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FUTURE OF VIRTUAL BANKING MODELS WITH REFERENCE TO KOTAK MAHINDRA BANK

[#1]**TUTTI POOJA,** *Dept of MBA,*
[#2]**Mr. M. BALA SWAMY,** *Assistant Professor, Dept of MBA,*
MOTHER TERESA INSTITUTE OF SCIENCE AND TECHNOLOGY, SATHUPALLY, KHAMMAM.

ABSTRACT: Kotak Mahindra Bank and online banking are two examples of the digital transformation taking place in the financial industry. This study looks at how the bank uses advanced analytics, blockchain, and artificial intelligence to improve customer service and operational security. We explore how open banking and API-driven ecosystems may promote customization and teamwork. The study looks into how cybersecurity, regulatory compliance, and digital literacy relate to sustainable development. Virtual banking has the ability to improve financial inclusion, reach disadvantaged groups, and save money, according to market data and user reviews. We offer a lot of chances for our digital services to grow. These data show that Kotak Mahindra Bank pioneered online banking and created a strong financial climate.

Keywords: *Digital Banking, Virtual Banking, Digital Transformation, FinTech Innovation, Artificial Intelligence (AI), Blockchain Technology, Advanced Analytics, Open Banking,*

I. INTRODUCTION

The adaptability, transparency, and innovation of virtual banking are revolutionizing the financial sector. Virtual organizations only conduct business online. Manage account balances, loans, payments, deposits, and withdrawals from a distance. Because internet systems are available around-the-clock, banking is more accessible and efficient.

Online banking has grown as a result of the quick development of technology, the widespread usage of smartphones, and the accessibility of instant financial services. Financial organizations may benefit from data-driven client experience customisation, cost savings, and quicker service. Many people are concerned about inefficiency, lawlessness, and cybercrime. Despite its inherent drawbacks, virtual banking is becoming a crucial part of modern financial systems, offering digital substitutes for cash and credit cards.

Many believe that all virtual banking models will be digital and that branches would no longer be necessary. Blockchain, big data analytics, cloud computing, and artificial intelligence will improve these models' operations, security, and customization. Banks and fintechs can offer personalized goods through embedded finance, neo-banking, and open banking. Sustainability, financial literacy, accessibility, diversity, and speed are among the goals.

II. LITERATURE SURVEY

Rajesh Mehta, 2021 Rajesh Mehta claims that younger, tech-savvy customers want mobile-focused services, quicker account openings, and cheaper rates, which is why neobanks and traditional banks are in

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rivalry. The pandemic's internet boom forced banks to reevaluate their branch operations and adopt hybrid digital-physical frameworks. When neobanks used artificial intelligence (AI) to detect fraud and offer tailored insights, laws were changed.

Ananya Sharma, 2022 Financial organizations are realizing the advantages of cloud computing, according to Ananya Sharma. Cloud computing allowed financial firms to grow, cut expenses, and improve their agility. We accelerated product delivery and improved encryption and surveillance to address cybersecurity and compliance issues.

Sarah Williams,2023 According to Sarah Williams, automation and artificial intelligence will have a big impact on banking. The AI recognized fraud, guided customer service agents, and anticipated client needs. Increased accuracy and cost reductions were achieved by automating repetitive processes and offering financial planning and investment guidance. The use of chatbots and virtual assistants freed up staff members to make strategic decisions, which improved customer satisfaction.

David Kim 2024 David Kim argues that banks use digital currency and blockchain, which were once thought to be futuristic. By using blockchain technology to speed up and secure international transactions, banks may save time and money. Global central banks are looking at or deploying digital currencies to improve client access and operations. Blockchain technology and real-time transactions improve the effectiveness and security of virtual currency. Complex middlemen are eliminated by smart contracts.

Olivia Martinez, 2025 Olivia Martinez talked on how integrated finance affects consumers. Applications for leisure, ride-sharing, and e-commerce use non-bank financing and insurance. Finance and client procedures were optimized by this smooth communication. Fintech collaboration and APIs enabled quick adaption, while traditional banks used middlemen to sell "white-label" financial products. Stricter regulations encouraged innovation and compliance.

Anjali Desai, 2025 Anjali Desai looked into online neobanks. Transaction alerts and streamlined smartphone apps were our top priorities. AI-driven personalization may allow users to keep track of their savings, assets, and spending. Despite traditional banks' attempts to keep customers, COVID-19 has improved digital and contactless banking.

III. FACTORS OF VIRTUAL BANKING

Technology Infrastructure

Online trading of stocks, bonds, and mutual funds is possible for users of e-banking. Investing in financial markets is made easier by electronics. Online investment platforms provide research, advice, and portfolio supervision to assist users make better financial decisions.

Security Measures

Technology makes virtual banking possible. servers, cloud apps, mobile platforms, and safe networks. Infrastructure makes transfers safe and simple. Modern technology meets the needs of consumers. Upgrading systems is the best technological solution for businesses. Inadequate foundations can quickly destroy client trust.

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Regulatory Compliance

Virtual businesses must comply with digital banking standards. Data security, consumer due diligence, and anti-money laundering (AML) are a few examples. The bank may avoid issues by following the law. It boosts regulators' and consumers' confidence. Reports and accounting must be consistent. Businesses may close as a result of breaking regulations.

Financial Inclusion

Virtual businesses must comply with digital banking standards. Data security, consumer due diligence, and anti-money laundering (AML) are a few examples. The bank may avoid issues by following the law. It boosts regulators' and consumers' confidence. Reports and accounting must be consistent. Businesses may close as a result of breaking regulations.

Cost Efficiency

Online branches are more affordable. Cut back on rent, utilities, and staff. They can choose between lower payments or higher interest rates. Reasonably priced, high-quality technology and services are made available. As a result, internet businesses will continue to compete. Operational efficiency improves sustainability and profitability.

Digital Payment Ecosystem

Digital payment systems enable online banking. Mobile wallets, cards, UPI, and internet payment systems are among alternatives. System integration optimizes transactions. Financial institutions give you power. Customers want quick, easy, and safe payments. The bank's strong operating circumstances sustain its competitiveness.

IV. STRATEGIES FOR VIRTUAL BANKING MODELS

Digital-First Approach

In virtual institutions, platforms should take precedence over infrastructure. The effectiveness of online and mobile banking is given top priority in our strategy. Branch consolidation improves bank operations and lowers costs. Consumers' lives are made easier by services that are always available. The design of the user interface and user experience (UI/UX) affects consumer acquisition. Digitization has made virtual banks financially competitive.

Strong Cybersecurity Measures

Online financial systems must be secure. Multi-factor authentication, biometric verification, and end-to-end encryption all boost confidence. Customers can confidently conduct transactions in dangerous online settings thanks to strong protection. International standards and examinations protect people. Artificial intelligence detects anomalies related to fraud. Customers gain trust in safe practices.

Personalization through AI & Data Analytics

AI and data analytics help digital businesses better understand their customers. Finance companies sell goods and services. Customer happiness and loyalty rise as a result of customization. An AI robot simplifies customer service. Profit or cost savings are possible outcomes of predictive analytics. Data-driven customisation improves usability.

Financial Inclusion Strategy

People who are unbanked and in poverty are among the targeted categories.

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Digitization enables remote banking. To increase participation, the account creation process is made simpler. Low-income people's development is aided by microloans and low-cost services. Both people and organizations benefit from this. Encourage participation in virtual organizations to promote economic equality.

Cost-Efficiency & Lean Operations

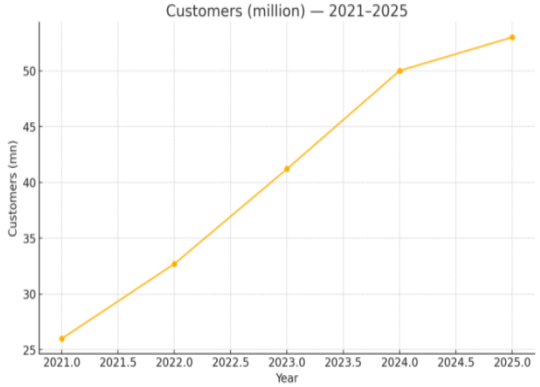
Virtual businesses can cut expenses because they don't have physical sites. Process automation lowers labor costs and boosts productivity. Process simplification lowers costs and boosts profits. Reduced infrastructure spending encourages innovation.

V. RESULTS

CORE FINANCIAL & DIGITAL METRICS (KOTAK MAHINDRA BANK, 2021–2025)

TABLE 1: Growth of Customers (2021–2025)

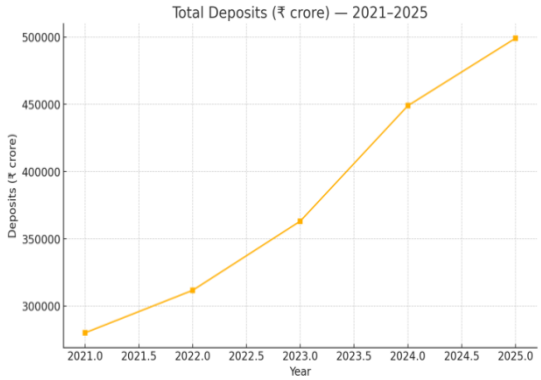
Year	Customers
2021	26
2022	32.7
2023	41.2
2024	50
2025	53



INTERPRETATION: By 2025, Kotak Mahindra Bank hopes to have 53 million customers, up from 26 million in 2021. Over 26% of clients reached a total of 32.7 million throughout the 2021–2022 timeframe. Every year, the base grew, reaching 41.2 million in 2023 and 50 million in 2024. By 2025, the company's user base had grown steadily to 53 million.

TABLE 2: Growth of Total Deposits (2021–2025)

Year	Total Deposits in cr
2021	280100.05
2022	311684.11
2023	363096.05
2024	448953.75
2025	499055.14



INTERPRETATION: Analysts predict that Kotak Mahindra Bank's savings would rise between 2021 and 2025. In 2021, deposits came to ₹280,100.05 crore. In 2022, the total was ₹311,684.11 lakhs. Deposits rose from ₹363,096.05 crore in 2023 to ₹448,953.75 crore in 2024. Consumer savings are predicted to rise steadily over the last five years and reach ₹499,055.14 crore in 2025.

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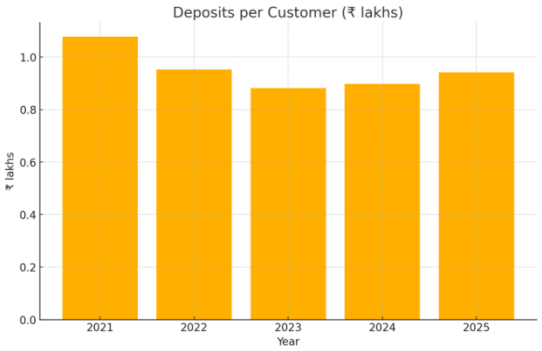
TABLE 3: Deposits per customer

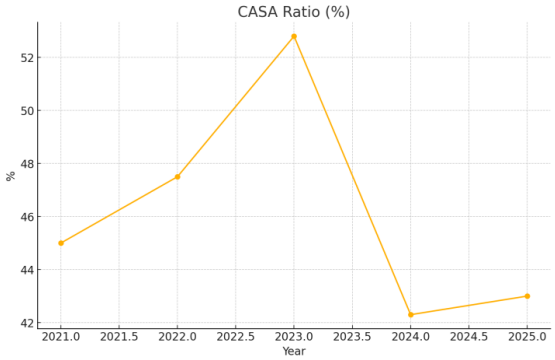
Year	Deposits per customer ₹
2021	107731
2022	95316
2023	88130
2024	89791
2025	94161



INTERPRETATION: Kotak Mahindra Bank saw variations in customer deposits between 2021 and 2025. Despite a rise in participation, the average salary per person fell from ₹1,07,731 in 2021 to ₹95,316 in 2022. After peaking at ₹88,130, the trend began to fall in 2023. The amount was ₹89,791 in 2024. The average client deposit rose to ₹94,161 in 2025.

TABLE 4: CASA Ratio Trend (2021–2025)

Year	CASA_%
2021	45
2022	47.5
2023	52.8
2024	42.3
2025	43



INTERPRETATION: Between 2021 and 2025, Kotak Mahindra Bank's CASA experienced a substantial change. The CASA ratio in 2021 was 45%. The percentage of low-cost deposits rose from 47.5% in 2022 to 52.8% in 2023. The percentage dropped significantly to 42.3% in 2024. It rose to 43% the next year. Even though aggregate savings increased, CASA deposits declined. These differences show that the makeup of the bank's deposits is changing.

VI. CONCLUSION

Virtual banking, which is distinguished by innovation and first-rate client care, is revolutionizing the financial industry. Blockchain, automation, and AI provide quick, safe, and customized services. However, mobile-first systems and open financial APIs make banking more accessible to everyone. Strict security and data protection procedures must be put in place to preserve online banking customers' trust. Virtual banks could benefit from their capacity to attract environmentally concerned clients and support low-income areas. By offering strong support, flexibility, and creativity, these organizations will be able to compete in the quickly changing financial industry. Technology, security, and customer focus are integrated to create a sophisticated, high-service financial environment.

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