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GIST OF YOJANA MAGAZINE

Important Articles Simplified!

- The Fintech Revolution
- Artificial Intelligence in Financial Sector
- Digital Currency
- Startups In Space Tech
- Phygital Banking

The Gist of Yojana Magazine | April 2022

Index

1. "The Fintech Revolution"

Relevance

GS 3: Capital Market, IT & Computers, Cyber Security, Scientific Innovations & Discoveries

Introduction

- The landscape of banking and financial sector has undergone a phenomenal transformation since **2008 Global Financial Crisis (GFC),** owing to financial technology firms, popularly known as **'FinTechs'.**
- Both as **creative disruptors and facilitators,** FinTechs have contributed to the **modern banking** and financial sector through various channels including cost optimisation, better customer service and **financial inclusion.**

What is Fintech?

- FinTech is generally described as an industry that uses **technology** to make financial systems and the delivery of financial services more efficient.
- It is **"technologically enabled financial innovation** that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services".

Key Enabling Technologies used by FinTechs

API (Application Programming Interface)

- APIs comprise a set of rules and specifications that software programmes use to communicate with each other. They allow new applications to be built on top of others.

Cloud Computing

- The use of an online network ('cloud') of hosting processors to increase the scale and flexibility of computing capacity, generating cost savings.

Biometrics

- The study of distinctive and measurable human characteristics that can be used to categorize and identify individuals.

DLT (Distributed Ledger Technology)

- A digital system for recording the transaction of assets in which details are recorded in multiple places at the same time.

Big Data

- Voluminous amounts of structured or unstructured data that can be generated, analysed and utilized by digital tools and information systems.

AI (Artificial Intelligence) & ML (Machine Learning)

- IT systems that can perform functions that would otherwise require human capabilities. ML entails computers learning from data without human intervention.

How FinTechs has been changing the banking scenario in the country?

- FinTechs have played an important role in unbundling banking into core functions of settling payments, performing maturity transformation, sharing risk and allocating capital.
- The information and telecommunications (IT) revolution is regarded as the fifth **'Technological Revolution'** driving growth, and FinTech is at the helm of this creative disruption.
- With time the scope of operations of FinTechs has also broadened, moving from crypto assets to payments, insurance, stocks, bonds, peer to peer lending, robo-advisors, regtech and suptech.
- FinTech has the potential to fundamentally transform the financial landscape, provide consumers with a greater variety of financial products at competitive prices, and help financial institutions become more efficient.

Safety Measures

- As a facilitative regulator, **the Reserve Bank** has broadened the scope of priority sector lending to include start-ups.
- In order to overcome internet connectivity problems as major hurdle for digital payments in rural areas and encourage innovations that enable offline digital transactions, the **Reserve Bank** has announced a pilot scheme under which, authorised **Payment System Operators (PSOs)** including banks and non-banks, will be able to provide offline payment solutions using cards, wallets or mobile devices for remote or proximity payments.
- Over the years, the Reserve Bank has prioritised security measures for digital payments such as the requirement of Additional Factor of Authentication and online alerts for every transaction.
- These measures have significantly increased customer confidence and safety leading to increased adoption of digital payments.

Way Forward

- Going ahead, FinTechs need to prioritise regulatory compliance and the management of cyber risks. They should design and implement cyber-risk prevention frameworks and regularly conduct penetration tests.
- The rapid and transformational changes brought on by FinTech need to be monitored and evaluated so that regulators and society can keep up with the underlying technological and entrepreneurial flux.

2. "Artificial Intelligence in Financial Sector"

Relevance
"GS 3: IT & Computers"

Introduction

- Artificial Intelligence is the future of **Finance & banking** as it brings the power of advanced **data analytics** to combat **fraudulent transactions** and improve compliance.
- **AI algorithm** accomplishes anti-money laundering activities in few seconds, which otherwise take hours and days.
- AI also enables banks to manage huge volumes of data at record speed to derive valuable insights from it.

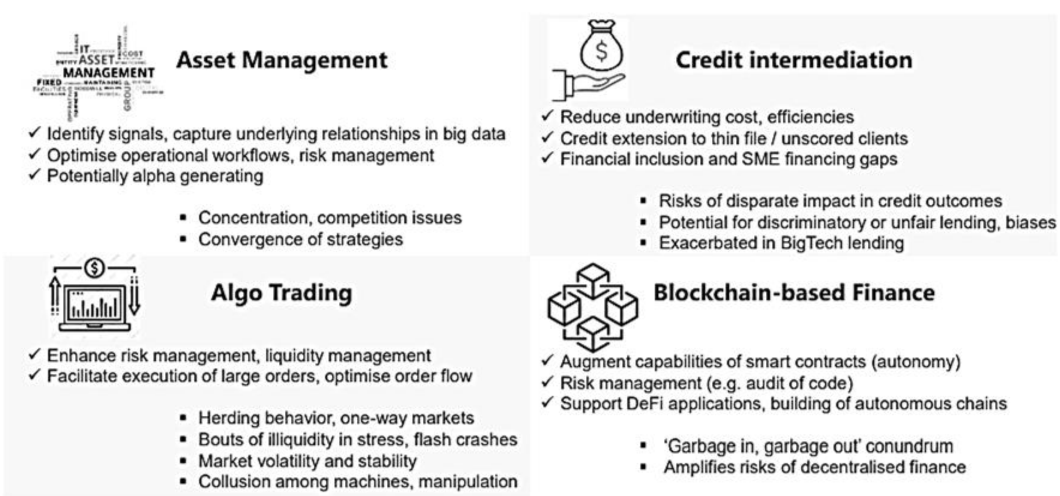
What is Artificial Intelligence(AI)?

- Artificial intelligence (AI) systems are machine-based systems with varying levels of autonomy that can,
- for a given set of **human-defined objectives, make predictions, recommendations or decisions.**
- AI techniques are increasingly using massive amounts of **alternative data sources and data analytics** referred
- to as 'big data'.
- Such data feed machine learning (ML) models which use such data to learn and improve predictability and performance automatically through experience and data, without being programmed to do so by humans.

AI & Finance Sector

- AI techniques can be applied in asset management and the **buy-side activity** of the market for asset allocation and stock selection.
- When used in trading, AI can add a layer of complexity to conventional algorithmic trading, as the algorithms learn from data inputs and dynamically evolve into **computer-programmed algos,** able to identify and execute trades without any human intervention.

Figure 2. Impact of AI on business models and activity in the financial sector



Source: OECD Staff.

- AI techniques could exacerbate illegal practices in trading aiming to manipulate the markets, and make it more difficult for supervisors to identify such practices if collusion among machines is in place.
- AI models in lending could reduce the cost of credit underwriting and facilitate the extension of credit to **'thin file' clients,** potentially promoting **financial inclusion.**
- The use of AI techniques in **blockchain-based finance** could enhance the potential efficiency gains in **DLT-based systems** and augment the capabilities of smart contracts.
- In the future, AI could support decentralised applications in **decentralised finance ('DeFi').**

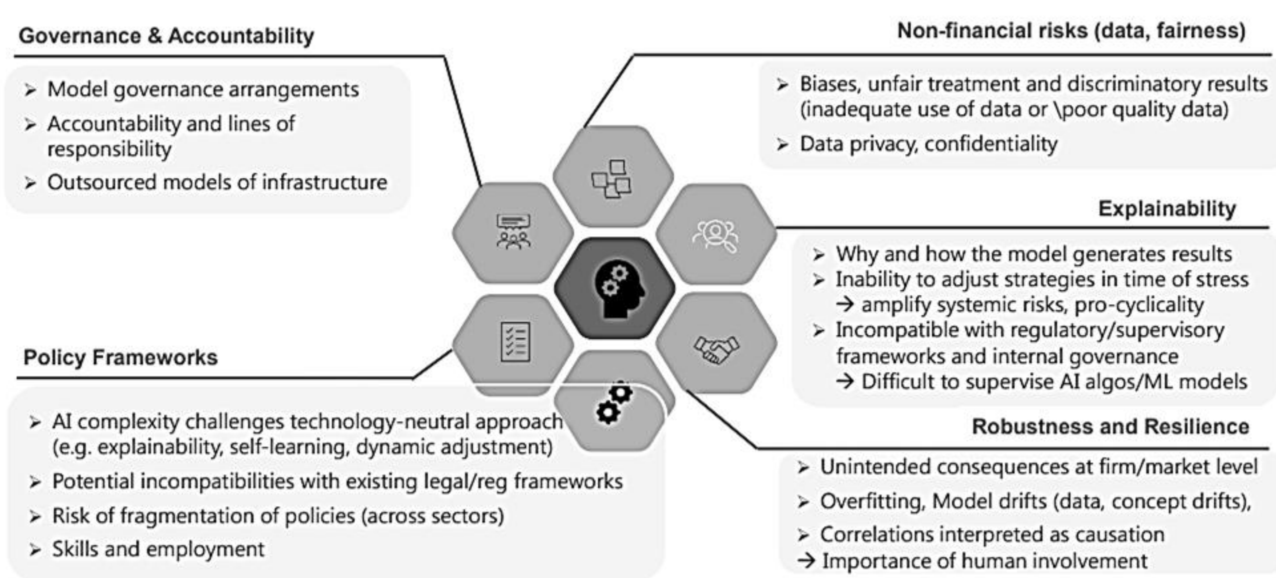
Indian Banking and AI

- Harnessing **cognitive technology** with Artificial Intelligence (AI) brings the advantage of **digitization to banks** and helps them meet the competition posed by **FinTech players.**
- In fact, about 32% of financial service providers in India are already using AI technologies like **Predictive Analytics, Voice Recognition, among others,** according to a joint research conducted by the National Business Research Institute and Narrative Science.
- Features such as **AI bots, digital payment advisers and biometric fraud detection mechanisms** lead to higher quality of services to a wider customer base. All this translates to **increased revenue, reduced costs and boost in profits.**

Potential Risks of AI in the Finance Sector

- AI applications in finance may create or intensify **financial and non-financial risks,** and give rise to **potential**
- **financial consumer and investor protection considerations.**
- The use of AI amplifies risks that could affect a financial institution's safety and soundness, given the lack of explainability or interpretability of AI model processes, with potential for **pro-cyclicality and systemic risk in the markets.**
- The difficulty in understanding how the model generates results could create possible incompatibilities with existing financial supervision and **internal governance frameworks**, while it may even challenge the technology-neutral approach to policymaking.

Figure 1. Relevant issues and risks stemming from the deployment of AI in finance



Source: OECD staff illustration.

- AI may present particular risks of consumer protection, such as risks of biased, unfair or discriminatory consumer results, or data management and usage concerns.
- While many of the potential risks associated with AI in finance are not unique to AI, the use of AI could amplify such vulnerabilities given the extent of complexity of the techniques employed, the dynamic adaptability of **AI-based models** and their level of autonomy for the most advanced AI applications.

Conclusion

Potential risks of AI should be continually assessed and managed to ensure that AI systems function in a robust and resilient way. In fact, AI in finance should be seen as a technology that augments human capabilities instead of replacing them.

3. "Digital Currency"

Relevance

"GS 3: IT & Computers, Mobilization of Resources, Banking Sector & NBFCs, Statutory Bodies"

Introduction

- The **Reserve Bank of India (RBI)** will introduce ***digital currency*** in this financial year.
- The use of **physical cash** in transactions has been on the decline in recent years, a trend further reinforced by the ongoing **Covid19 pandemic.**
- While interest in **CBDCs** is near-universal now, very few countries have reached even the pilot stage of launching their CBDCs.
- A **2021 BIS survey** of central banks found that **86%** were actively researching the potential for CBDCs, **60%** were experimenting with the technology and **14%** were deploying pilot projects.

What is CBDC?

- Central Bank Digital Currency(CBDC) is the legal tender issued by a central bank in a digital form.
- CBDC is the same as fiat currency issued by a central bank but takes a different form than paper (or polymer).
- It is sovereign currency in an electronic form and it would appear as liability (currency in circulation) on a central bank's balance sheet.
- The underlying technology, form and use of a CBDC can be moulded for specific requirements.
- CBDCs should be exchangeable at par with cash.

What is the Reserve Bank of India – Digital Payments Index (RBI-DPI)?

- The Reserve Bank had announced a **composite Reserve Bank of India – Digital Payments Index (RBI-DPI)** with **March 2018** as base to capture the extent of digitisation of payments across the country.
- The **RBI-DPI Index** continues to demonstrate significant growth in adoption and deepening of digital payments across the country.

From where did the idea of "Central Bank Digital Currencies" (CBDC) come from?

- The idea of "Central Bank Digital Currencies" (CBDC) is not a recent development.
- Some attribute the origins of CBDCs to **Nobel laureate James Tobin,** an American economist, who in **1980s** suggested that Federal Reserve Banks in the United States could make available to the public a widely accessible **'medium with the convenience of deposits and the safety of currency.'**
- It is only in the last decade, however, that the concept of digital currency has been widely discussed by central banks, economists & governments.
- Except as currency notes, all other use of paper in the modern financial system, be it as **bonds, securities, transactions, communications, correspondences or messaging** – has now been replaced by their corresponding digital and electronic versions.

What a CBDC is not?

- CBDC is a digital or virtual currency but it is not comparable to the **private virtual currencies** that have mushroomed over the last decade.
- Private virtual currencies sit at substantial odds to the historical concept of money.
- They are not **commodities** or claims on commodities as they have no intrinsic value; some claims that they are akin to **gold** clearly seem opportunistic.
- They do not represent any person's debt or liabilities.
- They are not money (certainly not **Currency**) as the word has come to be understood historically.

What is the need for a CBDC?

- Central banks, faced with dwindling usage of paper currency, seek to popularize a more acceptable electronic form of currency **(like Sweden).**
- Jurisdictions with significant physical cash usage seeking to make issuance more efficient (**like Denmark, Germany, Japan or even the US).**
- Central banks seek to meet the public's need for digital currencies, manifested in the increasing use of private virtual currencies, and thereby avoid the more damaging consequences of such private currencies.

CBDCs Advantages over other traditional methods

- Payments using CBDCs are final and thus reduce settlement risk in the financial system. Imagine a UPI system where CBDC is transacted instead of bank balances, as if cash is handed over – the need for interbank settlement disappears.
- CBDCs would also potentially enable a more real-time and cost-effective globalization of payment systems. It is conceivable for an Indian importer to pay its American exporter on a real time basis in digital Dollars, without the need of an intermediary.
- This transaction would be final, as if cash dollars are handed over, and would not even require that the US Federal Reserve system is open for settlement.
- Time zone difference would no longer matter in currency settlements – there would be no **'Herstatt'** risk.

Conclusion

The introduction of CBDC has the potential to provide significant benefits, such as reduced dependency on cash, higher seigniorage due to lower transaction costs, and reduced settlement risk. The introduction of CBDC would possibly lead to a more robust, efficient, trusted, regulated and legal tender-based payments option. There are associated risks, no doubt, but they need to be carefully evaluated against the potential benefits.

4. "Startups In Space Tech"

Relevance

"GS 3: Space Technology"

Context

- India is entering into an era when it is going to play a pivotal role in **space technology** with India already having taken a lead in the world as far as space technology is concerned.
- **Twenty-five years** from here would be crucial for the country as the ascent of India as a **frontline nation of the world** has already started through the **medium of space.**

Key Steps by Government

- The Ministry of Defence (MoD) has taken steps to attract new startups in the field of Defence and Space.
- Atal Innovation Mission (AIM), **Technology Development Fund (TDF) Scheme, Atal Tinkering Lab (ATL) Scheme, ANIC-ARISE Scheme, Atal Incubation Centre Scheme(AIM) are some key schemes for promoting startups in space tech.**
- The Government on **24th June 2020** approved far-reaching reforms in the Space Sector aimed at boosting private sector participation in the entire range of space activities.

What is Technology Development Fund (TDF) Scheme?

- It is a program of **MoD executed by DRDO** under the Make in India initiative.
- The scheme was approved in **September 2016.**
- The Government has approved **TDF Scheme** to encourage industries, especially **MSMEs** and Startups to develop various defence technologies.
- The scheme operates in **Grants-in-Aid Mode.**

What is the Indian National Space Promotion and Authorization Centre (IN-SPACe)?

- **Indian National Space Promotion and Authorization Centre (IN-SPACe)** is constituted as an autonomous agency in **the Department of Space (DoS)** for enabling space activities, as well as, usage of Department of Space owned facilities by **Non-Governmental Private Entities (NGPEs)** and to permit, regulate, promote, hand-hold, monitor and supervise Space Activities of NGPEs in India.

Atal Tinkering Lab (ATL) Scheme & DRDO

- An Atal Tinkering Lab provides **activity-based learning** in the identified schools across the country where young minds can give shape to their ideas for societal problems.
- It also fosters **entrepreneurship and innovation** to acquire a problem solving, tinkering and innovative mindset.
- Department of **Space, ISRO adopted 100 Atal Tinkering Labs (ATLs)** across the country to promote education in the field of **STEM, Space education and Space technology-related** innovations for school students.

Atal Incubation Centre Scheme(AIM)

- It is a flagship initiative to promote the culture of innovation and entrepreneurship in India.
- It is an umbrella structure that has been mandated to promote innovation and revolutionize the entrepreneurial ecosystem in the country.
- AIM has supported more than **15 startups** working in **Space Tech** and related industries across India.
- The focus areas for these startups are **UAV, Drone and Surveillance Equipment, Aero tech, Air Taxi, Space debris tracking and monitoring service, and space education** among others.

What is ANIC-ARISE Scheme?

- The Aatmanirbhar Bharat **ARISE-ANIC** program is a national initiative to promote research & innovation and increase the competitiveness of Indian startups and MSMEs.
- ANIC-ARISE program of AIM in association with the Indian Space Research Organization (ISRO) launched challenge statements in the below focus areas:
  a. **Propulsion – Green propellants, Electric propulsion, advanced air-breathing.**
  b. **Geo-spatial information using Machine Learning /Artificial Intelligence (ML/AI).**
  c. **Application of robotics, Augmented Reality/Virtual Reality (AR/VR) techniques.**

Conclusion

With the unlocking of space technology, times to come would have space economy, space collaboration, space diplomacy and space conquest.

5. "Phygital Banking"

Relevance

"GS 3: Mobilization of Resources, Growth & Development"

Introduction

- Around **90 per cent** of the banking transactions in India have now started moving into the non-branch channel such as **internet banking, mobile banking or ATM.**
- However, **physical branches** will continue to be relevant as a large percentage of customers are more comfortable doing **transactions at branches.**
- There is still a significant population who will be more comfortable in one-to-one dealings rather than only digital.
- Therefore, this world of **physical plus digital or phygital** will be the way forward.

What is Phygital Banking?

- **Phygital or Hybrid model** is a combination of the phrases physical and digital banking.
- It is a service where **traditional and digital models co-exist,** and customers get the best of both worlds.
- It gives the **personalization, relationship and in-person experience** of physical branch touchpoint and the **efficiency, flexibility and convenience** of digital services.
- It's a **disruptive model** that utilises both human labour and innovative technology.

Advantages of going Phygital

Increased Customer Value and Cost Reduction

- The Phygital mode of lending has reduced costs, and it delivers increased value to customers.
- By automating repetitive backend & frontend tasks and reducing the processing time for paperwork, phygital model negates the need to employ a large workforce or invest in expensive real estate.

Improved Customer Experiences through Omnichannel

- Phygital set-ups are the most viable solution for patrons who wish to seamlessly change their choice of engagement touchpoints.
- They have the option to either use **smartphone, tablet, kiosk, digital wall, or touch-tables** installed in the branch to gain product knowledge, or they can simply talk to one of the trained staff to discuss their doubts directly.

Anticipating Valuable Customer Needs

- Innovative technologies such as **AI, ML, and data analytics** segregate a patron's individualized data on a secure database.
- This provides keen insights and enables **phygital NBFCs** to anticipate what that customer might need in the future and deliver personalized products and services directly to them.

Securing a Wider Market Share

- The world is at a juncture where there are discussions surrounding open banking regulations to help banks & NBFCs, become more transparent and secure (data-wise).
- Phygital can build a connected ecosystem and work as a facilitator between the urban and the rural, where digital is still not widely accepted.

Improved Relationships between NBFCs and Customers

- Phygital ensures the existence and availability of branches while leveraging **FinTech solutions** and self-service platforms at every touchpoint, building trust and making the entire banking journey hassle-free and satisfactory for patrons.

How did Phygital become a new banking frontier for the NBFC sector?

- NBFCs have taken great initiatives in the last couple of years, making the function more agile and mobile for individuals.
- With the help of advanced technologies like **AI, Automation and Chatbots,** the NBFC sector has grown and reduced the dependency on **physical kiosks.**
- Adoption of advanced technologies have reduced the cost of NBFC companies in customer acquisition, servicing existing customers, or de-risking the portfolio while trying to overcome the increasing formal **credit penetration i**n a growing economy.
- With the new hybrid model, the key for smart banking will be to find the right balance to create an agile business & engaged customer, as an accomplishment to the great learnings of **2020.**
- Enabling agricultural NBFCs to access low-cost capital and deploy a **'phygital' (physical + digital)** model for achieving better long-term digital outcomes.

Way Forward

- In the post-Covid era, building resilient systems and encouraging business models that could be change-makers of the future are crucial.
- **Fintech players**, alongside the **conventional financial services providers**, hold the key to transforming the way the economy functions and increasing access to credit for our industry.

Conclusion

As we tread ahead on the growth path after the pandemic, India's rightful place in the global economy will be built on a sound, stable and resilient financial system. Banks and NBFCs, being the power engines of our economy, must undergo continual metamorphosis to accelerate this transformational journey.