

## **Disruptive Innovation in the Financial Sector<sup>1</sup>**

1. Every time I come here, I am impressed by the passion and energy with which IDRBT pursues its mission of improving banking technology.

- Over years, under the leadership of successive Directors, including Dr Ramasastry now, the Institute has made impressive progress in several areas.
- Apart from training junior and middle level officers, the Institute also engages directors on the boards of banks on IT strategy so as to get buy-in at the leadership level for IT as a management tool.
- That, you would expect from an Institute of this type.
- But IDRBT performs beyond expectations. It goes beyond training in banking technology to evangelizing frontier aspects of technology that could bring efficiency gains to banks and safety to bank customers.

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<sup>1</sup> Notes for the Inaugural address by Dr. Duvuri Subbarao, former Governor of Reserve Bank of India at the International Conference on Distributed Computing and Networking at IDRBT on Jan 5, 2017.

## **Achievements of IDRBT**

2. I want to recognize here some of the many initiatives and achievements of IDRBT in the last few years.

- IDRBT has set up research centres in critical areas of banking technology such as Analytics, Mobile Banking, Cyber Security, Cloud Computing, Affordable Technologies and Payment Systems which are helping improve the systems and standards of banking technology in the country.
- IDRBT has established forums of Chief Information Officers and Chief Information Security Officers, key officials who drive technology in the banking and financial sectors. These forums meet regularly to resolve common issues and find shared solutions.
- IDRBT has set up the Indian Banks - Centre for Analysis of Risks and Threats (IB- Cart), which now has a membership of over 60 banks. IB-Cart has emerged as a crucial platform for sharing information and understanding on cyber security which as you all know, is becoming a growing threat all around the world.
- The Institute is leading research in frontier areas such as Block Chain Technology, a potential game changer going forward. The White Paper on the subject I just had the privilege of releasing is likely to set the direction and pace of adoption of this crucial technology in the financial sector in India.
- Befitting the knowledge institution that it is, The IDRBT has just started post graduate Diploma in Banking Technology (PGDBT) this year. It is expected that the graduates of this programme will spearhead technology absorption in the banks.

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## **My Topic - Disruptive Innovation in the Financial Sector**

3. The topic for this conference is Distributed Computing and Networking - a highly specialized and relevant topic, but one on which I have no expertise.

- Instead I thought I would use this platform to reflect on a broader topic - **Disruptive Innovation in the Financial Sector.**

6. Encouraging disruptive innovation is very much the bread and butter business of IDRBT.

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## **Demonetization**

4. But when we talk about disruptive innovation at this time, we can't but acknowledge the big elephant in the room - Demonetization in which 86% of currency was delegalized overnight in what is arguably one of the most cash intensive economies in the world.

- Objectives, costs and benefits - subject matter of contentious debate.
- What is not contentious though is that this has possibly been the most disruptive policy innovations in India since the 1991 reforms.

## **Joseph Schumpeter**

5. We owe to the celebrated economist Joseph Schumpeter who gave us the phrase - creative destruction:

- A process or mutation that revolutionizes the economic structure from within - destroying the old one and creating a new one.

6. The smart phone, for example, is a creative destruction because it killed the market not just for regular cell phones but also for PDAs, point and shoot cameras, wrist watches, calculators, voice recorders, planners and even music systems.

- Demonetization is in that sense creative destruction too, but it is a unique type of CD because what it aims to destroy is itself a destructive creation.
- Demonetization - creative destruction of a destructive creation.

## **Two Perspectives**

7. Demonetization is arguably leading to a flurry of innovation in India's financial sector by way of digitization of payments.

- Two perspectives

- Extension of a global trend of fintech which is upending the finance industry
- Discontinuous change in a low income country from cash intensive economy to a less cash economy.
- Either way we will have disruptive innovations in India's financial sector.

### **Disruptive Innovation**

8. The world of finance has witnessed rapid disruptive innovation over the last decade as a consequence of a *magical combination of technology and financial engineering*.

- Tasks once handled by paper money and bulky computers are now being accomplished entirely on digital interfaces.
- **Outstation Cheque:** When I first went into RBI in 2008, one of the problems was how long it takes to clear an outstation cheque. A generation of millennials is growing up without knowing what a cheque is.

### **9. Common to talk of all this as Fintech Revolution**

- From payments to wealth management, from peer to peer lending to crowd funding, a new generation of start-ups is taking aim at the heart of the industry and revolutionizing how finance is done.
  - Borrow money - peer to peer lending club
  - Transfer money - through independent payment systems rather than through a bank
  - Invest - online customized advice tailored to your needs
  - Fight cybercrime - financial services company that checks customer identities based on biometrics, behavioural profiling, push notifications and analytics across all channels - from mobile phones to physical branches.
- You could get into a taxi, go to your destination and walk away - the billing is automatically taken care of
- You could go into a restaurant, wave your phone and touch your thumb for biometrics and walk away.

That is how fintech is revolutionizing financial services.

## **10. How will fintech change finance? In three ways.**

- (i) Will cut costs and improve the quality of financial services. Unburdened by regulators, legacy IT systems and branch networks.
  - Costs to outstanding loans - 2% vs. 7%-8% for conventional banks
- (ii) Clever new ways of assessing risk through social media review and usage of logistic firms
  - E.g.: Motor insurance by how much you drive and how you drive.
- (iii) Without the burden of geography, they are able to diversify risk
  - No geographical concentration and no asset liability mismatch.

## **Disruptive Innovation beyond Finance**

11. Although I have spoken about Fintech, Disruptive Innovation extends beyond Fintech.

### ***Microfinance***

- Think about a concept of microfinance which was in existence for a long time but took centre stage in 2006 when Grameen Bank, a Micro-Finance organisation founded by Dr Muhammad Yunus received the Noble Prize. The world took notice of this amazing experiment of lending in small amounts to closely-linked communities.
- SHGs in India and AP - closely linked small communities on mutual guarantee, taking advantage of the fact that default is a social taboo.

### ***Carbon Credits***

- A carbon credit in simple terms is a tradable certificate which permits a right to emit 1 ton of carbon dioxide or other greenhouse gas of this equivalence. The concept was created as part of Kyoto Protocol to discourage countries/companies that emit carbon dioxide, and that they should pay to countries/companies that don't emit such toxic gases by using clean technology.

## **12. What is disruptive innovation?**

- Spoke about Fintech. Spoke about disruptive innovations beyond Fintech.
- So what exactly is disruptive innovation?
- Every once in a while, a new management phrase catches on and becomes folklore.

- Reengineering
  - Fortune at the bottom of the pyramid
  - Disruptive innovation
  - Harvard Business School - Clayton Christensen
- (i) Wild and unexpected changes that radically restructure markets typically by harnessing new technologies

#### Examples

- Mobile phone which has nearly killed fixed line phones
  - Digital photography which sent sales of camera film plummet and made Kodak change its business model
  - Online retailing which is bruising traditional retailing
  - Online ticket booking which has made travel agents reinvent their business models
  - MOOCS - paradigm shift in the business model of higher education
- (ii) Not necessarily new technologies - using technology alter a business model
- Netflix -sending DVDs to streaming content online on demand
- (iii) Disruptive innovations usually find their first customers at the bottom of the market: as unproved, often unpolished, products, they cannot command a high price. Incumbents are often complacent, slow to recognise the threat that their inferior competitors pose.
- Move up the value chain as successive refinements improve them to the point that they start to steal customers, they may end up reshaping entire industries:
    - Craigslist has transformed classified ads
    - Skype has changed long distance calls
    - iTunes has changed record stores
    - Google has changed research libraries local stores (eBay)

- Uber has changed the business model of taxis
- Twitter has changed newspapers

(iv) Future:

- Driverless cars
- 3D Printing
- Shipping via drones
- Internet of things - known unknown

### 13. Are all innovations disruptive?

- Not all innovations are disruptive even if they are revolutionary.
  - **The first automobiles** in the late 19th century were not a disruptive innovation because those automobiles remained expensive luxury items that did not disrupt the market for the horse drawn carriages. It was the low priced Ford Model which came 30 years later that was a disruptive innovation because it was cheap, mass produced and changed the rules of the transportation market.
  - **PC:** Similarly, the first mainframe computers which used to occupy acres of space were not a disruptive innovation. It was the innovation of the PC - the personal computer in 1982 - that disrupted the market for a range of economic activity.

### Disruptive Innovation in India

14. Not just a developing country concept

- Indian finance has seen disruptive innovation not just in payment systems but in:
  - savings
  - credit
  - micro insurance markets
- What has made this possible?

**Internet penetration:** As digital payments industry survives and thrives on the internet, [The National Optic Fibre Initiative](#) under Digital India will link every village with a broadband connection. As the fastest growing internet economy in the world, India is slated to add 300 million internet users by 2020.

**Usage of smart phones:** India currently ranks #2 in the world with over 1 billion mobile subscriptions. Of this, approximately 240 million consumers use smart phones and this base is projected to increase to over 520 million by 2020.

**Improved O2O (Online to Offline) presence:** Online shopping, bill payment and mobile recharge are the foremost reasons for using a digital mode of payment. Sensing these opportunities, merger of e-commerce and e-wallet firms is adding synergy.

**Policy incentives:**

- Fifteen banks have rolled out Unified Payment Interface (UPI) to introduce a virtual payment address, easing digital transactions between two parties.
- Payment and Small Finance banks
- Aadhar based JDY accounts
- Wide access to Aadhar for pension, provident fund and other digital transactions
- Tax rebates for digitization
- Start-up India Initiative

**15. How will fintech affect traditional banks in India?**

- Fintech will challenge the business model of banks and can potentially take away the more lucrative segments of banking business.
  - On cost: Deposits - low cost of funds but that may not be a comparative advantage because fintech has no burden of regulation
  - On efficiency - tailor made products
  - On service
  - On trust
- Banks should beware.
  - In America - silicon valley is coming.
  - In India, Bangalore is coming.

**16. How should banks respond?**

- Compete
- Take over like they have done with ATMs
- Build alliances - small banks and payment banks - cede the last mile to them

**17. Most of all - change their attitude - Ela Behn** in her book *We are Poor but So Many*

## 18. How should regulators respond?

- Caught between two competing objectives
  - Let a laissez-faire regime run - encourage innovation
  - Regulate in the interest of financial stability and consumer protection
- Managing the right balance is the challenge for regulators
  - (i) Microfinance provides the best example of this conflict
  - (ii) GFC - another example that illustrates how regulators got the balance wrong
    - Sophisticated quantitative models - conquered risk and discovered the holy grail
    - Got carried away by the innovations and allowed complex financial engineering based on derivatives
    - It turned out that they did not conquer risk; just lost track of it.
    - Built of excessive leverage, maintained no liquidity and didn't know how much risk they were carrying.
    - When the inevitable implosion took place, it proved to be catastrophic.
- Regulation of finance is different from regulating other sectors
  - Because financial markets are different from other markets
  - Aviation - safety and pricing
  - Drugs - safety and pricing
- In what ways is the financial sector different?
  - (i) Interconnected - everyone loses
  - (ii) Don't self correct in good time - risk builds up
  - (iii) Don't know where the implosion will occur - dollar crisis
  - (iv) A collection of healthy financial institutions does not make a healthy financial system

## **Trust**

19. The most important thing for regulators is to they must inspire trust - they will do the right thing

- What is regulated is prudently regulated
- What is left unregulated is because of a conscious decision
- Shardha Scam

## **20. Conclusion - Disruptive Innovation in Finance**

- Spoke about
  - Disruptive innovation
  - Its characteristics
  - How disruptive innovation is changing the financial landscape all around the world
  - The ongoing and oncoming disruptive innovations in the Indian financial sector and what has made that possible
  - How it will challenge traditional finance, and in particular banks
  - How should banks respond
  - How should regulators respond
  - Financial sector and regulator must inspire the trust of the people

## **21. Conclusion - This Conference**

- This conference on Distributed Computing and Networking
- Has brought together some of the foremost experts in the area
- A lot of effort has gone into it from IDRBT in organizing this and from the individual experts in preparing papers and presentations
- I wish the deliberations every success
- Will strengthen the foundation for disruptive innovation in the Indian financial sector.