Fintech Future: The Digital DNA of Finance

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Fintech Future: The Digital DNA of Finance by Sanjay Phadke is crafted to address a broad and diverse audience, aiming to demystify the complex interplay between finance and technology, and was published on January 29, 2021. With the author's extensive 20 years of experience in both financial services and technology, including roles with global leaders like JPMorgan and HSBC, the book serves as a connecting bridge between these two rapidly evolving domains. The author has recognized a widening gap between business and technology, especially as technology accelerated, and thus, felt a strong need to help professionals from both sides understand each other better, communicate and collaborate.

The book's appeal extends from finance and technology enthusiasts to lay readers, largely due to its commitment to avoiding excessive jargon and lucidly explaining complex concepts, starting with the fundamental idea of money itself. It provides a bird's eye view of the profound changes occurring in the financial world and their implications for banks, fintech, Tech Fin companies and the average customer, making it a must-read for those keen on understanding the fintech space, particularly in the context of India’s digital future.

Fintech Future offers a sweeping yet detail-rich analysis of the converging paths of technology and finance. It chronicles the enthralling journey of finance from its historical roots to a future where it is deeply intertwined with technology, speaking new languages such as artificial intelligence (AI), blockchain, and crypto.

Fintech Future Book is structured into four parts, reflecting the evolutionary stages of financial technology as Fintech 1.0, 2.0, 3.0 and 4.0. This allows the readers to understand the past, present and the future of the finance in a cohesive narrative.

Part 1: The Evolution of Money and the Digital Shift

The book begins with an exploration of money as a foundational concept, as ancient as humanity itself, initially as a means of exchange to enable collaboration among people, replacing the tedious barter system. It traces money's historical forms, from cowrie shells 10,000 years ago, to metallic coins (2,000 years ago), and paper money (7th century China). The advent of central banks around 100 years ago solidified their role as sole currency issuers and gatekeepers of finance. A pivotal shift occurred when banknotes ceased to be backed by physical assets like gold, becoming mere promises or claims on value, marking their transition to a phygital (physical and digital hybrid) state. Today, physical money constitutes less than 5% of global monies, with the rest being digital data stored in computers. This inherent digital nature of money made it ripe for technological disruption.

The book highlights how technology fundamentally changed the interaction with money. Digital money, being a piece of software code or bits and bytes, resembling digital music or images, which can travel freely around the world at the stroke of a button or a verbal command. This transformation introduced notions of cybersecurity and the critical importance of digital trust. The book moves into the core problem that despite the world being awash with money (total supply doubling to $75 trillion in 10 years), access to loans for small businesses or marginal workers remains difficult, leading to increasing inequality. The traditional financial system, based on mistrust and requiring physical

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identity proofs and collateral, inadvertently discriminates against those without data or identity, essentially robbing the poor and paying the rich. The book argues that technology, particularly Fintech, holds the potential to unshackle money stored in banks or vaults and channel it into fountains of society, fostering a more equitable distribution of capital and democratizing access to capital.

Part 2: Fintech 1.0: Technology Enters Financial Services

The book details how technology first entered financial services, shifting activities from physical bank branches from bricks and mortar to digital platforms of click and order. This digitalization expanded market reach, enabling even migrant workers to access micro insurance and transfer money via mobile apps, and small businesses to secure loans from peer-to-peer lending schemes. This era saw the rise of digital-only banks like Monzo, N26, and MyBank, as well as neobanks such as Open and NiYo. The author emphasizes that consumers, accustomed to intuitive technology from Apple, Amazon, and Uber, now expect real-time financial services, a demand that traditional banks, burdened by legacy IT systems, struggle to meet. This created a "huge vacuum in finance" for innovative fintech solutions.

Mega technology companies like MASAA (Microsoft, Apple, SoftBank, Amazon, and Alibaba) are increasingly entering the financial sector. These companies set higher consumer expectations, leveraging their extensive user data and technological prowess. Amazon and Alibaba, through their marketplace models, see both merchant and consumer sides of transactions, giving them rich data for lending and payments. Alibaba's Ant Financial, operating Alipay and Yu'e Bao, is one among the world's largest valued fintech, worth over $150 billion, demonstrating how tech giants are redefining financial services. Microsoft, with its Azure cloud, focuses on empowering banks and fintechs as a collaborator. Apple's Apple Pay and Apple Card aim to tie users more strongly to its ecosystem. SoftBank's Vision Fund actively invests in disruptive technologies and fintech startups globally. Even Facebook has entered the arena with its Libra digital currency initiative.

Part 3: Fintech 2.0: Indian Digital Renaissance

The narrative then shifts to Fintech 2.0, focusing on India's digital renaissance. India is presented as a country undergoing a huge transformation to digitize cash, banks, financial infrastructure, and government, with the potential to leapfrog a few generations in technology. This is particularly relevant given India's large unbanked population as two out of three of whom have mobiles and its young, tech-savvy population. Central to India's transformation is the JAM trinity (Jan Dhan account + Aadhaar + Mobile), which has sparked a revolution.

Aadhaar (UID) is highlighted as the largest digital biometric identity programme in the world, aiming to replace numerous disparate government IDs. Its implementation has significantly reduced leakages in government schemes and enabled billions of Aadhaar-enabled payment services (AEPS) transactions.

Unified Payment Interface is described as a post-Internet product. UPI has revolutionized payments in India, allowing multiple bank accounts to be managed via a single mobile application, enabling seamless fund transfers and merchant payments. Its growth has been mind-boggling, with a vast majority of transactions contributed by non-banks like Google Pay, PhonePe, and Paytm.

Goods and Services Tax is presented as the backbone for the explosive transformation in the B2B world of financial services. It mandates digitization of business sales and purchases, using an API-based ecosystem and invoice matching to promote transparency and formalize the economy. This accurate, authenticated data can fundamentally

reform corporate credit systems, leading to more automated lending decisions and cheaper credit, crucial for India's goal of becoming a $10 trillion by 2030. The book also introduces the Data Empowerment and Protection Architecture (DEPA), an innovation coordinated by the RBI, which empowers individuals and small businesses to control and share their data for better services, potentially solving the data wars and enabling true equality of opportunity. India's approach of government-led public digital infrastructure, unlike the private ecosystem models of the USA and China, is portrayed as a marvel of technology.

Part 4: Fintech 3.0 – The New ABC of Fintech

This section dives into the cutting-edge technologies shaping the future of finance:

Artificial Intelligence (AI), Algorithms, Anomaly, and Autonomous: AI, described as the new electricity, is no longer mere hype but a robust technology poised to bring efficiency improvements in a large range of tasks by enabling machines to learn from itself. The book differentiates between narrow AI and Artificial General Intelligence (AGI), which aims to mimic the human brain's capabilities. It explains Machine Learning (ML) types like supervised, unsupervised, and reinforcement learning, and Deep Learning (DL), which mimics neural networks for unstructured data. A key financial application discussed is anomaly detection, crucial for fraud monitoring and large-scale automated processing in high-throughput systems, as demonstrated by Danske Bank's success in reducing false positives in fraud detection using AI. The book also touches upon the critical issue of bias in AI, stemming from training data or statistical skews by the 2008 GFC, and stresses the need for human judgment and ethical standards in AI deployment.

Big Data, Blockchain, and Bitcoin: Big Data signifies an exponential explosion in data from digital devices, requiring new approaches to manage unstructured information images, voice, videos and serving as the raw material for AI. Its use in fraud monitoring and security is principal. Then introduces Bitcoin, aftermath of the 2008 financial crisis as a decentralized, peer-to-peer digital currency. Its underlying technology, blockchain, creates a distributed ledger and establishes digital trust without central authority. Bitcoin's volatile journey, from near-zero to $20,000 and back, is detailed, highlighting its re-emergence as digital gold. The book contrasts regulatory stances in the USA, China and India regarding cryptocurrencies, noting India's restrictive approach. While Bitcoin's bubble burst, blockchain's underlying promise gained prominence, seen as a mechanism to establish trust in global supply chains and potentially revolutionize various industries. Facebook's Libra project is presented as a middle-of-road hybrid solution, seeking stability by backing its digital currency with existing financial assets.

Cloud, Crypto (Ethereum, Smart Contracts) and Cybersecurity: Cloud computing is presented as a re-organization of old technology for new times, moving IT infrastructure off-premise. Its benefits include economies of scale, innovation for providers, and reduced capital expenditure for users, shifting to operational expenditure (opex). This pay-per-use model, mirroring the sharing economy from Uber and Airbnb, enables nimble new-age companies to scale rapidly. The book notes Amazon's dominance with AWS and the ongoing cloud wars with Microsoft and Google. While banks have been laggards in cloud adoption, initiatives like India's GST rollout have pushed Indian companies towards cloud infrastructure. Cybersecurity is identified as the biggest risk in the increasingly digital world, escalating into a tool in geopolitics. Major incidents like the WannaCry ransomware attack, Capital One data breach (on AWS), and Equifax data breach underscore the vulnerability of even secure systems. The book discusses the constant threat from malicious hackers, the role of protocols like OWASP, and the growing internal threats. This highlights the

growing importance of data localization laws (e.g., EU GDPR, Russia, China, India), as governments seek to regain control over digital data from tech giants. The rise of Internet of Things (IOT) devices is depicted as enabling instant data collection and partial processing for personalized services and invisible finance. Finally, Quantum Computing is introduced as a future supercomputer and code-breaker that could process information at unimaginable speeds, but also act as a new-challenges to existing cybersecurity protocols by breaking encryption.

Part 5: Fintech 4.0 – All Finance Becomes Fintech

This concluding section envisions Fintech 4.0 as the complete merging of finance into technology, making it an invisible and ubiquitous presence embedded in daily life stating Finance as a Service - FaaS. This evolution progresses from digital wallets on mobiles to edge devices like IOT sensors. The author illustrates this with futuristic scenarios, such as paying for a ride with a wallet funded by carbon dioxide consumed by a tree or autonomous cars becoming public utilities with usage-based payments linked to digital wallets. These scenarios highlight three key transformations: linking the source of money to its use across the supply chain, shifting from upfront capital expenditures (capex) to pay-as-you-go operational expenditures (opex), and devices becoming economic entities with usage charges.

The book indicates that in this new world, traditional banks dominance is no longer guaranteed. They may evolve into creators of algorithms or service providers for automated products, but they must fundamentally transform into technology companies to be able to beat them at their own game. The financial regulators, while encouraging innovation, face the crucial role of ensuring systemic stability and individual data privacy, acknowledging the new elements in the risk-benefit balance introduced by big techs.

The book draws parallels with the disruption of the retail and telecommunications industries by technology, suggesting banks face a similar, drastic change in DNA, similar to a heart transplant. The potential upside for consumers and small businesses is tremendous, as fintech and big tech can overcome the inability of the banks to be able to see every person as a valued customer. The future of finance, as depicted, will be pervasive, contracted, tailored, intelligent and embedded, making financial transactions as effortless as interacting with a digital assistant or smart devices.

The book concludes by advocating a new paradigm—Universal Credit Access Limit (UCAL)—in which every newborn receives a basic account with state-accrued income, enabling access to capital for education or business, contrasting it with Universal Basic Income (UBI) which could dull productivity and creativity. This scheme, combined with India's digital infrastructure, holds the potential to democratize access to capital and drive explosive economic growth, making India a true superpower. The author emphasizes that while fintech offers immense power, it must also bear greater responsibility to uphold the traditional values of banking trust, ensuring sustainable contributions to civilization by unblocking the arteries of finance. The ultimate vision is a world where money will be increasingly behind the scene, as contextual infrastructure—almost like magic enabled by advanced technology.

In conclusion, "Fintech Future" is not just a descriptive interpretation but an insightful commentary on the profound shifts in finance, driven by technological advancements, with a keen focus on India's unique position and potential in this global transformation. The author's blend of financial and technological expertise allows for the discussion of both opportunities and challenges, making it a valuable read for anyone interested in the evolving landscape of digital money and its societal implications.