# FinTech, AI, and Digital Payments: Shaping the Future of Finance

***(Special Keynote Address delivered by Shri Ajay Kumar Choudhary, Non-Executive Chairman and Independent Director, National Payments Corporation of India – Aug 29, 2024, 5th Global Fintech Fest, Jio World Convention Centre in Mumbai, India)***

Good afternoon, esteemed members of financial institutions, academia, press and media, colleagues from RBI, NPCI and the FinTech industry and distinguished guests. It is an honor to be present at the Global FinTech Fest 2024. As we gather here today, let us embrace the opportunity to collaborate, innovate, and shape the financial landscape in our journey for developing an inclusive and sustainable financial system. Together, we can drive positive change and revolutionize the way we interact with money and technology.

I would like to begin by recognizing the significance of this gathering. The Global FinTech Fest (GFF) has rapidly evolved into a critical platform for innovation, collaboration, and dialogue in the financial technology sector. Now in its fifth edition, GFF stands as a cornerstone of communication and creativity in the FinTech industry. **The theme of this year's fest—responsible AI, inclusivity, and resilience** - directly addresses the difficulties and opportunities that lie ahead for all of us in the FinTech industry.

**Steve Jobs once said, "Innovation distinguishes between a leader and a follower."** As we convene to deliberate and investigate the significant transformations that are currently taking place in the financial technology sector, I am reminded of this quote. We are not merely participants in this global conversation; we are the leaders who are influencing the very foundation of the financial world. We must approach these advancements with a sense of responsibility and inclusivity. By fostering a culture of responsible innovation that prioritizes ethical practices, embraces diversity and strengthens financial stability, we can ensure a more resilient and sustainable future for the financial system in general and FinTech industry in particular.

The landscape of the financial system is witnessing profound transformation, unlike anything we have seen before. Technology is at the heart of this change, reshaping how we think about finance, how we interact with financial services, and how we approach regulation and oversight. The convergence of AI, tokenization, blockchain, big data, embedded payments, quantum computing, digital currency and other emerging technologies is opening up new possibilities, but it also poses significant challenges. We must address the associated risks with foresight and collaboration, to ensure that these technologies are used responsibly.

**Global FinTech Landscape:**

The journey of FinTech has been nothing short of extraordinary. Globally, FinTech investment reached USD 58.2 billion in just the second half of 2023, and the sector is projected to generate an astounding USD 1.5 trillion in annual revenue by 2030, constituting 25% of the global banking valuations. Asia-Pacific (APAC) region leads this charge, with the total FinTech revenue at USD 90 billion in 2022 – just the second region after North America, with the projected growth of 27% and poised to be number one region globally by 2030 in revenue generation. Latin America and Africa follow this, with impressive growth rates of 33% and 32% respectively. With policy support and technological advancements, the future of FinTech looks promising for both investors and consumers alike.

The Global FinTech landscape is as diverse as it is dynamic. From embedded finance to decentralized finance (DeFi), from integration of artificial intelligence (AI) and machine learning (ML) to distributed ledger technology (DLT) and tokenization, the innovations are endless. These technological advancements are not just redefining financial services; they are reimagining the future of finance itself. As the industry continues to evolve, the right mix of both competition and collaboration between FinTech entities and traditional incumbents may be essential to drive innovation as also its adaptation, by leveraging their respective strengths and meet the evolving expectations of customers. The market forces will ultimately determine the areas of focus for each dynamic.

**FinTech in India:**

India, known for its dynamic and swiftly evolving FinTech ecosystem, is at the forefront of this global transformation. India's FinTech sector is projected to expand from USD 110 billion to an outstanding USD 420 billion over the next five years, with a compound annual growth rate (CAGR) of 31%. Further, our nation is third globally in terms of the number of FinTech companies, with more than 9,000 entities. Additionally, we have an adoption rate of 87%, which is significantly higher than the global average of 67%. The transformation of India's FinTech sector from an emerging market to a global powerhouse has been nothing short of extraordinary. Initiatives by way of Digital Public Infrastructure (such as UPI, JAM Trinity and now ULI), Institutional support, supporting policy framework form Government and regulators and Tech capabilities are helping in driving a revolution in FinTech innovations and playing a crucial role in fostering an environment where FinTech and FinTech entities can thrive and continue to drive inclusive growth.

India's journey in FinTech is a story of vision, resilience, and adaptability. It is a journey that began with small steps but has now reached a point where we are setting global benchmarks. The success of UPI, which recorded over 14 billion transactions with value amounting over Rs. 20 lakh crores in July 2024, is a shining example of how technology, when combined with policy support, can transform the financial landscape. UPI has not only simplified payments for consumers but has also empowered small businesses, enabling them to access a wider market and grow their enterprises.

Similarly, the Aadhaar-enabled payment system has revolutionized financial inclusion in India. With over 1.3 billion Aadhaar cards issued, we have created the world's largest biometric identification system, ensuring that even the most marginalized sections of our society have access to basic financial services. The JAM Trinity—Jan Dhan, Aadhaar, and Mobile—has further accelerated this process, bringing banking services to the doorstep of millions of Indians who were previously excluded from the formal banking system. If we may look at financial inclusion from the lens of access and more access, these enablers have truly revolutionized financial inclusion in India.

The impact of these initiatives on India's economy has been profound. Digital payments have reduced the cost of transactions, increased transparency, and reduced corruption. They have also paved the way for new business models, such as digital lending, which leverages data on cash flow to facilitate more inclusive and accurate underwriting to MSMEs and small businesses, which empowers them to grow and thrive in a competitive market. Today, India is home to over 30 FinTech unicorns, and this number is expected to grow as more startups emerge, driven by the promise of a digital-first economy. The rapid growth of the FinTech industry in India has also attracted significant investment from both domestic and international sources. This trend is expected to continue in the coming years.

India's leadership in FinTech is also evident in the international arena. The launch of the UPI-PayNow linkage between India and Singapore is a testament to the potential of cross-border FinTech collaboration. This initiative enables real-time, low-cost remittances between the two countries, benefiting millions of workers, students, and businesses. As more nations look to replicate this model, India is well-positioned to support the development of a global digital payment network.

The success of this initiative could revolutionize international money transfers in a more efficient and cost-effective manner, creating a more interconnected world. Under the 'global digital public good initiative,' our vision is to support building a robust fast payment system globally, and connect the world through sustainable, equitable, and inclusive payment corridors and technologies. NPCI International Payments Limited, wholly own subsidiary of NPCI, is at the advance stage of extending UPI and RuPay card arrangements and its linkages with India in various other jurisdictions and entities, including those of UAE, Qatar, entities in France, Namibia, Peru, Bhutan, Sri Lanka, Mauritius, and Nepal.

**Emerging Technologies:**

Application Programming Interface (API) and Cloud Computing are some of those new technologies which are already being used by significant number of incumbent banks and FinTech entities. As we look ahead, several emerging technologies stand out as the driving forces of the future of FinTech. Artificial Intelligence (AI) and Machine Learning (ML) are already transforming the way financial services are delivered, offering personalized experiences, predictive analytics, and enhanced decision-making support capabilities. Distributed Ledger Technology (DLT), including blockchain, is reshaping the way we think about transparency, security, and trust in financial transactions.

Embedded finance, where financial services are seamlessly integrated into non-financial platforms, is expected to drive significant growth. Looking ahead, quantum computing, tokenization of financial assets, unified ledger, interconnection of financial ecosystems, launch of digital currency at population level and many more may represent the next frontier in financial innovation, promising further enhancement of efficiency, inclusivity and affordability of global finance. This may also help in unlocking the growth potential of the economy of a jurisdiction. In coming years, the FinTech Innovation will be particularly impactful in the B2B and B2B2X space, where small and medium-sized enterprises (SMEs) have a USD 5 trillion credit gap waiting to be addressed.

Let's now delve deeper into the transformative potential of AI/ML. The AI/ML technologies significantly increase operational efficiency by automating processes, enhancing accuracy, and ensuring consistency across financial services. AI-driven tools offer new, personalized financial products and services tailored to individual needs, leading to better client experiences. Moreover, AI's superior pattern recognition capabilities are transforming risk management by effectively managing large, unstructured data sets. This allows for improved fraud detection, money laundering prevention, and a deeper understanding of behavioral patterns for more accurate underwriting.

For example, AI-powered chatbots can quickly address customer inquiries about account balances or transaction history, freeing up human agents to handle more complex issues. Additionally, AI algorithms can monitor market fluctuations and identify potential risks to help financial institutions make informed decisions to protect their assets and investments. Similarly, in the areas of risk assessment for insurance, AI-driven underwriting models can analyze vast datasets, including social media activity, purchasing patterns, and even health data to generate a more accurate risk profile. This not only streamlines the underwriting process but also allows insurers to offer more personalized and competitively priced products.

As regards Quantum computing, though it is still in its early stages, it holds the potential to solve problems that are currently beyond the reach of classical computers. In finance, this could mean optimizing trading strategies, improving portfolio management, and enhancing encryption methods. As quantum technology matures, we can expect it to unlock new possibilities in FinTech, and pushing the boundaries of what is achievable. By using quantum algorithms, fintech applications can improve asset allocation strategies, risk management, investment portfolio optimization, and strengthening the financial decision-making.

**Risks, Opportunities, and Challenges linked with New Technologies:**

As is apparent, FinTech innovations bring out lot of benefits. However, new Technological innovations can create new vulnerabilities as also amplify existing risks to the banks, their customers and financial stability. These include- strategic risks by way of adjusting their business models to increasing digital environment as also potential partnership and competition with FinTech entities; potentially heightened reputational risks; larger number of factors testing operational resilience and operational risk; data governance issues, etc. The system wide risk may also be there due to greater interconnection nodes across financial entities, heightened degree of contagion in times of stress and amplification of procyclical behaviour.

As regards risks specific to AI/ML, they may inter-alia include challenges in data governance due to use of high volume, higher velocity and different variety of data, explainability of model outcomes, model biases and increased third party dependency leading to concentration risk. Similarly, tokenization and unified ledgers, though create new opportunities, they may also raise system wide risks due to greater interconnection of nodes across financial systems and concerns on single point of failure. Likewise, embedded finance may expose non-financial firms to financial risks and regulatory scrutiny.

The FinTech entities may also pose risks by way of market and business conduct including issues relating to customer grievance redressal, concerns on financial integrity, data privacy, operational resilience, enhanced cyber security and financial stability.

The challenge for regulators and industry leaders alike is to strike a balance between fostering innovation and managing these risks. This requires a robust governance framework that prioritizes customer-centricity, transparency, and accountability.

**As Steve Jobs said, "You have got to start with the customer experience and work backwards to the technology."** In the context of FinTech, this means placing the needs and interests of customers at the heart of innovation. A customer-centric approach, combined with strong governance and ethical standards, will be crucial in navigating the complex landscape of FinTech.

On the issue of good governance, it is glue to all systems and processes and essential for a sustainable FinTech ecosystem. It is expected to ensure accountability, fairness, and transparency across all operations. A robust governance framework is essential for managing risks, fostering trust, and maintaining the integrity of financial systems. It provides the necessary checks and balances that enable an organization to navigate the complexities of the digital age while aligning its operations with ethical standards and regulatory requirements.

Within this broader governance structure, data governance plays a critical role in safeguarding one of the most valuable assets i.e. data. To mitigate these risks, robust data governance arrangement and enhanced security protocols are critical. This requires ensuring that data is collected and used transparently, that informed consent is obtained from customers, and that data is stored securely. Moreover, companies should adopt privacy-by-design principles, embedding data protection measures into their systems from the start rather than as an afterthought. Further, both the incumbent banks and FinTech entities may mitigate specific technology related risks by enhancing controls and ensuring that human judgment remains a core part of the decision taking, risk management and governance arrangement.

**Need for Self-Regulation:**

One of the key regulatory challenges in the FinTech space is balancing the need for innovation with the managing risks. Achieving the balance is the key for allowing innovation that can provide benefits to the society without compromising the soundness of financial system. Thus, as I always mention, the sustainable financial world would not depend on how the regulators design the regulation for Fin Tech entities, it would largely depend on how the Fin Tech sector balances its own wants against the need of customer centricity and good governance. In this context, the role of Self-Regulatory Organizations (SROs) in the FinTech ecosystem cannot be overstated. These industry-led bodies may set standards, promote best practices, and monitor compliance within the sector. They may also act as a bridge between FinTech entities, regulators, and consumers and may pro-actively monitor the developments in the FinTech ecosystem. This may help in achieving the objectives of sustainable FinTech ecosystem. I am happy to note that RBI has yesterday provided its approval for creation of one SRO for Fintech.

**International Coordination:**

International coordination is critical to manage the risks associated with bigger FinTech entities having cross border operations, including Big Tech entities. The growing need of harmonized regulatory frameworks is essential to address challenges related to risk from scale, concentration risk, contagion risk, enhanced risks on data privacy, cybersecurity, and financial integrity. Collaboration between regulators across borders will be crucial in managing the risks associated with such entities.

**Financial Crime and Fraud:**

Now before concluding, I may like to touch upon something which is emerging as one of the big risks for the financial system i.e., Financial crime and fraud. Financial crime and fraud have emerged as a global menace, with over USD 3 trillion in illicit funds flowing through the financial system in 2023 alone, fueling crimes like drug trafficking, human trafficking, and terrorism. These crimes not only threaten the stability of financial systems but also have profound social impacts, exploiting vulnerable populations and undermining economic stability. In India, the situation is equally alarming, with cybercriminals siphoning off over ₹1,750 crore in the first four months of

2024. The increasing sophistication of fraud, often leveraging AI and cryptocurrencies, poses significant challenges. Criminals have adapted quickly to new defenses, utilizing technologies like deepfake fraud and human-operated ransomware attacks to perpetrate complex scams at minimal cost. The role of money mules further complicates these efforts, adding layers of difficulty in tracing illicit funds.

The need for robust measures to manage these risks has never been more critical. NPCI has been at the forefront of these efforts, implementing a comprehensive cybersecurity framework and leveraging advanced technologies like Machine Learning and Artificial Intelligence to detect and prevent fraud in real time. NPCI's initiatives, including the Real-time Fraud Risk Monitoring and Management (FRM) solution and public awareness campaigns, are pivotal in safeguarding the financial ecosystem. Further, amongst multiple efforts at different organisations, a pilot is also being run on identification of mule accounts by NPCI based on payment system data and banks are now being sensitized on the outcome of these models. In addition, India's regulatory framework, with acts like the Prevention of Money Laundering Act (PMLA) and the Indian Cyber Crime Coordination Centre, plays a crucial role in fortifying defenses against these threats. However, as financial crimes continue to evolve, it is essential to not only embrace new technologies but also strengthen cooperation and creating awareness among all stakeholders. This collaborative approach is necessary to protect the integrity of our financial systems.

**Conclusion:**

In conclusion, by leveraging technology, embracing alternative data, and adopting customer centric approach, the FinTech sector holds immense potential to transform the global financial landscape. However, realizing this potential will require a collective effort. As incumbent banks, FinTech industry leaders, regulators, and consumers, we must work together to build a financial system that is inclusive, efficient, responsive and resilient.

The journey ahead is both exciting and challenging. We are at a pivotal moment in the evolution of finance, and it is our responsibility to ensure that the entry barrier to financial services is further reduced, financial services are more accessible, responsible innovations lead the economic growth, and risks are managed in a way that protects the stability of the financial system.

**Let me leave you with a thought from Peter Drucker,** who once said, **"The best way to predict the future is to create it."** The decisions we make today, the innovations we embrace, and the risks we manage will shape the future of finance for generations to come.

Thanks.

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