CAFRAL
CENTRE FOR ADVANCED FINANCIAL RESEARCH AND LEARNING
Promoted by Reserve Bank of India

Program on Digital Banking was held on August 23-24, 2017, Mumbai

Takeaways from program on Digital Banking on August 23-24, 2017

The focus of the program was on end to end digitisation in banks. Each session was structured with specific targeted learning. A brief background note of the program is placed here before listing the session wise takeaways.

Background:

The program takes a 360 degree look at the digital developments in commercial banks and the latest initiatives taken by major banks. Speakers were senior bankers involved in execution of the digital initiatives. There was also a session on Agile way of dealing with digital initiatives in banks by Paul McNamara from BCG with exercises. Saurabh Tripathi & Pranay Mehrotra of BCG were the knowledge partners for putting together the program which covered all the trends in digital developments in banks and NBFCs. There were also five Fintechs who discussed their innovative mechanisms of customer interaction, acquisition, credit delivery and monitoring, which can work in synergistic partnership with banks namely, KrpC, Cropin, Flexiloans, Atyati, and Technospire.

Following 6 themes were tackled through presentations by various practioners of digitisation:

1. **End to end digitization to enhance employee productivity, reduce costs, improve customer experience**
    a. Structured approach to digitizing customer journeys – from sales to service
    b. Digitizing sales journeys - enabling sales teams and RMs with digital tools
    c. Capturing the power of digital to transform employee journeys (e.g. performance management, postings and talent management)
    d. How to capture value from new technologies – robotics, machine learning, AI
2. **New ways of working in the digital age**
    a. Driving Agile delivery: Moving from long delivery cycles to short sprints
    b. Role of leadership to drive digital transformation
    c. "Digital academies" to embed core digital capabilities within banks and sustain change
3. **Analytics and Advanced Data**
    a. Analytics to power sales across customer segments – from new acquisition to cross-sell
    b. Leveraging analytics for credit decision making, loan monitoring
    c. Creating analytics capability in the Bank (technology, organization, processes)
    d. "Big data lake" and data warehouse: creating right back bone for data excellence
4. **Digital to build low cost banking models**
    a. Enabling financial inclusion
    b. Leveraging digital to reduce costs of delivery
    c. Approach to driving sustained adoption by customers of digital channels

5. **Technology : Building the backbone of a digitally driven Bank**
    a. How to capture value from IT to enable digital transformation (e.g. building of service oriented architecture, approach to decide and efficiently managing IT priorities, vendor collaboration)
    b. Cyber-security – protecting against risks in the digital age
6. **Next generation digital**
    a. How to work with Fintechs
    b. Approach to API and Open Banking
    c. Building digital sales and marketing capabilities
    d. Digital **trade finance** and integrated digital front end **for corporate clients** combining **cash, trade and FX**

Some of the most important and relevant subjects covered included creating digital ready IT architecture, digital marketing, API banking, next generation digital technology, cyber security issues and new digital payment initiatives etc. Takeaways from these important sessions that can help in practical digital transformation efforts of banks are summarized below.

1) End to end digitising customer journeys at SBI: Ms Manju Agarwal, Deputy Managing Director

i) **Internal Customer Journeys of Employees**, which are being digitised by SBI, include;

a. Salary slip
b. Claims for various expenses
c. Leave application/ tour program
d. KRAs
e. performance appraisal
f. Internal communications
g. How we accord approvals/ sanctions
h. How we conduct meetings

ii) **External Customer Journeys**, which are being digitised by SBI, include;

- Balance enquiry
- Statement of account
- Ordering cheque book
- Blocking Debit Card
- Seeding of mobile number
- Seeding of Aadhaar number
- P2P transfers
- Creation of RD/FD

- Bill payment
- Top ups/Recharges
- Tax payment
- Payment of fees
- Ticket booking - airline, train, bus, etc.
- Online purchases
- Change PIN/PIN generation

iii) Purpose of Digitising Customer Journeys

- Customer convenience
- Operational efficiency for bank

iv) Major digital trends, which are impacting banks, include;

Customer empowerment: Globally banks are being forced to **open their platforms**. **Open banking will increase competition & empower consumers.** Fintechs are nibbling into Banks' domain, be it payment, lending or account aggregation. New technologies (IoT, RPA, Analytics etc.) will lead to **product and service innovation**. Big data technology is becoming mainstream. Analytics and data will change business model.

v) **Banks need to transform the current culture to meet competition and pursue innovation.**

From traditional banking culture	.....to digital culture
Risk Averse	Experimentation
Channel/Product Centric	Customer centric
Rigid	Collaboration
Siloed	Agility /Third party suppliers
Focused on running the business to	Innovations

vi) Priorities for Bank in digital for value creation:

Establish Innovation Lab Robotics & Automation	Develop an Analytics platform	Sales Tools to Relationship Managers
Partner with FinTechs - Investment/ Collaboration	Leverage data to customise products/processes	Merchant eco system for proximity & non proximity payments
Redefining branches	Leverage data to create new business models for lending	Mass Market wealth Management
Digitize Contact Centre	HR: Performance Management & Posting tools	Some Important Journeys

vii) Investing in Innovation to build the Bank of the Future

Invest in an Innovation lab to ensure development of new products on continuous basis and improvement in processes, operations and service levels.

It should be "outcome focused" and "customer centric" innovation hub

Key considerations for the innovation lab

Assess the development to be done and number of people required

- A state of the art lab facility to be developed and managed
- Hire from the market for the required skillsets (design, UI/UX, mobility, social media etc.)
- Encourage Flat organization structure in the lab
- Promote a culture where failures are acceptable

Research-**explore key trends & identify consumer behaviour & needs**

Innovate-Ideate & innovate to address consumer demands

Design-Design working prototypes of customer focused products and services

Sandbox-test the designed products & services for customer acceptance & market adoption

viii) Collaborating and partnering with Fintechs

Through the innovation lab and a defined partnership/ collaboration framework, SBI will be able to drive new products in the market

Fintechs have 'out of the box' thinking, technology & business models

We have existing customer relationships & financial resources.

Collaboration will be a win win for both.

Fintechs can be grouped based on the use cases into:

- Lending
- Payments
- Artificial Intelligence
- Robotics
- Wealthtech
- Account Aggregation

Barclays has built a set of partnerships across emerging fintech and payment players through:

- Investments
- M&A
- Incubation
- Partnering for specific products capabilities

ix) Redefining the branches: **Go where the customers are. Next generation branches would deliver value-added services, making the branch network cost efficient in a modern and trendy setting.**

Flagship Center Branch: Technology focus. Use to build brand, test innovations and provide a fascinating customer experience

Supermarket Branch: Product diversity focus. High customer autonomy with self-service for a very large offer of products and services
Concept Store Branch: Design focus**:** Use of branch designs that focus on the needs of local users, with a special concept
Kiosks and "Self Service" Branch: Location and convenience focus. Minimize cost of branches while maintaining presence through smart technology enabled retail location
Mobile Branch: Accessibility focus. Enable remote customers with cash in and cash out in various locations

x) Big Data technology is becoming mainstream

Estimated 2.3 trillion gigabytes of data produced every day. 4 billion+ hours of video watched on YouTube each month 400 million tweets sent each month 30 billion pieces shared on Facebook every month

- Velocity (Rate at which data changes)
- Variety (Different forms of data)
- Volume (Scale of data)

Influence of Big Data: Financial Institutions are leveraging analytics for **insights & intelligence for better decision making**. NYSE captures 1 TB of trade data during each trading session, Telecom operators process 500 million daily call records in real time.

- **Intelligent Decision Making**
  - Data Discovery and Market research
  - Development of new product ideas
  - Portfolio Management
- **Superior Customer Experience**
  - Deepen KYC insight
  - Enhance Customer segmentation and analysis
  - Predict and prevent customer churn
- **Enhanced compliance and monitoring**
  - Implement aggressive fraud detection and prevention
  - Monitor communication channels for compliance

xi) Understanding the customers better

Data analytics and behavioral profiling of customers to help SBI to achieve a far deeper insight into its customer base and their needs

Who are your customers? Know them better?

: Micro-segment the customers based on demographic and socio economic data

What they do, how much they earn, where they stay and where they spend ….

Identify the emerging needs and avenues of embedding SBI in their lifestyle

What they want?

Predicting the financial and lifestyle related needs of the customers

- Savings, investments, payments, insurance, finance

- Travel, entertainment, health & fitness, shopping, e-commerce, luxury etc.

Interacting with the customers to address their apparent and latent needs

Deliver services where the customers are present?

Millennials are the future revenue pool and we need to be present where they interact in the digital world

Serving the customers the way they like

Detailed understanding of the customers based on their banking / non-banking interactions

Advising on financial and investment matters

WOW your customers on their lifestyle needs **(eg. predict a future int' travel, offer best forex deals)**

Given that WeChat has become a way of life in mainland China, HSBC is building banking solutions on WeChat platform

xii) e-SMART SME

- Digitized lending to e-commerce sellers.
- Sellers can apply for loans at partner e-tailer platform (like Flipkart, Snapdeal, Paytm etc.)
- E-tailer platform transfers performance data along with demographic details of sellers
- Centralised processing and in-principal sanction by specially designed Credit Underwriting Tool.
- Sanction shared with Seller and SMECC for disbursement.
- Mapping of account on e-tailer platform for the capturing the cash flows.

xiii) P.A.C.E. Tool (Package for Accurate, Convenient and efficient recasting)

SBI has redesigned our SME Credit underwriting process and it is now based on cash flow based lending.

- It uses the Bank account statements (on us & off-us) to arrive at latest turnover of the unit.
- Advanced logics are applied to remove the non-trade transactions (e.g.Kite flying, Transfer to subsidiaries, System transactions etc.) for computation of real turnover.
- Key ratios are validated with company & industry standards to redraw the P & L and balance sheet on the latest date

Key Benefits:

- Fully automated process with minimal manual intervention which reduces subjectivity and increases speed of processing.
- Projections are objective.
- Minimizes window dressing.

xiv) Use of digital tools in various banking- **HR- Performance Management** ~270,000 *users*

Individual accountability: KRAs aligned to business

Continuous assessment: Monthly scores on performance

Automated data capture: Scores calculated from system data

Relative scores: Eliminates externalities

HR- Postings optimizer: ~500 HR managers

Find "Right man for the right job": Uses 200+ parameters

Transfer policies digitized: Click of a button to detect officers due for transfer

Bankwide optimization: Checks 1 trillion possibilities for best match

Process time reduced: 3 months to 2 weeks

xv) Journeys may result in huge efficiencies for the Bank

Outward Clearing-Cheque drop kiosk - the customer will scan the cheque, fill all the details and the cheque will go in the queue of outward clearing post authentication by an official.

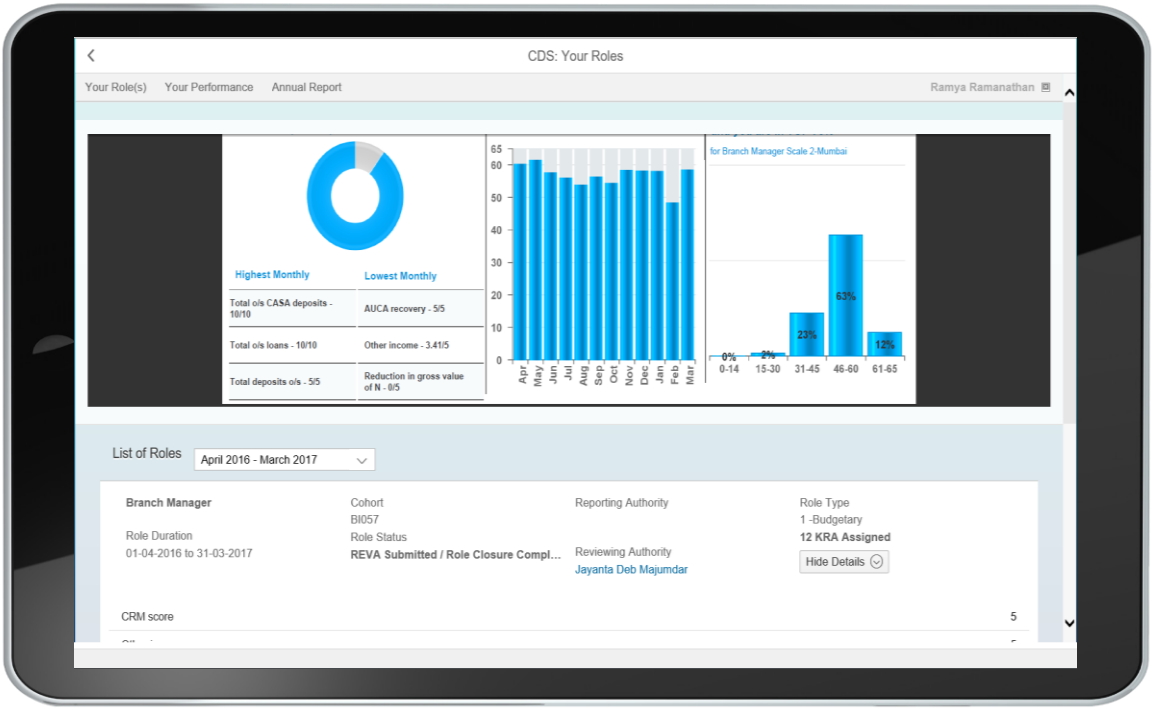
Personal loan

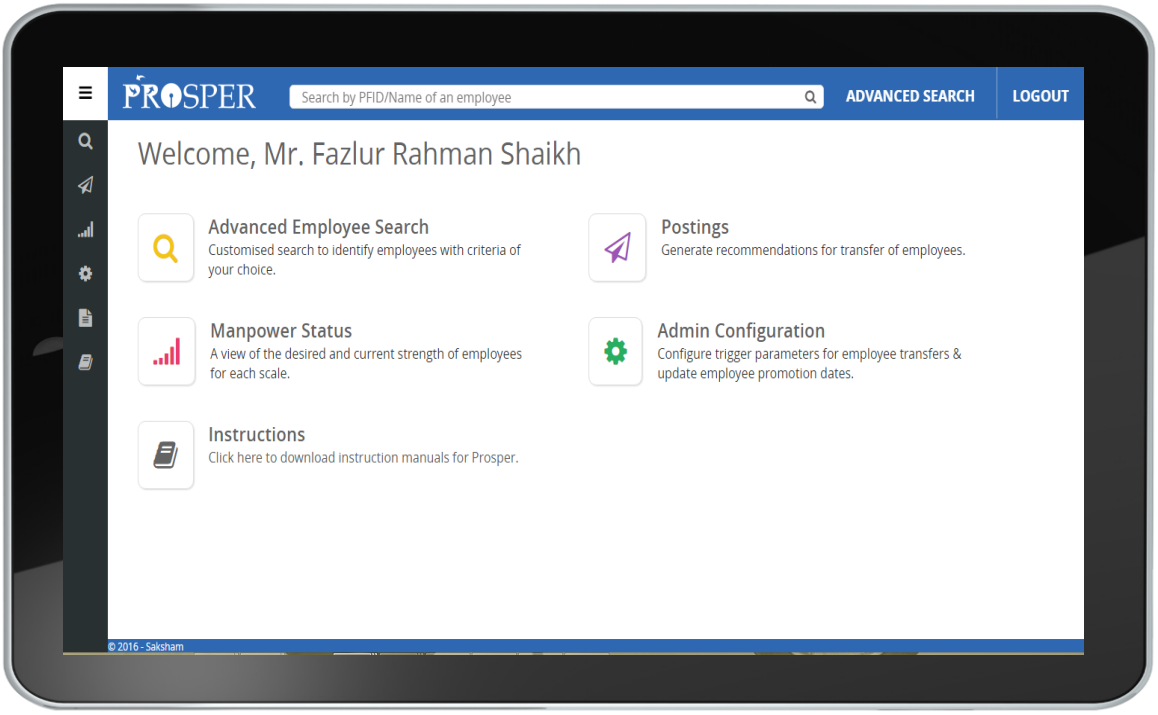
Top up loan for an existing home loan customer

Loan against shares/ mutual fund units

Account Opening

Customer can open his SB account through a web portal or mobile App based on OTP. He can get started immediately and at his convenience do an e-KYC verification based on Aadhaar by visiting a nearby branch





2) Session on 'DIGITAL EMPLOYEE' by P Jayaraman, Chief General Manager, State Bank of India:

India's largest bank & a 'Fortune 500' Company

- Among the top 50 global banks with Asset Level approximating $550 billion (post merger)
- Over 41 Crore customers with 18 Crore transactions per day (peak transaction of 5,000 per second)
- Presence in 36 countries with more than 24,000 Offices
- 60,000 Banking Correspondents
- Highest IT spends amongst Indian Banks
- Amongst the first Banks to leverage Big Data to understand customers' individual needs

Pioneering the Digital Transformation

Internet Banking is Ranked 5th- In terms of global traffic, with a turnover of Rs. 56 Lakh Crores

Largest Number of POS - Market share of 52% in mobile transactions terminals

UPI Transactions- More than 39 Lakh customers

59,000+ ATMs- Providing convenience across the country

Digitalised Transactions- Using Bharat QR code and Aadhar Pay which are Capexlite models for acquiring transactions

Empowering the Employee

Training and imparting knowledge is the way to empower the employee

Driven by the digital transformation, the e-Learning portal *Gyanodya* with about 1,000 hours courses launched.

To enhance domain specific knowledge, bank has subscribed to off the shelf e-Learning content in partnership with Harvard University

Knowledge sharing and collaboration through a Knowledge Helpline (intranet based) and Intranet Social Platforms –*SBI Aspirations*

Certification programs on processes like Loan Life Cycle is conducted both through online and offline channels and employees are evaluated based on an in-house developed software

Creating a learning culture among the employees by conducting Quiz programs frequently

Each employee now has annual target to complete e-learning modules, which are integrated with the Bank's Performance Management System

Besides the e-learning modules, information is made available to the employees through the intranet portal State Bank Times, e-Circulars, SMS alerts and digital library

Continuous feedback to drive improvement, developmental agenda and feedback tracked via an internal 'learning app'

TECHNOLOGY DRIVEN EMPLOYEE LIFE CYCLE MANAGEMENT

Recruitment & On boarding: Revamped recruitment process and made cutting edge, ensuring State Bank is the candidate's preferred choice of employer

- ✓ Best in class recruitment portal.
- ✓ Digital advertisement targeting select Colleges.

Performance Management System: Performance Management System more objective, transparent and individualised to bring business focus

- ✓ Objective 'metrics based' performance evaluation;
- ✓ User friendly front-end platform that gives information (targets, achievement, etc.,) and insights to guide forward planning (percentile ranking amongst the peers, worst performance metrics, etc.,) Compatible with all devices –desktop, iPad, mobile.
- ✓ Transparency to controllers; real-time visibility of individual performance to employees to drive business action.

Transfer & Posting: Transfer optimization tool to identify the right person for the right role

- ✓ Scientific algorithm that analyses employees past roles, experience, educational background, specialization choice, etc., to identify the 'perfect next role'

Employee Engagement: Succession Planning - Integration of employee journey data points (postings, specialization exposure and interest, educational qualification, etc.) to plan for employees career path and develop them for a Succession

- ✓ Rewards & Recognition - Driving motivation through instant gratification on exceptional performance, while creating organisational memory through 'Digital GEMS'
- ✓ Collaboration - Activating platforms for enabling employees and driving regular engagement,

feedback and constructive interaction (Like SBI Aspirations, Work from Home policy, etc.)

- ✓ Grievance Redressal – IT enabled system rolled out for timely resolution of staff grievances. The escalation mechanism is automated such that, if any grievance is not responded within stipulated TAT, it will be escalated to next higher authority
- ✓ Industrial Dispute Management Information System (IDMIS) – IT enabled portal to track and monitor HR legal cases of the bank

Impact and Learnings in the Digital Employee Transformation

The largest accomplishment (and also the biggest challenge) was to drive change in a huge bank with about 3 lac employees, in about 24,000 branches spread across length and breadth of the country

Substantial impact on employee engagement and satisfaction in the organisation

- ✓ Fairness and transparency of processes
- ✓ Greater recognition of talent, regular appreciation, feedback and development program
- ✓ Greater stability, lesser probability to move them to 'unrelated roles'

Can see results in overall business performance as well

- ✓ Individualised targets leading to a more focussed approach for employees
- ✓ Business get insights from performance data – used to define future strategy for divisions
- ✓ Stronger ability for people to understand and deliver on Bank's goals – through greater communication, their voice being heard and their questions being answered regularly

Simplify – as much as possible! Employees will adapt to change that is easy to DO and helps them in their roles.

Digital is the key! People spend a large portion of their time on computers, mobiles, iPad. It is very important to ensure adoption on these platforms to drive widespread 'reach' in a large organisation.

Touch the ground! Talk to your employees, get feedback, and communicate with them effectively. 'On ground' issues can be very different from those senior executives are made aware of.

3) IT transformation journey of AXIS Bank -Digital Ready IT Architecture enabled significant benefits: Amit Sethi, President & Chief Information Officer, Axis Bank Ltd.

Shri Amit Sethi, President & Chief Information Officer, Axis Bank handled the session and shared invaluable experience on converting into a Digital Ready IT Architecture from an bank saddled with complex multiple legacy back end systems with more than 450 odd applications which were not API enabled to an completely Agile API enabled bank. The journey started in 2013 from a case study of Commonwealth Bank of Australia who achieved a single common front end for all corporates, branches and customers over approx. 7 years with multiple partners and $ 700 bn and team of 7000 odd persons. It's a famous use case. After studying the same, Amit formed a team of 60 core IT personnel, invested in their training and achieved the similar result of a single common frontend with clean lean API based scalable sustainable architecture by cleaning consolidating 450 services into around 250 (40% reduction) with meagre budget of around Rs.10 crore or so.

The current system has been created with the principle of service oriented architecture (SOA) where one can search for an existing service for consuming for new application instead of multiplication.

How was it done? His team studied almost 1000 micro transactions in existing systems, and built 500 APIs to 90% of the activities. No legacy system would change anything so the team did the customization itself.

He made a pertinent point. It is necessary to realize that technology is core. And bank has to create on its own with help of partners as no vendor will do it. They has Finnacle, Nucleus, Mice and so on. An open architecture with 500 odd micro services (API) involving B2C, B2B, B2E functions. This common single frontend is called as SAKSHAM. Branches, customers and employees work only on Saksham. It takes care of all requirements of the bank. Currently bank is engaged debundling the from monolith to modular architecture with 200 consolidated micro services (Bian model) in next 18 months. which would be future ready SOA, with add on services like cloud, robotics, machine learning and blockchain etc.

Transformation journey of the banks is shown in few table and slides below;

AXIS Bank IT transformation

AXIS Bank IT transformation Digital Ready IT Architecture enabled significant benefits		
1	From Legacy architecture challenge	To digital architecture
2	Too long to make IT change	Predictable , crunched timelines
3	Change across products, channels take too long	Lego architecture, Agile, Reusable,
4	Frequent cost overruns	Cost certainty
5	IT is service function	IT is business enabler, embedded in planning
6	To many people in IT	Lean, agile function
7	One change will break other changes	One and done

What Did Axis Do?

What Did Axis Do?						
Hairball Architecture			To a modular service oriented IT architecture (SOA*)			
Core Systems	**Complex hairball network**	**Applications**	**Converted into**	**Core systems**	**Service Oriented**	**Applications**
Core banking		Call center		Core banking		Call center
Lean management		CRM		Lean management		CRM
Card management		ATM Switch		Card management		ATM Switch
Debit card management		Mobile banking		Debit card management		Mobile banking
Transaction systems		Internet banking		Transaction systems		Internet banking
Trading platform		Payments systems		Trading platform		Payments systems
Wealth management		Collection systems		Wealth management		Collection systems

Evolved over time from complex mesh not reusable architecture issues e.g. duplication, legacy etc.		To planned requirements, SOA allows rapid development, simplified modular components, clean architecture, without duplications

*SOA: A service-oriented architecture is a style of software design where services are provided to the other components by application components, through a communication protocol over a network.

Axis Bank IT transformation Changes on the ground

Axis Bank IT transformation Changes on the ground			
Key Impact on lean and agile IT architecture			
	Impact	From	To
1	Effort for new developments	5-10 project teams to	Less than 2-3 lean integration teams
2	Time for development	X to 3-4 months to	0.4-0.6 X 3-4 weeks
3	No. of systems interfaces	MxN to More than 400 to	M+N Around 50
4	Duplicate systems	20 systems	None
5	Data, document management systems	More than 10 systems	Just 2 systems

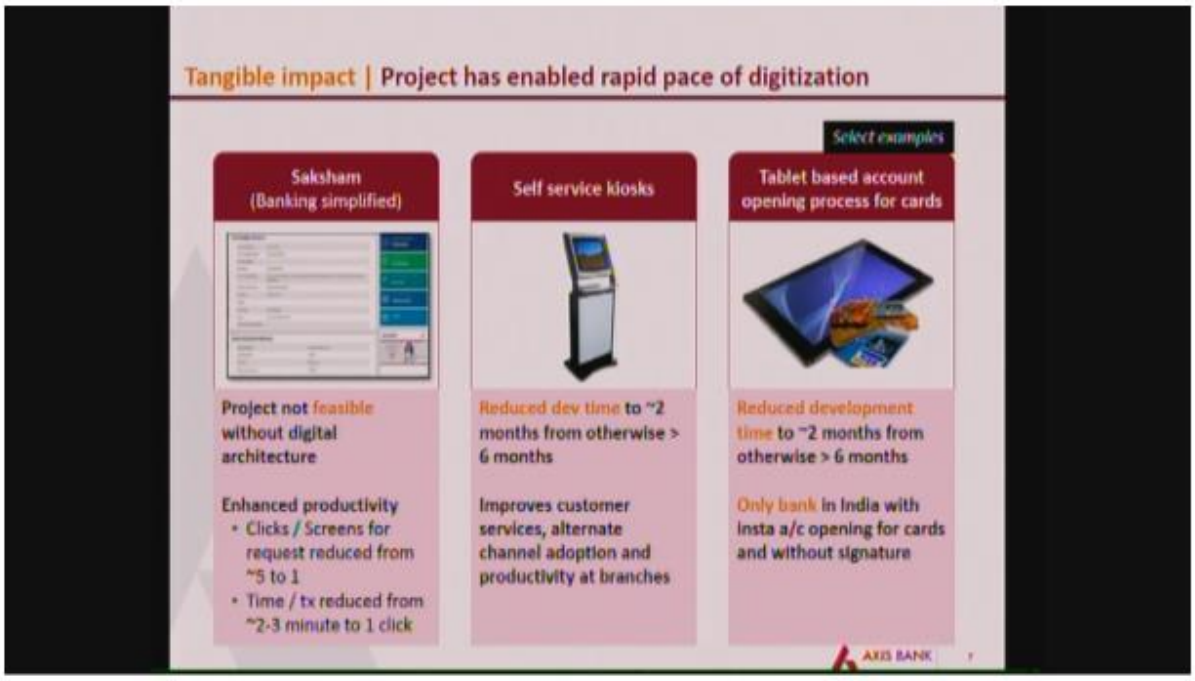
Axis Bank IT transformation: Three key tenets of their journey

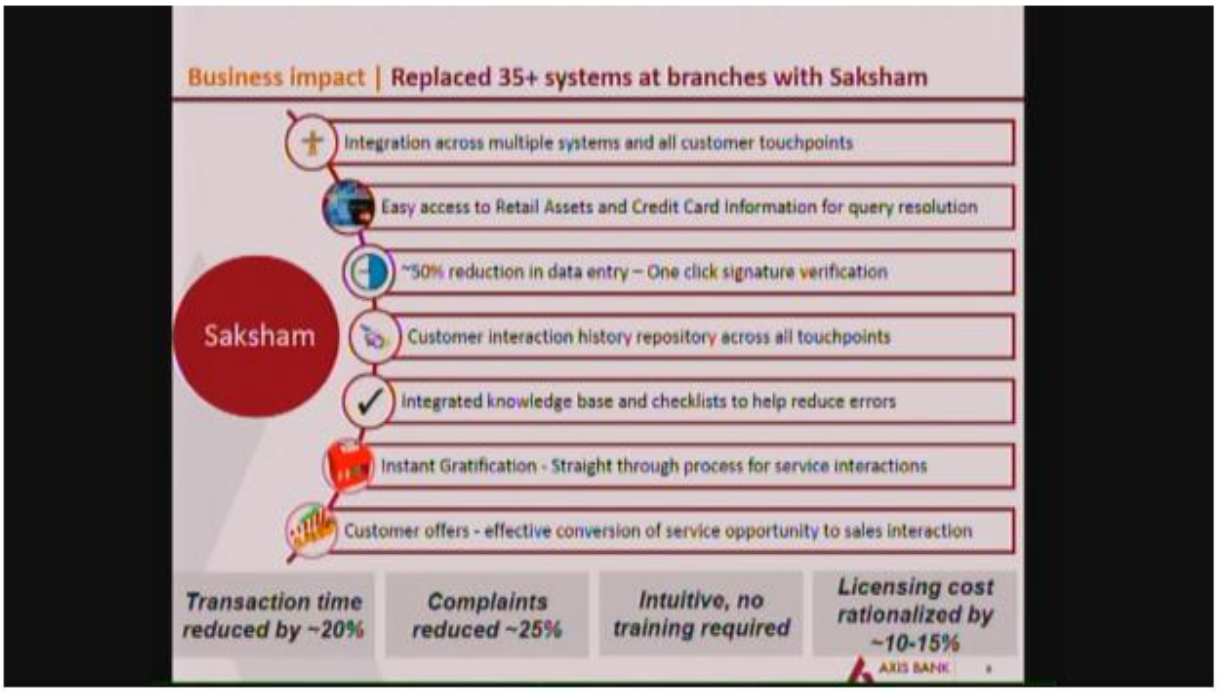
Axis Bank IT transformation: Three key tenets of their journey		
3 feet review	IT governance	Quick wins
Service oriented architecture (SOA) IT information architecture -enable a digital bank -channel and product agnostic, modular IT architecture	Saksham governance framework for sustained SOA architecture -all future development is compliant	Implement SOA services -identify potential projects from business plans and initiatives including Pratham
Detailed SOA IT Services	Architecture review board and process	Business use cases for SOA services

Axis Bank IT transformation: Digital IT Architecture: Directory of services-500+APIs created, visible, to IT & business teams

Axis Bank IT transformation: Digital IT Architecture: Directory of services-500+APIs created, visible, to IT & business teams

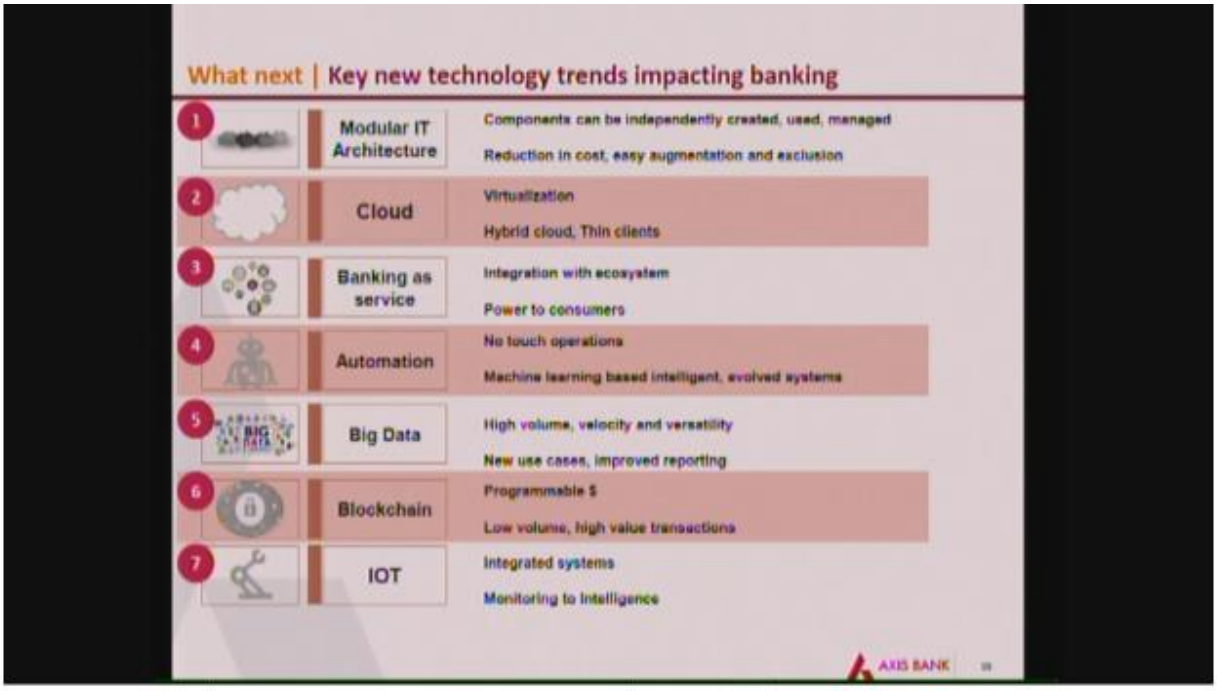
List of services	Description of services	Systems that publish and consume services	Information/processing and data architecture	Technology enabling the services
Service Name	Description	Calling Systems	Called Systems	Information and service technology
Business users and IT team can pick services for new developments using Services Directory				





Learning from Transformation at Axis Bank

Learning from Transformation at Axis Bank		
1	Implement at scale	Scale up critical to exact value
2	Holistic	All systems, applications, need to be transformed
3	Organisational enablement	Build skills required to succeed (design, implement, manage)
4	Cross functional teams	Proactive involvement of compliance, audit, legal, risk, CISO, to co create solution
5	Finding right partner	Partner that brings right technology , resources, & capabilities
6	Governance	Strong governance required to ensure change are consistent
7	New way of working	Agile way of working: Rapid development, continuous test and learn



5) **Takeaways from Session on API Banking by Sujata Mohan of RBL Bank:**
Application Program Interface (API) Banking –RBL Bank-Sujata Mohan,

Interesting Quote: Digital is the main reason just over half of the companies on the Fortune 500 have disappeared since the year 2000" -Pierre Nanterme, CEO of Accenture

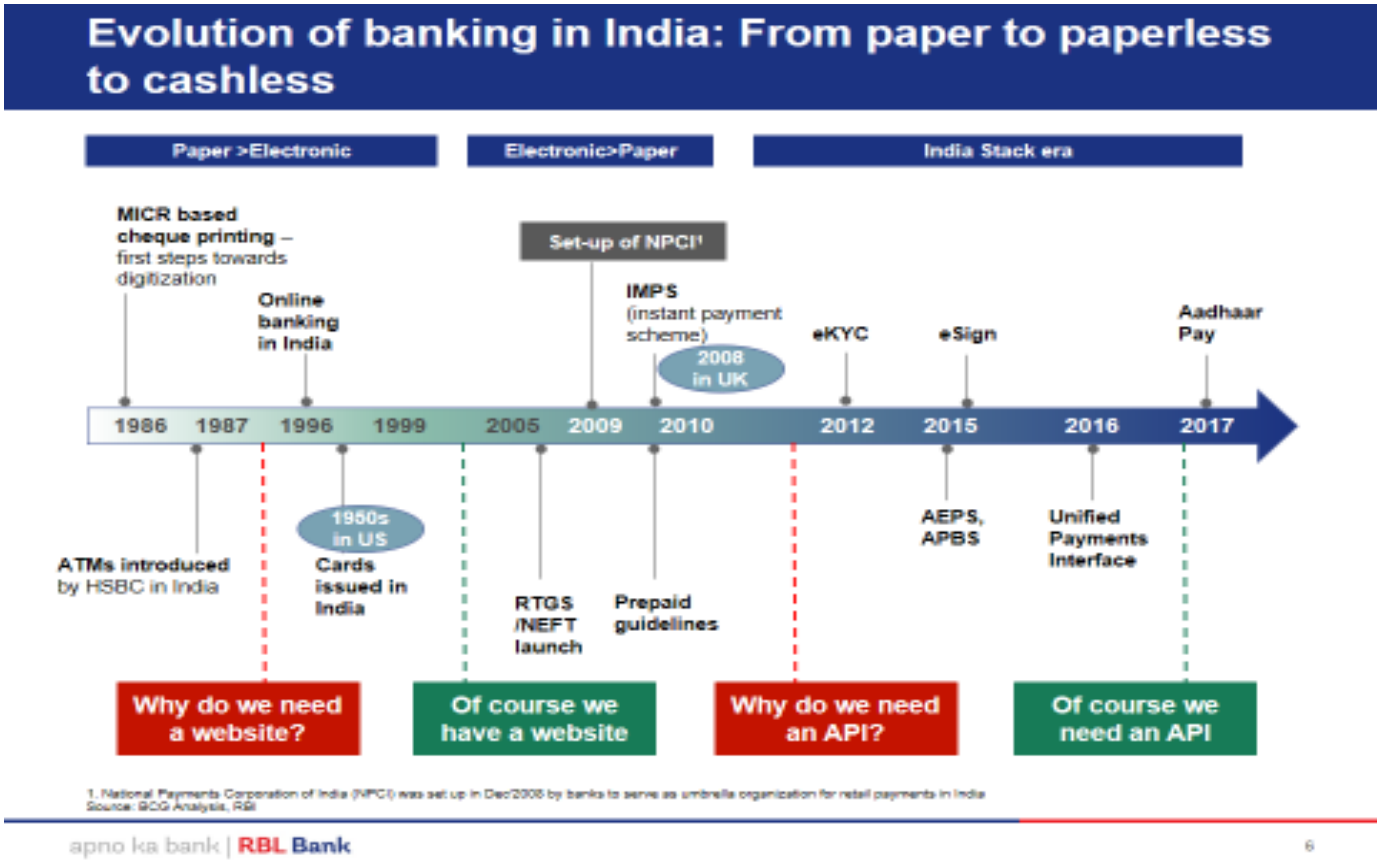
APIs are causing fundamental changes to business models e.g.-
Uber-World's largest travel company, leverages APIs to show real time cab position
Alibaba-World's most valuable marketplace leverages APIs to understand customer behavior & provide personalized offers
Airbnb-World's largest accommodation provider, uses maps & real estate data in an integrated manner
Facebook-World's most popular media owner, offers seamless user authentication leveraging APIs
- Digital has been the buzzword for quite some time now.
Some of today's largest companies work on an "asset-light" model. Uber, Alibaba, Airbnb, Fb - There are several commonalities amongst the companies listed here:
- Seamless front-end interface which is simple & intuitive for its customers
- Best in class open technology infrastructure
- Agile development practices – "try, test and tailor" approach
- Today's customers are becoming more demanding and have much more specific needs.
- Also, they are getting used to an altogether different experience, thanks to innovative companies

across sectors

What it also means is that companies that will not adapt and evolve to become nimble and responsive to evolving customer expectations will die, sooner or later.

- Digital is increasingly becoming imperative to stay relevant and this is a trend across industries.
- Imagine if since 2000, more than half of the Fortune 500 companies disappeared, what can be the potential of digital disruption in the next decade

Evolution of banking in India: From paper to paperless to cashless



Financial services industry has also been evolving rapidly- 3 stage evolution

Manual processes

DSA led supply chain

Low technology involvement

Paper based processes for all transactions

Digitization of banking channels

Internet banking

Mobile banking

Technology led banking

Technology integration based partnerships

End-to-end digital offerings
New business models to scale-up such as platforms
Plan ahead-Strong technology

The key differentiator between the three phases of evolution has been the increasing role of technology. Going forward, every bank will need to start thinking as a technology company which is a big mindset shift that the banks need to embrace

Financial services market is ripe for disruption and Digital penetration in India growing rapidly
Smartphone users in India have gone up ~4 times in last 3 yrs. 391 mn smartphone users in India; 2nd highest in the world. By 2020, 4G enabled devices expected to grow to ~550 million. Internet economy expected to double to ~250 bn USD by 2020
Supply side advancements to propel growth-India Stack has provided a transformative digital infrastructure for FS players to leverage with 1.1 billion Aadhaar cards
Fintechs disrupting FS market through innovative solutions-Across wide range of topics: payments, lending, data analytics, wealth mgmt...

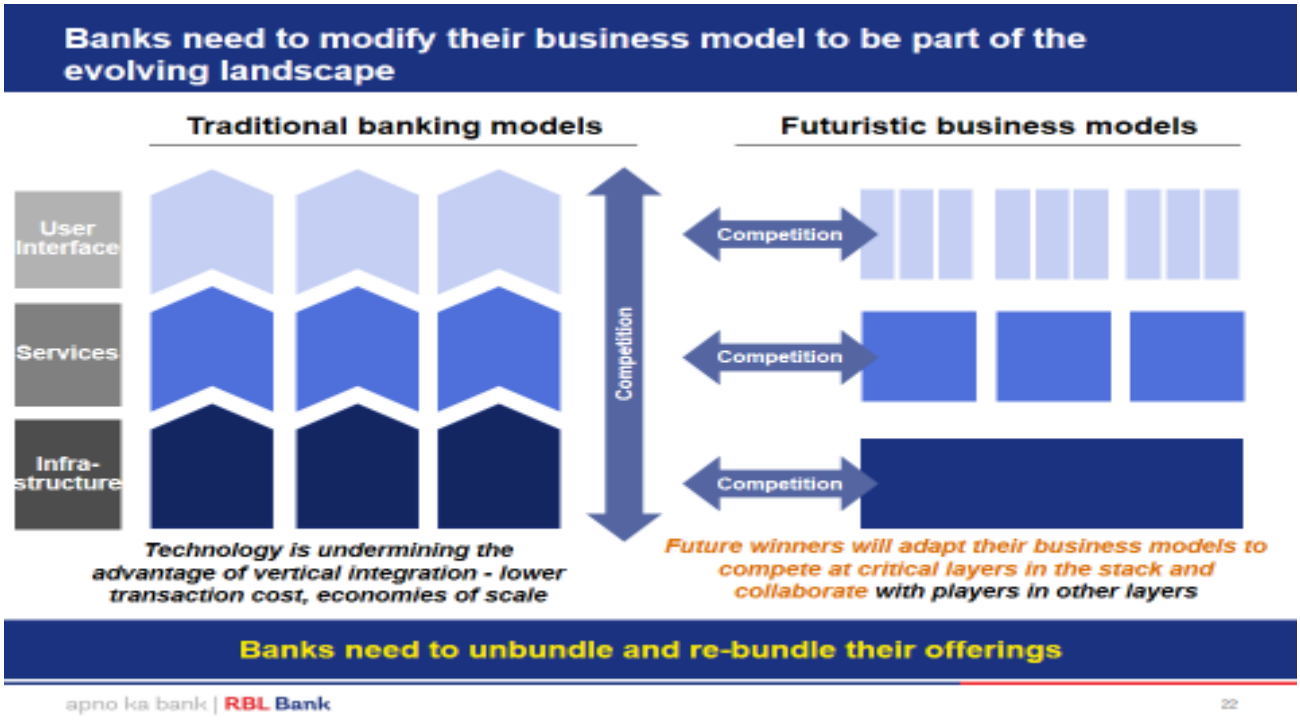
Enterprises are increasingly becoming connected: By 2550 bn connected devices expected by 2020asingly becoming connected: Digitally connected enterprises offer several opportunities Improved service, enhanced revenues and increased efficiency.

Improved services and customer experience offer enhanced revenues and increased efficiency.

Application Programming Interface (APIs) key enabler to connect enterprises digitally: In layman's terms, an API is an agreement between two people stating: "If you give me this instruction, I will perform this action, or return this information". We have all been consuming APIs Apps that we download on our smartphones, When we use Payment Gateways to shop online
Maps that we use/ see embedded in websites
APIs connect the value chain with different parties to reach a broader audience with new and existing services
Web apps and SaaS can be easily accessed by developers and customers
Mobile devices and apps can be easily accessed and targeted
Social Media can be targeted on a personalized basis for single users
Big Data results and base data can be shared and monetized to broader customer base
External Internal and Partner APIs
Some Questions:

Reimagining Financial Services How can banks provide financial services to a billion the way consumer goods are distributed or prepaid minutes are sold?

How to build business models that help you scale without adding large number of people?
Future winners will adapt their business models to compete at critical layers in the stack and collaborate with players in other layers



Open banking: Setting the context The gradual opening up of the banking business to third parties in an automated way through leveraging application programming interfaces (APIs)

Open Banking enables bank to leverage functionalities of third parties:

- To enrich own offering
- To increase efficiencies and reduce cost

Banks can leverage third parties offerings:

- As a new distribution channels for bank's products

Open Banking vis-à-vis Digital Banking

We can define Open Banking as: "The movement to enable digitally-focused companies to leverage traditional banking services, from access to basic account information to complex multi-party cross-border transactions, in real-time and with little or no human intervention"

***Digital* Banking** *digitally-focused companies*	***Versus***	***Open* Banking** *to leverage traditional banking services (from access to basic account information to complex multi-party cross-border transactions) in real-time and with little or no human intervention*
Aim to **improve existing business models** Focused on **creating customer journeys** **Control exercised** entirely by banks Reliant on **web and mobile technology** Explicit **customer journey designs** **End-to-end** effort	Versus	Aim to **create new business models** Focused on **enabling third party developers** **Control shared** between banks and 3rd parties Reliant on **API technology**[1] Explicit **interface paradigms design** **Functionality-driven** effort, not end-to-end

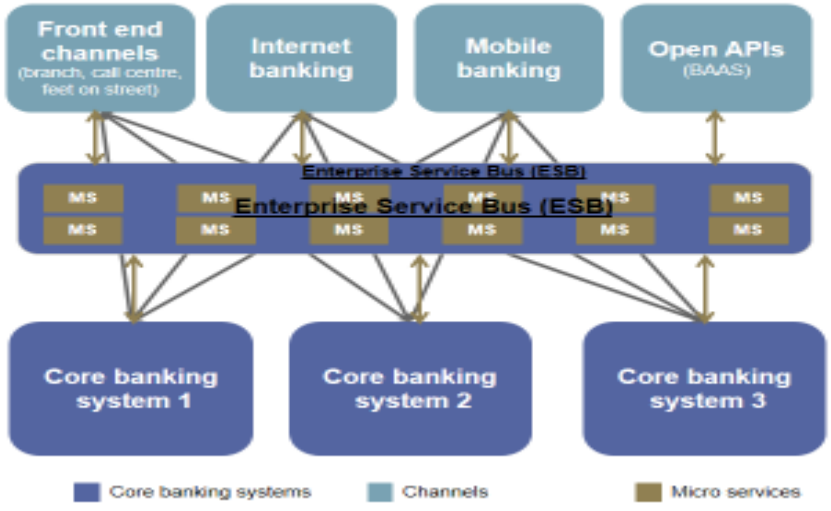
Open Banking use cases can categorized as information sharing, analytics, and transaction-enabling

Service type	Descriptions
Information sharing	Data provision and sharing platforms based proprietary data **Leverage data** such as purchase patterns at the aggregate level **to deliver specific insights**
Analytics	**Platforms** to integrate data analysis to **provide users with actionable insights** Allows to **customize and automate a set of instructions for other platforms**, i.e. live stock trading with present and customizable strategies
Transactions	**Leverage standardized APIs to connect merchants and payment providers** **Enable innovative transactions**, e.g. Uber seamless payment through Paytm

Partnership model critical for faster speed to market, quick results

apno ka bank | RBL Bank

Micro-services based IT architecture key for enabling BAAS



Micro-services hosted on ESB layer to provide BAAS solutions using Open API channel

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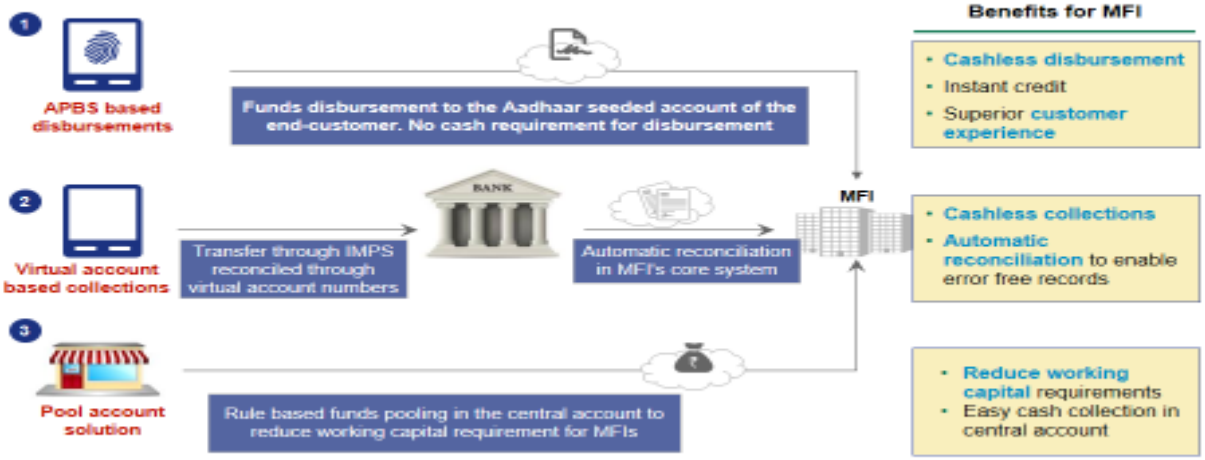
Example: Leveraging open banking to solve pain points of the MFI industry



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Impact: Open banking business has scaled-up significantly post creation of dedicated team in 2016

Technology imperatives: 4 key points

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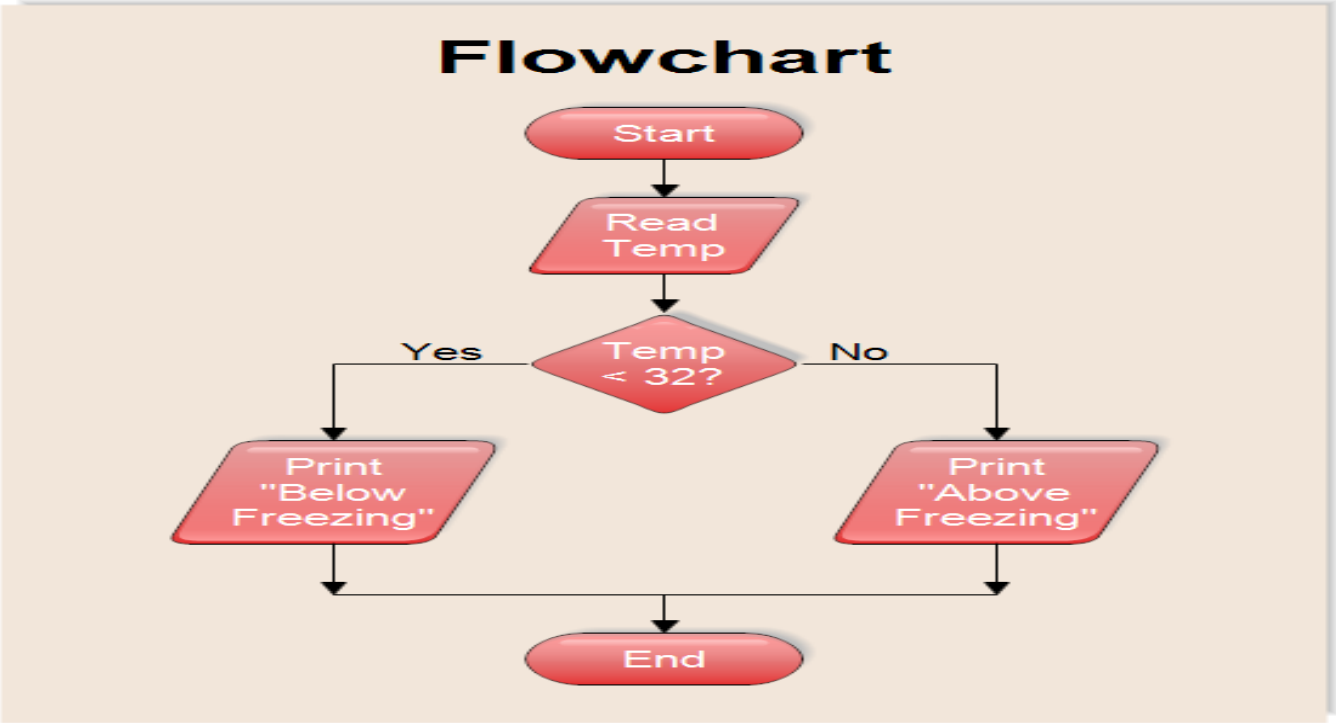
Conclusion: In the next 5 years if you are selling your products, through your channels, to your customers, then you are doomed!

6) Takeaways from presentation by Salil Chugh Artificial Intelligence & Robotics

AI & Machine Learning: Machine learning is the science of getting computers to learn, without being explicitly programmed**.** Artificial Intelligence refers to process of getting computers to perform tasks like humans. NLU is a part of AI that deals with machine reading comprehension.

Human Learning by experience. Machine Learning (ML) by programming



Some key ML techniques

- Analytics on structured data- Random forest
- Support vector machine
- Neural network and deep learning
- Gradient boosting
- Alternate least square

Analytics on unstructured data

- Word clouds
- Natural language processing – document/text classifications
- Fuzzy matching
- Image mining and pattern recognition; and voice recognition, Classification techniques & types of data

Machine learning – Key areas at ICICI Bank

Portfolio management: Portfolio management tool available to customer that auto generates recommended next best investment product based on profile

Robo-advisory to recommend suitable products e. g: Betterment.com

Credit risk assessment

Creating ML based scoring algorithms to assess credit risk based on:

- Transaction narrations

- Customer transaction network
- Policy rule automation based on unstructured data

AI: Mobile Application – NLU

- First bank to introduce live chat in mobile app 2015 – Chat with call center agent to resolve queries
- Pioneer to Launch NLU based transactional bot in Sep'16
- Launched a digital assistant that would answer banking related queries in Feb'17
- First bank to launch payments via Siri

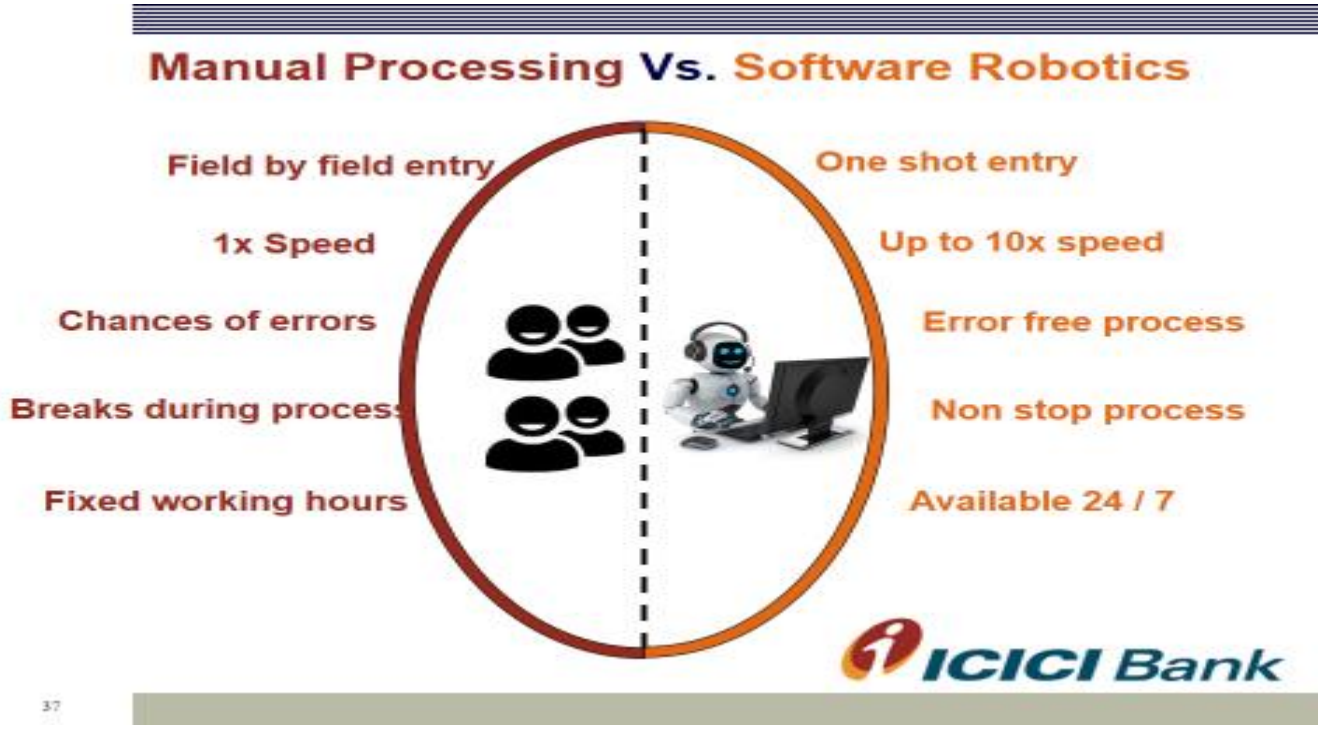
Live chat , transactional and self service chats

Customers can chat with customer service executives directly via iMobile Customers can chat on iMobile to do financial transactions (Recharge, Fund transfer & Bill Payment). Huge adoption of chat as customers preferred chatting over sending e-mails or calling customer care
Transactions
Launched in Beta
Continuous learning on the data captured via live & transactional chatbot
Based on user voices, digital assistant was launched that will answer
General banking inquiries
Service queries
Do selected financial transactions
Smart channelling to live agent/e-mail if the bot is unable to answer the query
Customers can make cross border remittance payments through iMobile via siri

- ICICI Bank Website – NLU search
- First Indian bank to introduce Search feature on ICICI Bank website in 2009
- One of the few banks to introduce Keyword based Search in 2014
- In Jan'17, the Bank launched a NLP powered HELP section on website to resolve queries

Software Robotics

- 'Software Robotics' emulates human actions to automate and perform repetitive tasks
- First bank in the country and among few, globally, to roll-out 'Software Robotics'
- 500 Software Robots installed across functions
- Parses response time to customers by up to 60% sharply raises productivity
- More than 50% reduction in processing time
- 10 lakh+ transaction per day



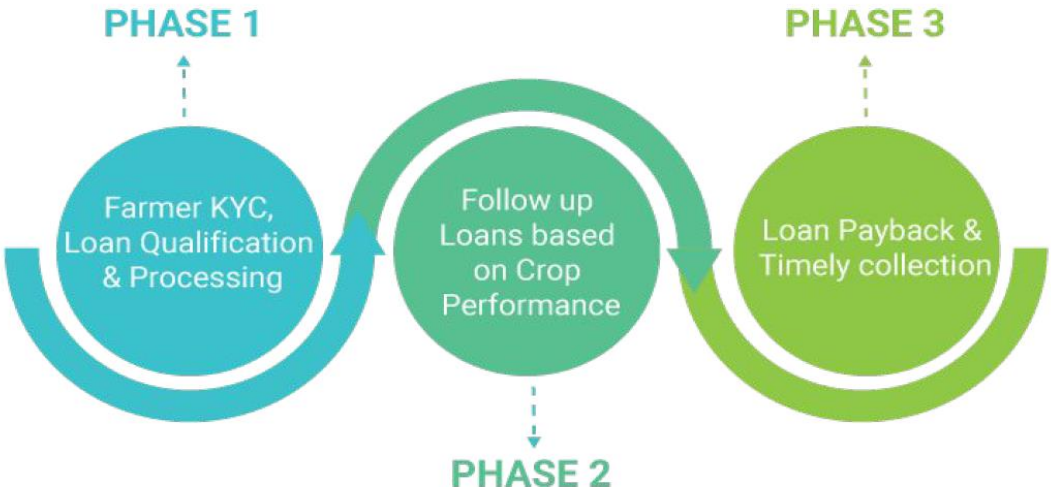
Summary – AI & Robotics in ICICI Bank

- Machine learning has been used extensively in risk assessment, cross sell, portfolio management & customer services among others
- ICICI Bank has launched NLP solutions on website, Mobile applications & call center
- Launched 500 software robots over 200 business processes across various functions of the bank

7) Takeaways from presentation by Kunal Prasad, co Founder of Cropin Fintech on Data Driven Agri Lending: giving access to 99 million small farmers in India which is 20% of total small farmers in the world. By Smart farm, smart risk, smart insurance mitigating credit, marketing and production risk. Banks partnering with Cropin can introduce new products with assured monitoring with satellite technology.

Introducing SmartRisk

A Complete ICT Solution For Credit Risk Mitigation In Farm Loans & Crop Insurance

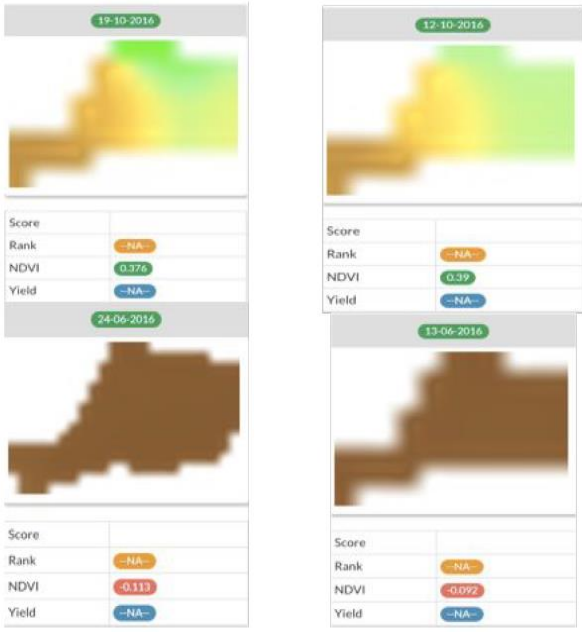


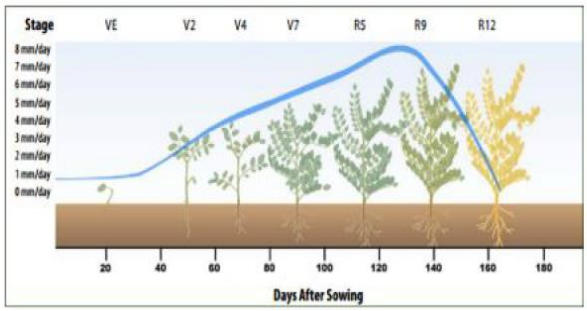
Mitigating "ALL" Risk Comprehensive Solution-

- Credit Risk:
  - Historic Farm Data (Last 3 years)
  - Farmers Performance & Credit worthiness (score)
  - Generating farm score for benchmarking,Crop Planning, Sowing and Monitoring – Geo Tag & Remote Sensing
- Production Risk
  - Validating Crop Stress and Solutions in Real Time
  - Long term weather predictions
- Market Risk:
  - Determine the time and tonnage of yield – To assist recovery activities
  - CropIn's Marketplace for Market connect & activities for best price

Mitigating Production Risk:

Sowing till Harvesting. Monitor Remotely and Approve





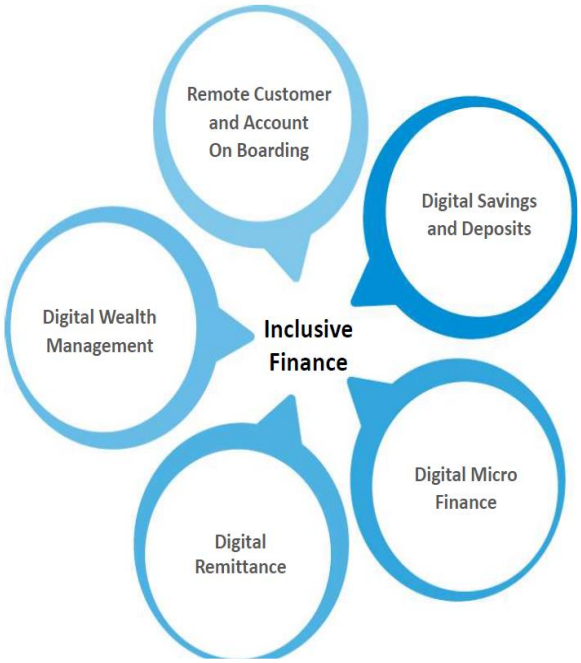
Crop & stage wise loan disbursal observing current condition remotely - DSS

- Land Preparation
- Sowing & Weeding
- Fertilizer & Spray
- Harvesting

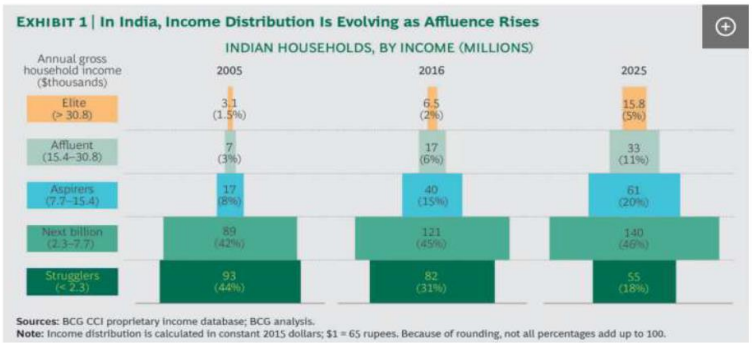
8) Takeaways from presentation by Prakash Prabhu of Atyati Technologies offering technology based BCBF services partnering with 18 banks. Such partnership with Fintech is helping scaling up operations. 12000 agents. 20 million customers. 19 banks. 30000 villages. 3500 crore loan portfolio. Deposit, remittance, technology platform Ganesha. Inclusive finance platform.

atyati – An overview

- Founded in 2006, acquired by Genpact in 2012, acquired by Metdist Group in 2016
- Focus on building technology platform for financial inclusion / last mile services / digital banking
- Micro-loans, deposit mobilization, investment , remittance products for financial institutions through technology platform "Ganaseva" and service agents
- 12,000+ agents servicing 20+ mil customers for 19 banks across 30,000 villages (25 states)
- Supports more than 3500 crores of loan portfolio in India for 2+ mil customers



Market we address

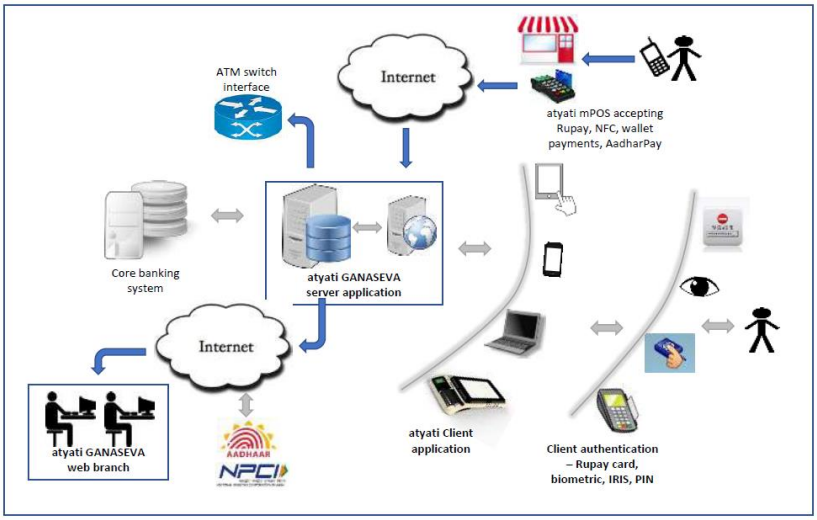


- Enabling Banks, financial institutions and other organizations to service 'Bharat'
- atyati agent network in primarily the Next billion and Strugglers segment with some presence in the Aspirer's segment
- Significant concentration in East and North East – traditionally underpenetrated geographies
- Low credit penetration as well as immense opportunity for deeper penetration of services
- Key products & services planned / in pilot / scaling up include:
    1. Lending (Group & Individual lending)
    2. Tapping into Agri and Dairy supply chains
    3. Bill payments
    4. Bus and Train ticket booking
    5. AADHAR pay merchant points (Digigram initiatives)

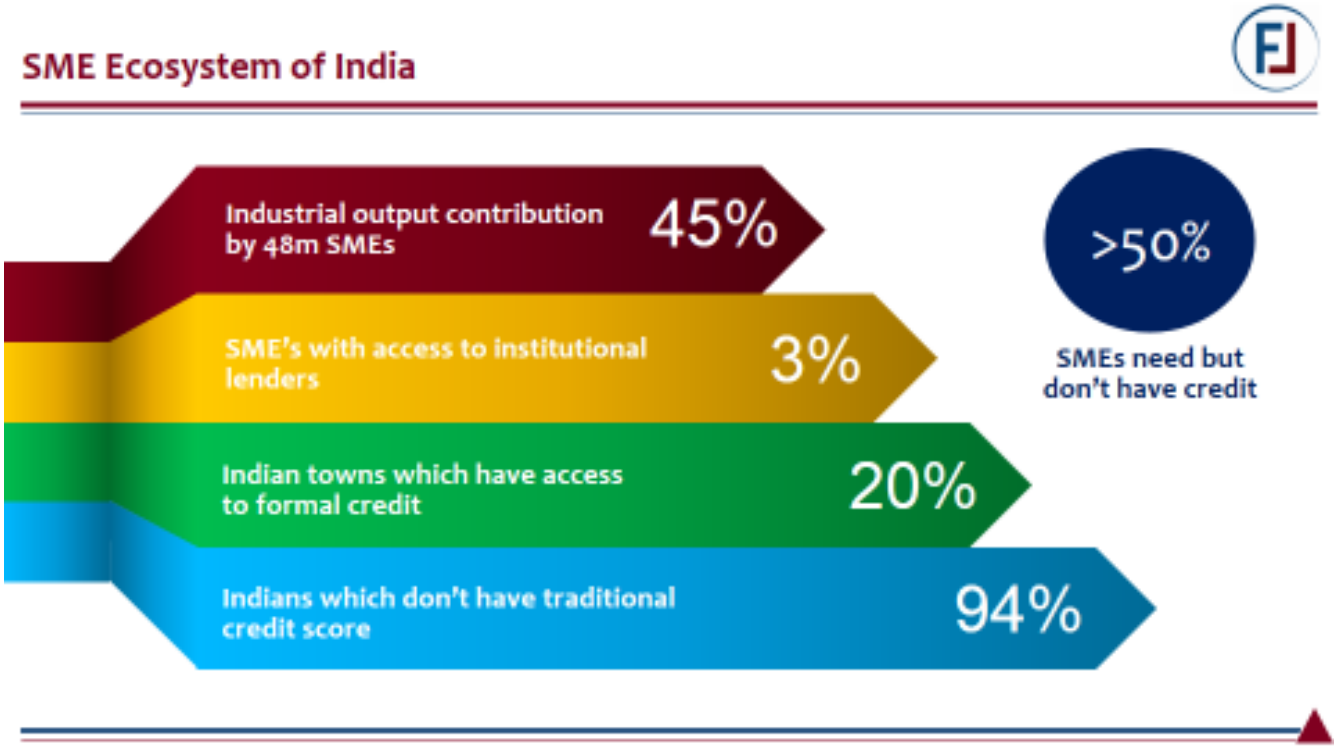
Technology Schematic

Services offered at last mile

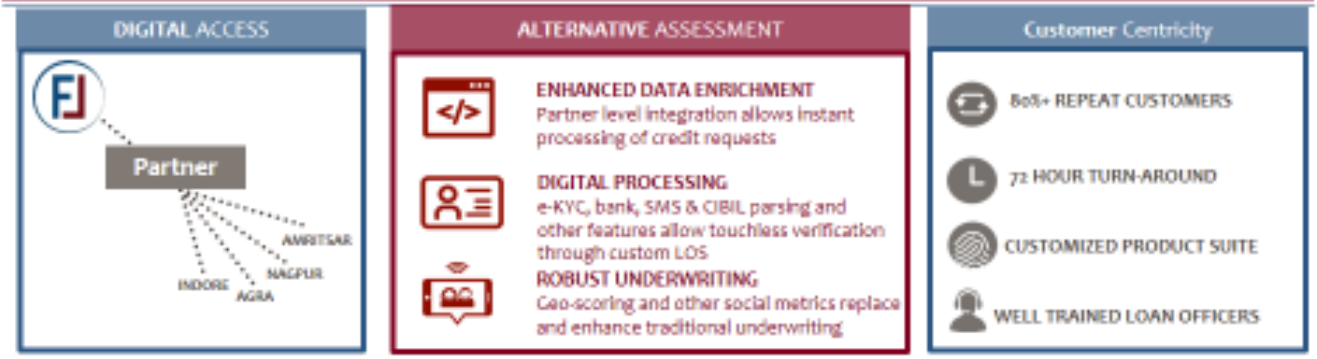
1. Account opening
2. eKYC
3. Transactions (Rupay, AEPS)
4. Remittances
5. Micro loans
6. Micro insurance
7. Merchant POS
8. Customer wallet



9) Takeaways from presentation by Flexiloans Fintech specialising in SME loans by Riesh Jain, CoFounder.



FlexiLoans well placed to leverage SME Lending opportunity



- ✓ Tie-ups with 50+ **National** level Market Platforms providing wide scale reach and low cost of acquisition
- ✓ Access to over 2 **Mn Businesses** with 3rd party verified data
- ✓ In-house alternative scorecard based on over 500+ **traditional and new- age variables** created based on data available from customers
- ✓ Strong digital assets to minimize processing costs; 4 **patentable technologies**
- ✓ Frictionless customer journey from loan application to disbursal
- ✓ Superior customer journey through an extremely fast and simple process of application
- ✓ Minimal documentation ensure repeat customers
- ✓ Low TAT and customized products meets the needs of businesses

Our Vision, Mission and Values

Our Vision

To provide financial access at a click

- 'Financial access' means providing access to working capital loans that can help underserved SMEs grow their business
- 'At a click' means being available through digital channels and enabling lending to those currently depending on informal borrowing channels

Our Mission

To create an enterprise that is focused on 'solving the problem of credit' through effective use of data and technology

- 'Focus on credit' to enable customer centric product development and execution
- 'Focus on data science' to enable accurate predictions and effective risk management
- 'Focus on technology' to ensure unit profitability and scalability.

Our Values

Innovation

Creative curiosity

Respect

Disagree but do not disrespect

Collaboration

Be dependable & work with the team

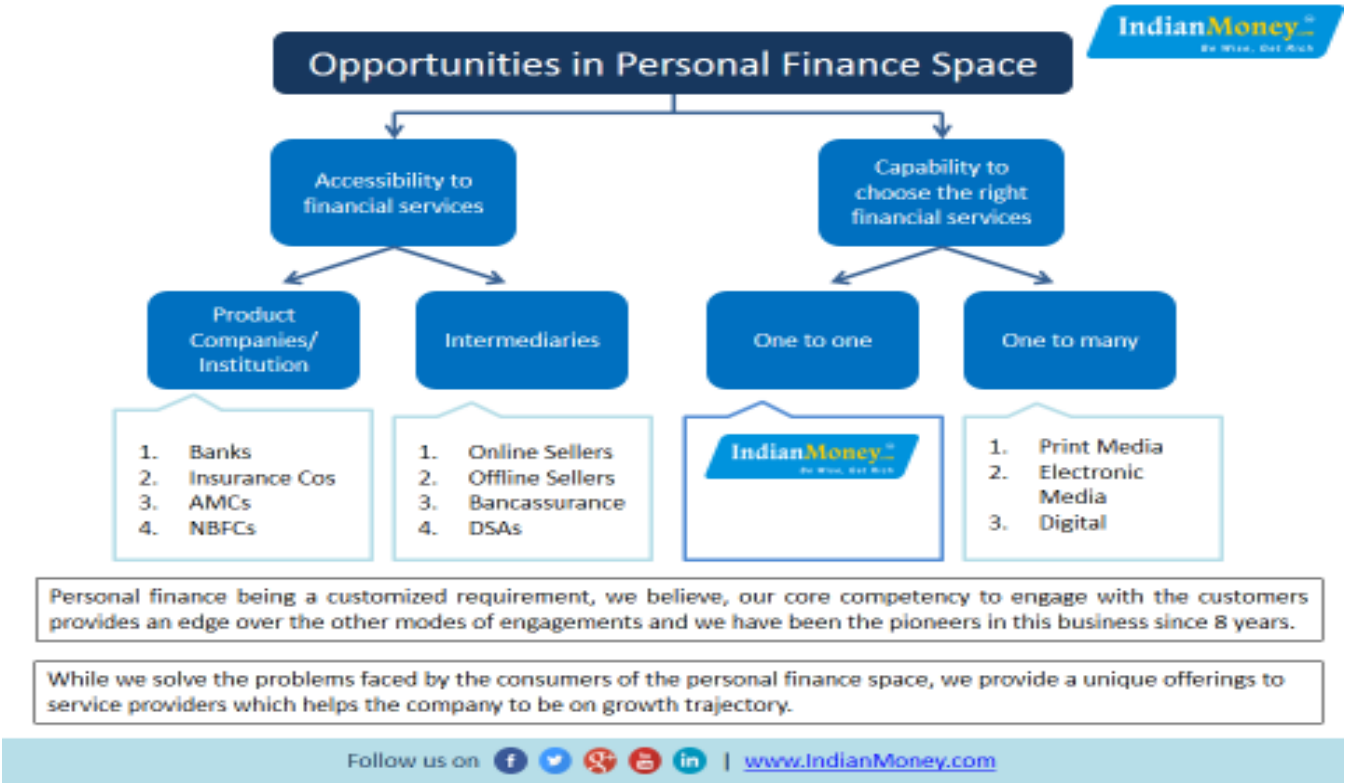
Ownership

Get it done

Agility

Learn fast, Fail fast

10) Takeaways from presentation by C S Sudheer of India Money Fintech for Banking Correspondent and Banking Facilitator startup



FINANCIAL LITERACY

Objective

- Include, Educate, Involve and Engage every citizen into **Formal Financial System.**
- **Guide** people towards the right approach to handle financial situations.

K1	K2	K3	K4
Nil	Low	Average	Adequate

* K : Knowledge level

Population Segmentation

Addressing the Pain Points of Consumers

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IndianMoney & Banks

- Financial Education as the face of Financial Services Distribution
- Empowering Financial Services Distributors with Training, Technology & Market Access to deepen the penetration

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11) Takeaways from presentation by Delip Asbe, CEO, NPCI on NPCI digital innovations transforming banks and economy: NETC, BBPS, Rupay, BHIM, UPI

NETC -

Interoperable RFID tag and **API** specifications
Works across **350+ toll booths** on national highways (16% of toll collected)

All vehicle classes, **~60 Million**, supported
6 Large banks LIVE (6 Mn Txns/Month) - Retail in progress

Built as an **Open API platform**. In future, can be used for dynamic pricing, congestion pricing, parking apps, etc.

It can also be used to auto link transport manifests for ease cross border movements.

Next - State Highways, Parking, Vehicle

BBPS – Bharat Bill Pay System

~1 Billion
Bills per month

~250 Billion INR
monthly payments

- API Based platform allowing innovation
- Ecosystem Incentives aligned for rapid adoption
- Multi Channel with Multi Payment
- Unbundling of Bills, Access, Payments (Huge cost savings on printing the bills)
- Bills can go to digital locker with consent
- Huge data potential for credit rating

RuPay Common Mobility Call -

RuPay Combo Card

National Common Mobility Card

BHIM acceptance use cases for Merchants

Dynamic QR on the terminal charge slip

Dynamic QR on the terminal display screen

Dynamic QR on MPOS being carried by delivery boy (COD)

Dynamic QR on published on bills

Dynamic QR on the merchant website

Dynamic QR on merchant App

Dynamic QR on PCPOS Machine

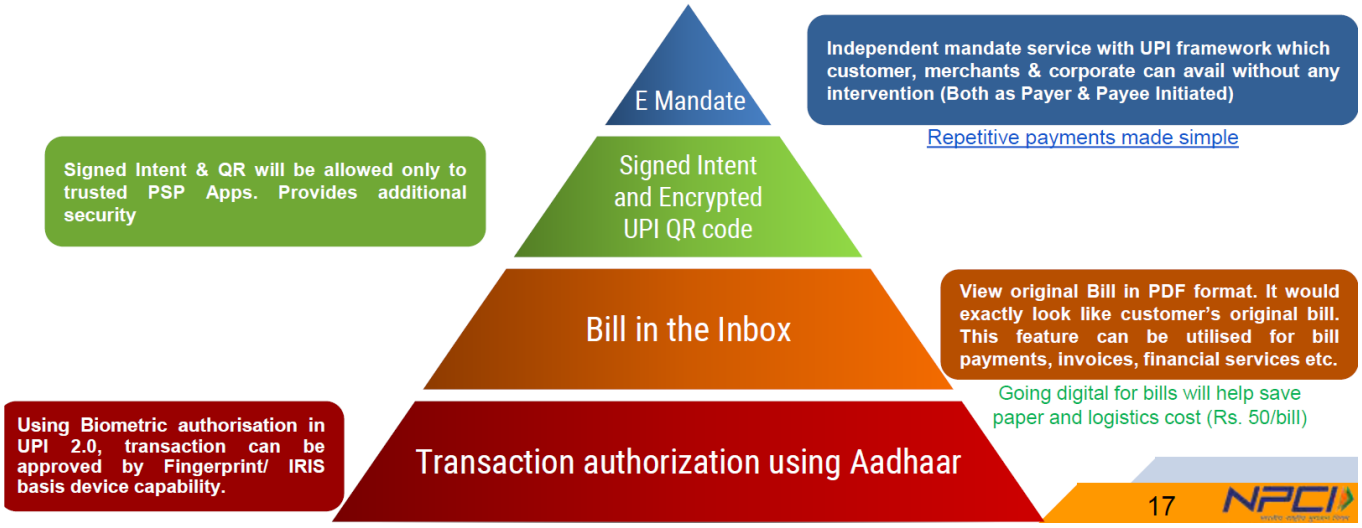
Static QR on Retail outlet

Static QR on merchant App

Existing key features in BHIM

- **Send Money** (Using Mobile No, Aadhaar No, A/C & IFSC, UPI ID & Saved Beneficiary)
- **Receive Money** (Using Mobile No & UPI ID)
- **Option to SPAM, Block & Unblock a Customer**
- **Scan & Create UPI QR Code to Send & Receive Money**
- **View & Download Transaction history**
- **Transactions limit of 10,000/- per txn & 20,000/- per day**
- **Available in 12 vernacular languages (Urdu being added)**
- **Creates a default UPI ID (mobileno@upi)**
- **One account linked to BHIM. User can switch between multiple accounts & banks**
- **Making payments by selecting a contact from contact list**
- **Option to raise a query / complaint**
- **Option to Reverse/Return the money by clicking on "Return Transaction"**
- **Option to save beneficiary for future payments**
- **Switch between SIMs in case of dual SIM handsets (if both SIM are registered)**
- **User can check pending request**

Brief details on UPI 2.0



UPI Pricing – P2P

Sr.	Particulars	Amount	Paid By	Paid To
1	Switching Fee	50p	Remitter Bank	NPCI
2	PSP Fee	50p	Remitter Bank	Remitter PSP
3	Transaction Amount	At Actual	Remitter Bank	Beneficiary Bank
4	Interchange Fee	Rs. 1 for transaction ticket size up to Rs. 25,000/- Rs. 5 for transaction ticket size above Rs. 25,000/-	Remitter Bank	Beneficiary Bank

- **At present, member banks are not charging customers for UPI transactions, At later stage, no charge to customer for < Rs. 1,000 (90% of volume)**

Interchange & Switching Fee (Merchant Payments)			
Sr.	Category	For transactions up to ₹ 2,000	For transactions above ₹ 2,000
1	MDR	0.25%	0.65%
2	Interchange	0.10%	0.40%
	Flat Fee for Specific Industry Programs		
5	NPCI Switching Fee#	₹ 0.50	₹ 0.50

- **Fixed price to 20 MCC's for e.g. LIC Rs. 6 irrespective of amount**
- **95% volume < Rs. 2000 and 2/3rd of MDR, is paid to Acquirer**

Expected Policy Changes

- Rationalization of Debit MDR, Remote Onboarding of Merchants (Cost Efficient)
- Discouraging Cash Transactions (value, ATMs etc.)
- Mandate to Govt Divisions to move Cashless - Railways, MoPNG, MoRD, MoRTH, MoUD
- Incentives to BHIM, Merchant Cashback programs by Govt
- Interoperability of Wallets

Brief background note about the program:

The banking and financial services sector in India has undergone disruptive changes in the last decade and especially after demonetisation because of the government providing incentives

for digitalization of the economy. Digitisation has potential to boost the banking business. It may be the new success mantra for banks. There are both challenges and opportunities for banks.

A: Challenges: The banking sector faces a number of challenges for digitisation like

(i) legacy technology,
(ii) digitalization of documents at banks,
(iii) leakages of data,
(iv) onboarding new customers in true sense,
(v) upgrading the backend processes,
(vi) cyber security etc.
(vii) report of BCG, FICCI, and IBA and other surveys about retail customers has brought out some challenges like (a) 17% of the respondents were unaware about bank's digital offerings, 35% were aware but were not using, 7% were unsatisfied user and 42% were satisfied users (b) 70% of the MSME and 90% of the shopkeeper transactions were done through cash & cheque, only 9% MSMEs collect orders online, and only 5% accept payments online (c) The research on retail customers show that out of people not using Mobile Banking apps, 22% do not know how to use it, 18% don't know about bank's app and 14% of them have fear of hacking.
(viii) increasing the scope: There is still much scope for penetration of digital in our population. With much non penetration and government initiatives to push digitalization, banks have tremendous opportunities and advantages in adopting digital infrastructure.
(ix) need of holistic approach by banks: Despite the huge potential and well-established promise of digital financial services, there is a need for the players to adopt a holistic approach on going digital and fusing business strategy with all the elements of their operating ecosystem to create a remarkable customer experience.
(x) investment: Banks may also need to invest in supporting mobile platforms and analytics, customer service through models like multi-lingual voice-based interaction and simplified service offerings.
(xi) convert awareness into usage is the biggest challenge

B: Opportunities: What are the trends and opportunities for banks in this digitisation era?

a) **changing client preference** from traditional banking to its digitalization: India's demographic dividend is well suited to switch to digital behavior, with the median age of an Indian expected to be 29 years by 2020 and 900 million population falling in the age group of 15-60 years by 2025.
b) **leveraging increased smartphone usage and mobile penetration:** The current and expected widespread reach of smart phones in the country provides a disruptive and low-cost medium, to extend the reach of banking and payments services. Mobile penetration of around 90% is likely to drive financial inclusion. Mobile phones are likely to spearhead the digital growth in India, taking into account the expected level of penetration and because the youth of India prefer to use smart phones rather than stand in long queues to avail banking services. With largest number of mobile phone penetration people have

actively started using technology to do banking transactions and avail other services because they want more convenience at the cost of paying additional price

c) **Unpenetrated areas and government initiatives:** Around 50% of the non-banked population is targeted and progressing towards the goal of financial inclusion, around 160 million accounts have been opened under PMJDY (Pradhan Mantri Jan Dhan Yojna) with Rs. 500 billion being targeted to be transferred directly under DBT (Direct Benefit Transfer).

Compiled by Ravi Sangvai, Program Director, CAFRAL.