing a user-friendly and efficient experience.
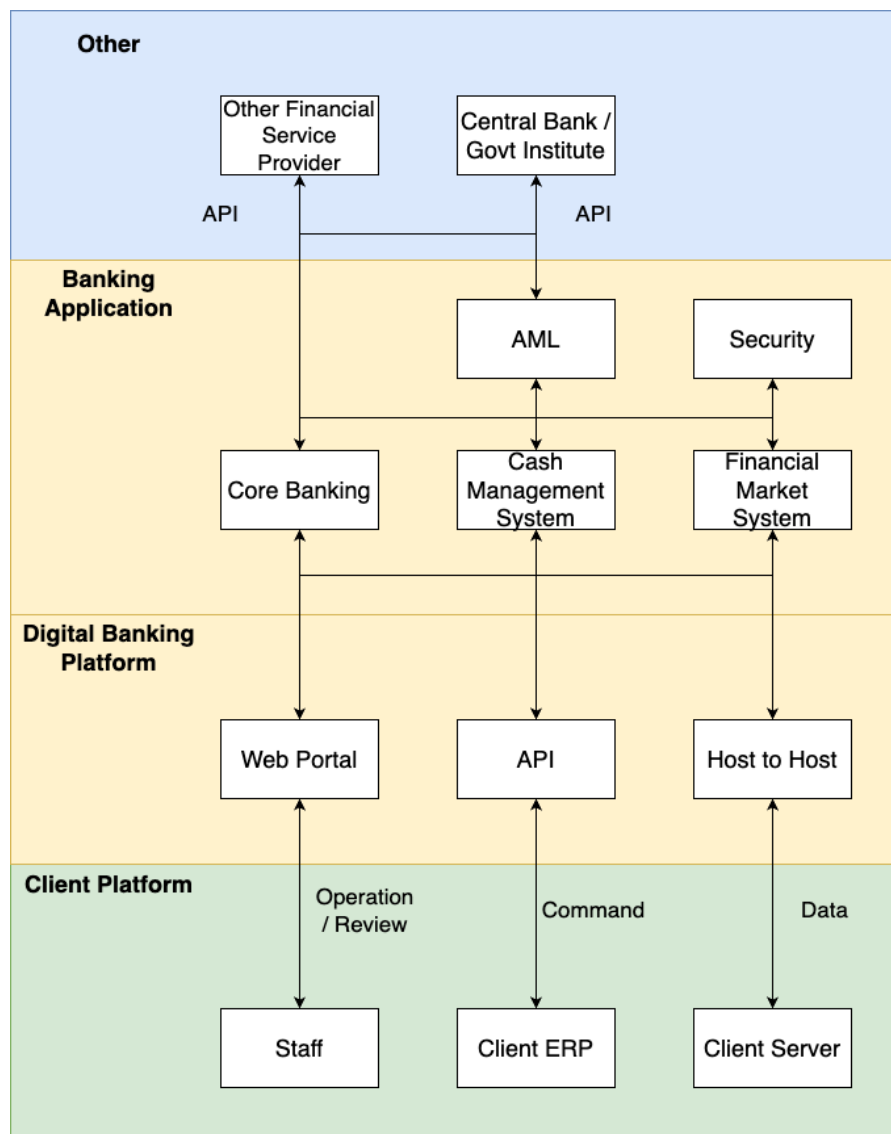

Figure 3 Bank ABC System Overview

ACCOUNT OPENING AND ONBOARDING

Our account opening and onboarding process prioritizes efficiency and transparency.

1. Document Submission

The client initiates the process by submitting scanned paper documents through our web portal. Simultaneously, their internal system connects via a host-to-host system, providing essential financial and legal data.

2. Application Submission

We employ Optical Character Recognition (OCR) technology to extract data from scanned documents. AI and Robotics Process Automation (RPA) automate form-filling, encompassing vital details such as company information, ownership, contact, financials, regulatory compliance, and more. Incomplete submissions trigger email notifications with an option for additional uploads on a user-friendly web portal.

Figure 4 Bank ABC Account Opening and Onboarding System

3. Verification, Due Diligence, and Account Approval

API integration provides real-time access to policy and security-related data from central banks and government institutions. Advanced AI and machine learning models enhance our due diligence by identifying irregularities and red flags. The application undergoes a rigorous checking process before approval.

4. Account Setup

Clients electronically sign documents and promptly receive them. AI predicts the ideal account type and services, simplifying the process of opening various services, including specialized banking solutions. Subsequently, the client can conveniently make the initial deposit.
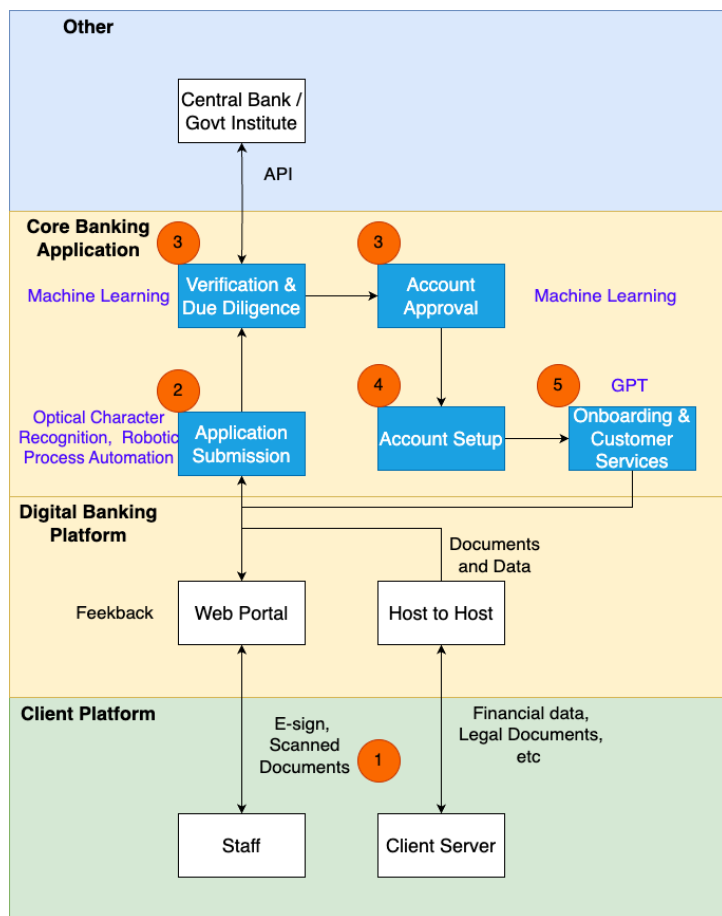
5. Customer Onboarding and Ongoing Services

Clients manage their accounts through our web portal. Transparent and timely communication includes email updates, while client inquiries are addressed by chatbots powered by Generative Pre-trained Transformers (GPT).

PAYABLE AND RECEIVABLES SOLUTION

Our methodology optimizes the efficiency, transparency, and reliability of the delivery and payable-receivable process, harnessing the potential of IoT and blockchain technologies.

1. Creation of Contract Instructions:

Clients initiate contract instructions through various means, while our system simultaneously collects relevant data.

2. Generation of Smart Contracts:

Smart contracts are generated based on the requirements of suppliers, builders, and clients. These contracts delineate process conditions, completion criteria, payment amounts, and other pertinent details.

3. Execution of Smart Contracts:

a. IoT Integration:

IoT technology plays a pivotal role in the delivery process, encompassing QR code tagging on item packages and IoT devices for tracking cargo during shipments. The smart contract is automatically marked as complete upon successful, damage-free delivery.

Figure 5 Bank ABC Payable and Receivables System

b. Smart Contract:

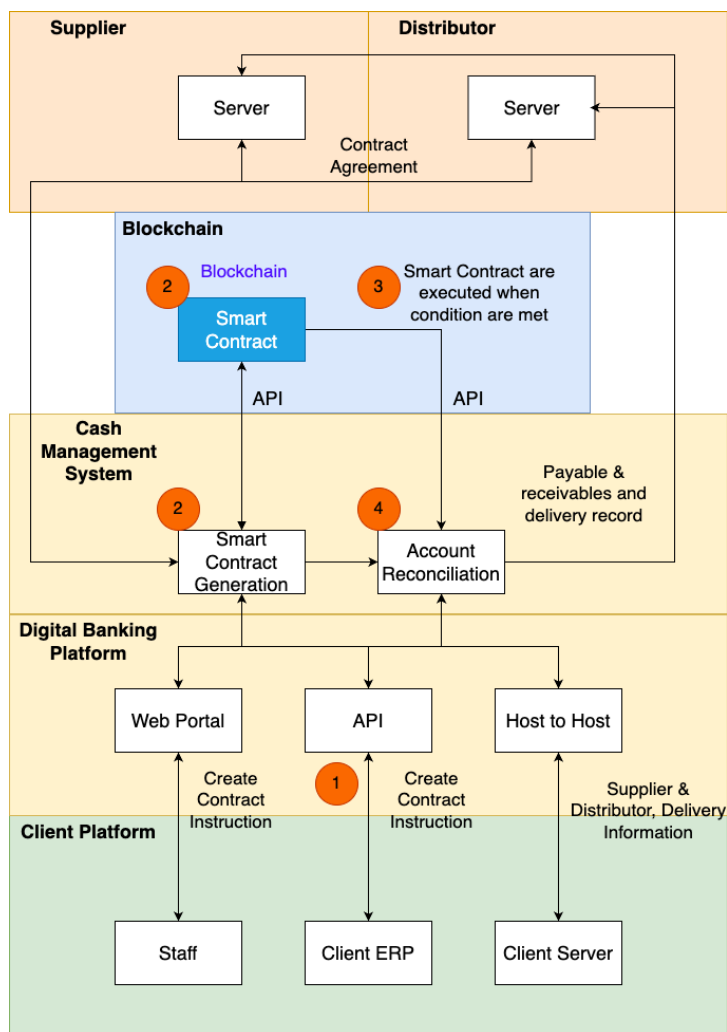Smart contracts execute when predefined conditions are met, streamlining efficient and automated payment processes.

4. Reconciliation of Accounts:

   Information from completed smart contracts is extracted to facilitate account reconsolidation. This includes details concerning contract completion, payment amounts, and more. The results are promptly transmitted to all involved parties, including suppliers, builders, and clients, ensuring seamless account reconsolidation for all three stakeholders throughout the entire process.

5. Real-time Payment

   In addition to utilizing Smart Contracts, real-time payments can be executed using a method similar to the payroll solution.

PAYROLL SOLUTION

Our payroll settlement solution is swift, accurate, and tailored to each market's unique requirements.

1.   Data Collection

   The initial step involves the client submitting their payroll policies across different markets. Concurrently, we gather comprehensive human resources data, encompassing employee information, salaries, compensation, and bonuses. This data is acquired through a H2H system and integrated into our digital banking platform. Additionally, the client's ERP system communicates with our platform through APIs to initiate payroll disbursements.

2.   Salary Calculations

Figure 6 Bank ABC Payroll System

   In the second stage, we access data from the tax bureau via APIs to stay updated on tax policies and retirement regulations. This information is crucial for accurately calculating employee salaries.

3.   Salary Payments
   To facilitate payments, we collaborate with various financial service providers, including mobile wallet services. Using APIs, we transmit the necessary payment data to these providers.
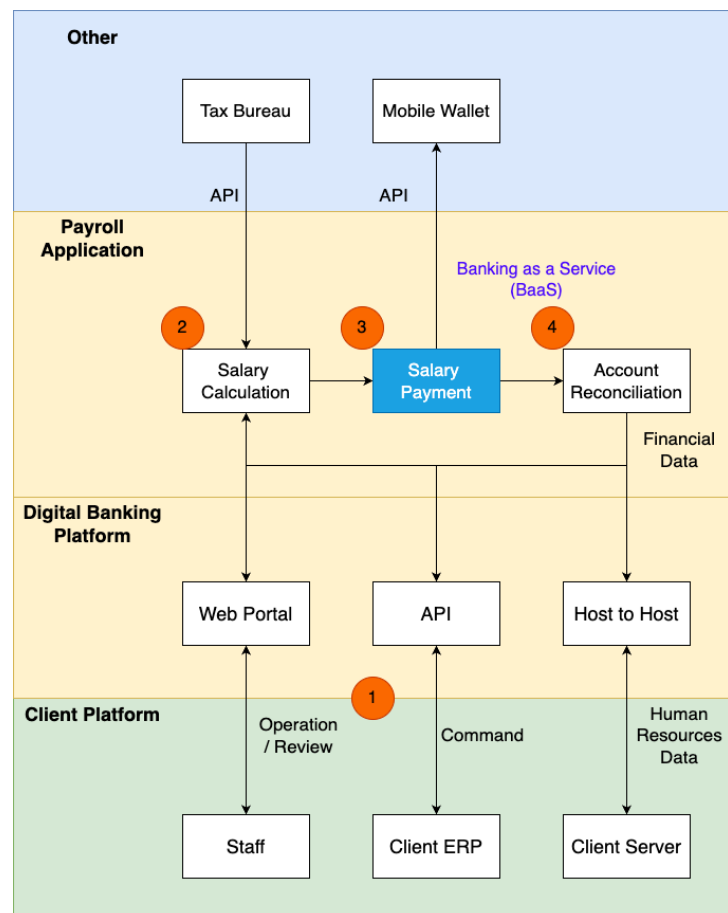
This approach is particularly valuable in regions where we lack a direct presence, enabling us to leverage third-party services efficiently.

4.   Account Reconciliation

The fourth stage focuses on consolidating all payment data and financial information. Subsequently, this consolidated data is returned to the client's platform via a secure host-to-host channel, ensuring the client's financial accounts are promptly updated.

TAX & STATUTORY PAYMENT SOLUTION

The payment system employs a similar framework and structure as the payroll system, both of which leverage Banking as a Service (BaaS) for seamless payment processing.

FX INVESTMENT ON SURPLUS CASH

Our FX investment solution is engineered to optimize the utilization of surplus cash, empowering our clients to make strategic investments while mitigating currency risks.

1. Data Integration:

We establish a secure host-to-host connection with the client's SAP ERP system, granting us access to essential financial data. This includes operational costs, cash flows from overseas offices, and other critical metrics that enable us to evaluate cash flow patterns.

2. Robo-Advisor Recommendations:

Our machine learning-powered robo-advisor assesses the company's financial situation and tailors

Figure 7 Bank ABC FX Investment System

investment strategies. This involves determining the suitability of funds for either long-term or short-term investments, considering the client's financial health, and analyzing external data
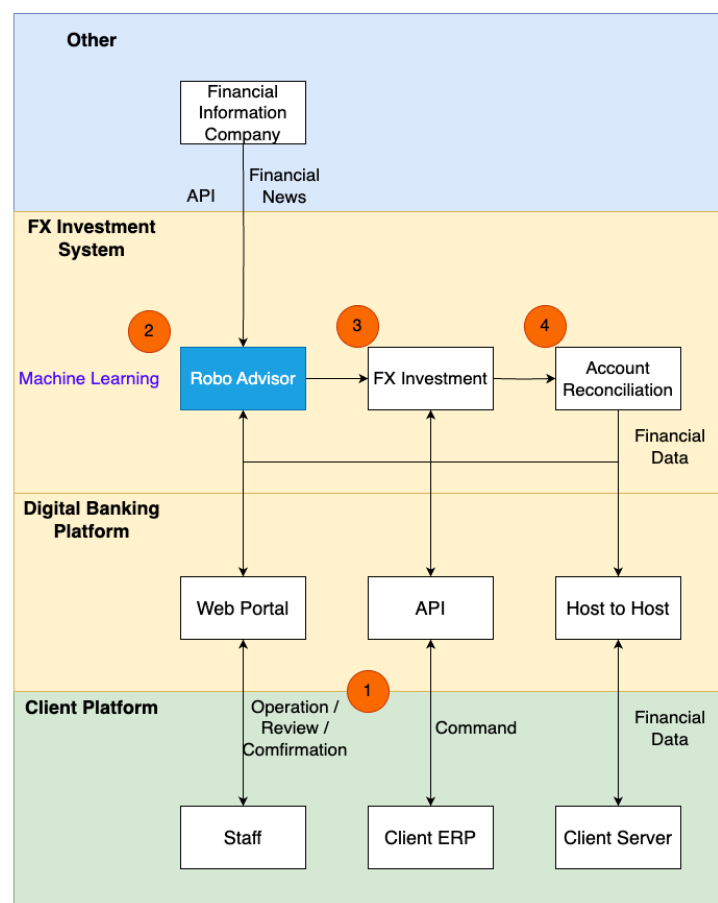
sources for predictive insights. After the robo-advisor's recommendation, the proposed strategy is presented to the client. The client confirms the strategy, aligning it with their financial objectives.

3. FX Operations:

In this stage, our back-end FX function calculates exchange rates and executes currency exchanges, seamlessly transferring funds between different currencies. Clients enjoy streamlined transactions, facilitated through our direct bank accounts, reducing the need for manual processing.

4. Account Reconciliation:

Following successful FX operations, all pertinent financial data, including currency exchange records and investment results, is consolidated. This consolidated data is securely transmitted back to the client's platform via a host-to-host channel, ensuring the prompt update of the client's financial accounts.

TECH SLACK & BENEFIT

Services	Technology Applied	Benefit
Account Opening and Onboarding	OCR, AI, RPA, GPT-powered chatbots	- Faster Document Processing: OCR technology accelerates data extraction, reducing errors and rework. - Enhanced Due Diligence: AI improves verification and risk assessment. - Improved Customer Experience: GPT-powered chatbots offer instant customer support, elevating the client experience.
Payable and Receivables Solution	IoT, Blockchain, Smart Contracts	- Transparency and Traceability: Real-time cargo tracking enhances security. - Efficient Payments: Smart contracts automate transactions, reducing costs and delays. - Stronger Relationships: Efficiency and transparency foster trust among parties.
Payroll Solution	Banking-as-a-Service (BaaS)	- Swift Salary Calculations: BaaS tech ensures fast, accurate payroll processing. - Convenient Payments: Diverse mobile wallet integration caters to employee preferences. - Reduced Errors: Automation minimizes manual effort and errors. - Faster Money Transfers: Direct channels expedite fund disbursement, ensuring employee satisfaction.
FX Investment on Surplus Cash	Robo-advisor	- Optimized Cash Utilization: The robo-advisor maximizes returns while managing risk. - Tailored Strategies: Strategies align with clients' financial objectives. - Streamlined Currency Management: Efficient currency exchanges save time and reduce costs. - Enhanced Financial Performance: Data-driven decisions improve investment returns and risk management.
Entire Digital Banking Platform	API, Host-2-Host	- Streamlined Banking Operations: APIs and H2H connections enhance communication and data transfer. - Simplified Integration: Clients benefit from an easy-to-integrate platform, promoting efficient services.

Table 1 Tech Stack and Benefits

DATA PRIVACY & SYSTEM SECURITY

Services	Process Stage	Security Standards
Account Opening & Onboarding	Document Submission	- Use SSL/TLS for data encryption
		- Implement digital signatures for document verification
	Verification & Approval	- Utilize OAuth 2.0 or OpenID Connect for API security
		- Implement data authorization and authentication
	Account Setup & Onboarding	- Employ e-signature solutions (e.g., DocuSign, Adobe Sign)
		- Enable two-factor or multi-factor authentication (2FA/MFA)
Payable & Receivables	Smart Contract Creation	- Utilize blockchain technology (e.g., Ethereum, Hyperledger Fabric)
		- Use cryptographic hash functions for unique identifiers
	Account Reconciliation	- Apply API security standards for data exchange
		- Ensure secure and confidential data access
Entire Platform	All Stages	- Use SFTP or FTPS for secure host-to-host connection
		- Employ encryption algorithms (e.g., AES-256, RSA-2048) for data protection
	All Stages	- Follow industry best practices (ISO/IEC 27001, NIST Cybersecurity Framework)
		- Establish a comprehensive ISMS for full security coverage

Table 2 Data Privacy and System Security

LIMTATION

Services	Challenges	Solutions
Account Opening and Onboarding	Handling Incomplete Submissions	Implement automated reminders and alerts for clients to complete their submissions. Offer real-time chat support to assist clients in resolving issues.
	AI and Machine Learning Accuracy	Continuously refine AI and machine learning models through retraining and fine-tuning with real-world data. Implement feedback mechanisms to improve model accuracy.
Payables and Receivables Solution	Supplier Resistance to Smart Contracts	Educate suppliers on the benefits of smart contracts, including faster payments, reduced disputes, and enhanced transparency. Offer incentives for suppliers who adopt smart contract technology.
	IoT Implementation Challenges	Ensure compatibility of IoT devices with existing infrastructure. Conduct pilot tests to identify and resolve potential issues before full-scale implementation.
	Data Security and Privacy in IoT	Implement secure IoT data transmission protocols, including encryption and blockchain technology. Comply with IoT security standards and regulations.
Payroll Solution	Compliance with Local Labor Laws	Stay updated on labor laws in different regions and implement compliance checks in the payroll system. Offer customizable payroll settings to accommodate local labor regulations.
	Currency Conversion for International Payments	Implement an efficient currency conversion mechanism to handle international payments. Collaborate with currency exchange providers and use real-time forex data to ensure accurate conversion rates.
FX Investment	Client Acceptance of Robo-Advisor Recommendations	Provide clear explanations of the robo-advisor's recommendations and the reasoning behind them. Offer customization options for clients to tailor investment strategies.
	Currency Exchange Rate Fluctuations	Implement dynamic hedging strategies to mitigate the impact of currency fluctuations. Monitor forex markets and adjust strategies in real-time.
	Regulatory Compliance	Stay updated with tax regulations and maintain a team of experts in tax and legal compliance. Implement automated tax calculations and reporting for compliance.
	Secure Transmission of Sensitive Data	Use end-to-end encryption, VPNs, and secure transmission protocols to safeguard sensitive financial data during transmission. Regularly assess and enhance security measures.
	Consistency in Payment Processing	Develop a standardized, automated payment processing workflow with thorough quality checks for accuracy and compliance. Implement automated checks for regulatory compliance.
Entire Platform	Integration with Client's ERP System	Develop seamless and user-friendly integration tools, APIs, or connectors for easy integration with the client's ERP system. Provide comprehensive technical support for integration issues.

Table 3 Limitation

NEXT STEP

In the next phase, we invite the client to embark on this transformative journey with us. Together, we will implement these innovative solutions tailored to their unique challenges and aspirations. Our experts will work closely with the client, ensuring a seamless transition to the advanced digital banking and cash management processes. As we forge ahead, our commitment is to empower your business with enhanced efficiency, security, and profitability. Embrace the future of banking today, and let's navigate this exciting path to success together.

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