

Banking Technology

THE DIFFERENTIATOR

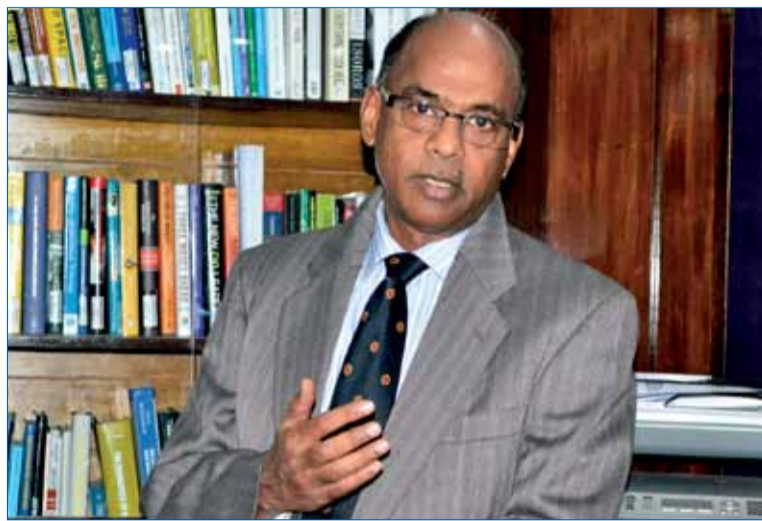
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Advertorial & Promotional Feature

Focussed on R&D in banking technology

B Sambamurthy, Director, IDRBT, highlights the key initiatives and executive programs. Excerpts...



>> B SAMBAMURTHY, DIRECTOR AND CEO, IDRBT

You have been at the helm of IDRBT for over five years now. How has been your journey?

It is not as much about my journey but journey of the institute over the last 18 years that is important. Institute for Development & Research in Banking Technology (IDRBT) since its inception in 1996 has played a catalytic role in promoting electronic payments in the country. Besides technical infrastructure, IDRBT has also created an ecosystem for quicker adoption and growth. INFINET (Indian Financial Network) SFMS (Structured Financial Message System), PKI (Public Key Infrastructure), NFS (National Financial Switch) are some of the important services that are designed, developed and deployed by IDRBT for promoting electronic payments in the country, as per the requirements of Reserve Bank of India (RBI).

Besides these services, promoting academics has been the mainstay of IDRBT. We run an M-Tech (IT) program in collaboration with University of Hyderabad. Over the years, the collaboration has produced over 200 M-Tech graduates. We are recognised as an ASSOCIATE institute of University of Hyderabad for doctoral programs.

What is your mandate?

Our mandate is development and research in banking technology. There are very few institutes with this kind of mandate.

In terms of the development mandate, we have designed, developed and deployed services like INFINET, SFMS, and PKI mentioned earlier. Our research wing provides inputs in design and development phase.

Our principal mandate is research and the focus is on banking technology. As research and teaching are mutually reinforcing the Institute is engaged in teaching as well.

We organise Executive Development programs on banking technology to train bankers on emerging technologies.

You will find very few institutions even globally with such a diverse portfolio of activities. Doctoral programs on one hand and 24x7 services, on the other extreme. One domain is added to body of knowledge and the other converts knowledge into useful services and products.

Face to Face

What has been the impact of IDRBT work on banking industry in recent times?

Let me share with you some of the growth stories of e-payments.

Firstly, National Financial Switch (NFS) that enables bank customers to use ATM of any bank, was originally strategised, conceived, designed and deployed by IDRBT. It is now operated by NPCI with a daily peak volume of over 10 million transactions.

Secondly, Peak NEFT that runs on INFINET and gateway operated by IDRBT handled volume of transactions

daily which used to be about 5 lakhs about 5-6 years ago are scaled up to nearly 6million, a 12-fold increase. Besides designing, developing and deploying the services, we also train bankers.

Thirdly, various frameworks developed by IDRBT during the last three years like IT governance, IS governance, CRM-Analytics, Social media, Green computing, among others are finding increasing acceptance and adoption by banks.

Fourthly, our various programs enhance capacity building at many banks.

You said you train bankers besides operating services and running M-Tech and PhD program in collaboration with University of Hyderabad. What are the recent developments in this area?

We have scaled up our programs from about 30 a few years ago to 80 annually.

Earlier, we were training only officers at operating level. Boards of banks also need to be sensitised on issues like IT strategy, IT governance. Recognising the need, we now offer programs on these subjects to independent directors and executive directors of banks from strategic perspective. Over 100 independent/executive directors have gone through these programs and the feedback is quite encouraging.

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'Awareness is the first step towards improvement'

Dr A S Ramasastri, Director-Designate, IDRBT, talks about the core area of innovation in banking technology

You moved recently from Reserve Bank of India to IDRBT. What do you think are the important areas of banking technology to be focused upon?

There are several. For me the first and foremost area of focus is the technology for financial inclusion. The technology that can take banking to every nook and corner of the country. The technology that can reach banking services to all sections of people, especially to those who could not avail of such services earlier. There is a need to conceive, design and implement technology solutions for financial inclusion.

How far are we from achieving total financial inclusion?

From my perspective, financial inclusion has three components - funds, funds transfer and awareness.

Making the first component, funds, available is mostly the

responsibility of the government and other agencies.

The second component is funds transfer. Making available fast and convenient ways of funds transfer comes under the realm of banks. Technology certainly plays a major role in this regard. It can help in overcoming barriers relating to socio-economic factors, geography and language. Mobile technology is one such technology. It needs to be exploited.

Surveys reveal that it is not only the intended beneficiaries who are not aware, but also the concerned staff of banks. Even if some of them are aware of such services, they are not aware of procedures for utilising them. Technology can play an important role in increasing awareness. Social networks, mobiles and interactive kiosks can help in enhancing the understanding of products and services.

But is security not a concern for all payment systems?

It indeed is. Banks have to be concerned with information security as funds are stored and transferred in digital form. Protecting fund is no more a physical security concern. It is to be managed as part of information security. So, there is a need for firewalls and intrusion prevention systems. There is need for periodical penetration tests. With state-sponsored attacks, there is need for continuous evaluation and upgradation of security systems. I strongly feel that security should be the top-most concern of a bank. By security I don't mean either only physical or only information security. I mean comprehensive security, where there is a convergence of physical and information security. Emerging technologies that handle video analytics and pattern recognition are capable of handling, what is called, enterprise security management.

You used the word analytics. Has it become the buzzword in finance and banking?

I don't think it has become. But I think it should become. Banks in India have adopted core banking solution and other such solutions for various functional areas. In the process, they have started collecting and storing large volumes of data. As the next logical step, they build data warehouses and data-marts. Now is the time for analysis of data for meaningful conclusions. Analytics should help banks in crucial areas like customer relationship management, risk management and more importantly fraud analysis.

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Q & A

Awareness is the third component and it is perhaps the crucial component. There may be several technology-based products and services made available by banks for financial inclusion. But if the intended beneficiaries are not aware of such products or services, then they don't serve the cause of financial inclusion.

With state-sponsored attacks, there is need for continuous evaluation and upgradation of security systems. I strongly feel that security should be the top-most concern of a bank



>> DR. RAMASASTRI, DIRECTOR-DESIGNATE, IDRBT

TOTAL COMMUNICATIONS: THE BACKBONE OF NEW-AGE BANKING

Naveen Chopra, Director - Vodafone Business Services, India, and **Avinash Mathur**, AVP & Head Marketing - Vodafone Business Services, India, talk about the evolution of banking industry and how innovative banking solutions enabled by new-age connectivity are replacing the traditional methods.

Enhancing the Connect

In the world of banking and finance, reliability is critical. With many transactions taking place across multiple branches, organisations need a communication platform that they can rely on to deliver sensitive information securely and reliably. Your communication solution must scale with your business growth quickly and cost-effectively. It needs to effectively accommodate increasing data volumes and provide connectivity to remote branches and ATMs.

"We converge our mobility and

wireline networks to offer many of our services. These could be backup connectivity, connectivity in remote locations, work from home employees, etc. We also bring together voice and data, wireless and wireline to help

enables 24x7x365 performance management to ensure best-in-class, high-speed connectivity, and secure links between its multiple offices spread across various locations - both in India and overseas. This enables us to rapidly respond to customers in the fast-

and achieving operational cost efficiencies," states Mathur.

In India, Vodafone has provided the MPLS solution unifying the global offices and managed network services across the geographical spread for a large public sector bank. With the MPLS solution, the bank now enjoys a single network that allows smooth flow of traffic including voice, data, and video; supports superior Quality of Service (QoS); and is reliable, secured, and redundant. Also, the solution aided efficient time management for critical business communication and operations, lowered total cost of ownership as no extra hardware was required, allowed optimal utilisation of bandwidth across locations, and provided room for flexibility so the bank can accommodate changes in their business strategy.

Enabling Secure Productivity

evolving paradigm of digital communication, he adds.

"Globally, we have provided end-to-end connectivity solutions for a large British BFSI MNC.

We delivered services ranging from network design and architecture, network management and optimisation to setting up a global MPLS WAN for over 500 global locations spanning across 40 countries. We have also centralised network and appliance operations to effectively manage acquisitions and the growing infrastructure of one of America's largest BFSI MNC. This involved migrating from a decentralised to a centralised support model

However, the biggest threat that Indian BFSI enterprises face while implementing BYOD is accidental data loss or planned information theft. "Our industry-leading mobile device management (MDM) solution, Vodafone Secure Device Manager,

provides enterprises with a secure management console which allows them to remotely configure and secure their device estate. Vodafone Secure Device Manager empowers IT administrators by allowing them to remotely manage security policies, device settings, certificates, applications, and operating systems among others. Vodafone's solution can also prove to be invaluable in the event of mobile device loss—it allows administrators to remotely lock or wipe all information from smart device," he says.

Chopra states further that VBS is also targeting productivity solutions that keep the field force always connected with the regional offices and the

servicing urban population, the same level of service is now expected in rural regions as well. Unsurprisingly, telecom and connectivity can play a vital role in making this happen.

The Indian BFSI sector, owing to the government regulations on Financial Inclusion, is geared up and has placed strong emphasis on reaching out to the large untapped populations. According to statistics, only 35 percent of Indians have access to formal financial services. While there is one branch per 12,000, only 5 percent of the villages have a bank.

With a global presence in more than 190 countries, a pan-India

VODAFONE IS PRESENT IN 190 COUNTRIES AND HAS A PAN-INDIA REACH OF 23 CIRCLES. WE CAN PLAY A CRUCIAL ROLE IN ENABLING FINANCIAL INCLUSION WITH OVER 350 DOMESTIC AND 5 INTERNATIONAL POPS (POINTS OF PRESENCE).



Avinash Mathur, AVP & Head, Marketing - Vodafone Business Services, India

Innovating to Enable Change

On the other hand, innovation is not just about enabling new services or tapping new markets, but also simplifying mundane and time-consuming tasks. Speedy and easy-to-use services form the engine of growth for banks. With customers demanding not just convenience, but comfort as well, banks are compelled to devise new ways to simplify banking. For instance, opening a bank account encompasses a tedious process that requires one's physical presence in the bank and manual documentation that takes not less than 7-8 days. It is inconvenient and time-consuming for customers and often results in loss of business opportunities for banks.

In line with its philosophy of 'Khayaal Aapka', ICICI Bank has thought of making the account opening process more convenient to the customer. This thought led the bank to launch 'Tab Banking', a service designed to give customers a hassle-free account opening experience in the comfort of their homes or offices within

BFSI COMPANIES HAVE SET HIGH STANDARDS IN SERVING URBAN CUSTOMERS. TELECOM AND CONNECTIVITY WILL PLAY A VITAL ROLE IN PROVIDING THE SAME SERVICE LEVELS TO THEIR RURAL CUSTOMERS.

Naveen Chopra, Director - Vodafone Business Services, India



headquarter locations. In fact, most of the BFSI companies regularly use their offerings like audio conferencing.

"In fact, increasingly we are offering products that are agnostic of devices as well as networks. Take Video Conferencing for instance where a user can connect to Vodafone's Video Bridge over VPN or Internet network from any service provider. And conferencing is possible even from a smartphone or tablet apart from a Video Conferencing endpoint or laptop. We also offer a choice of quality going upto full HD resolution for an unmatched conferencing experience," he explains.

Jumpstarting Financial Inclusion

While on one hand most BFSI companies have thus leaped by miles when it comes to

penetration across 23 circles, more than 350 domestic Point of Presence (PoPs), and 5 International Points of Presence, a telecom provider like Vodafone can play a crucial role in this. Vodafone's expertise in customer documentation and capability of handling millions of transactions per day makes it easy to be part of financial inclusion projects.

"Considering the way our country is growing, telecom penetration is increasing. Its impact on rural population gives an indication of interesting times ahead. In a way, we're part of the force that's shaping the future. Keeping this in mind, Vodafone collaborated with ICICI Bank to come up with an innovative service that brings the bank to

Vodafone Business Services

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Focused on R&D in banking technology

To demystify IT and bring about better business-IT alignment, we started organising a number of round tables in major metros for the benefit of business executives. Over 2,000 business executives have benefited from these round tables.

IT management and leadership program for senior executives is one of the focus areas. Every two years we introduce new programs. Social media, mobile banking, analytics, balanced score card and cloud computing are some of the new areas that banks are exposed to.

We have also started international programs in collaboration with University of Ghent for Analytics and University of Buffalo-SUNY (State University of New York) for information security. We also have student exchange program with SUNY-Buffalo.

Any other developments in this direction?

Over the last couple of years, we have set up state-of-the-art labs for analytics, mobile payment security, Centre for Information Assurance in collaboration with Buffalo-SUNY for conducting research, experiments and share the same with bankers.

To encourage banks to adopt best practices, we started developing frameworks and evangelise the same. We have frameworks for IT governance, IS governance, CRM, and Information Security, Cloud Computing, Social Media, among others.

Can you share with us any significant research initiatives and output of recent times?

One of the significant research outcomes in recent times is conceptualisation, designing and development of community cloud for Indian banking community. This is based on open source and one of its kinds in banking sector globally. The initial phase is quite encouraging and could be game changing for banking industry. Besides bringing elasticity, it could change IT delivery model in banks. Banks get that extra space for value delivery besides cost and value optimisation.

Two years ago, we have started organising doctoral colloquium giving an opportunity to research scholars to showcase their research work. They are proved popular and we are on way to our fourth edition.

Summer internship is another to connect with potential future leaders. This year we received over 2,000 applications from top-end engineering and business colleges.

We are now connected with several international bodies that are engaged in standards setting like BITS, BIAN, TOGAF, IBEX, and ISACA, among other.

What are your thoughts on evolving banking technology trends?

For quite some time, a debate has been going on brick and mortar versus virtual banking. However, what does not change is

customer engagement and experience. Demography, social and lifestyle factors would influence the choice. The right way in my view is to look at creating digital banks. Mobile would be at the centre of digital banking evolution. It should be a customer fix not tech-fix.

Besides technology adoption, people and processes are the most important key drivers. Non financial service industries like retail, health, and telecom have really revolutionised their industries, particularly from customer engagement and experience perspective. They are not *jugaad* but affordable excellence examples. Banks can learn a lot from these industries and not obsessed much with competitors. Banks need to create marketplace innovations.

Any final thoughts?

Any institution, whether commercial or academic, has to grow and stay relevant. It has been a happy growth story. But as someone said, never be satisfied. It is a journey. Opportunities are huge. I am sure that IDRB would grow both quantitatively as well as qualitatively and make an impact on society through banking industry.

What is your message to banking industry?

Banks need to focus on three things: Information, information and information.

Technology Adoption and IT Governance in Banks

Patrick Kishore, COO and G. Raghuraj, GM, IDRB, highlight the evolution in banking

Generally, every organisation looks for the most convenient process to achieve their target of deliverables. Two and a half decades ago, using IT (information technology) was an option, today 'adoption' is not a choice, organisations emerge in IT. The banking sector in India, too, has evolved from the phase of leveraging IT to getting born with IT.

The perception among top managements in general is that IT is also bureaucratic in approach and issues are not resolved in good time. IT solutions rarely meet the business requirements and are mostly delivered over budget. Solutions given by IT do not fully address the risk elements in business operations. Highly successful IT projects do not translate into business successes at the same level. There are invariably lots of experimentations and trial runs in IT which use up resources. This gets reflected in the budget overruns but the management mostly does not relate to the efforts put in by the IT teams. This disconnect between IT and Business can be bridged by a set of principles and processes that would align the goals of business with the deliverables of IT. This is the heart of IT governance.

The gap in the awareness of potential of IT between the operators of IT and the policy makers has significantly narrowed creating an environment of synergy for better management. Increasingly, top managements of banks are realising the significant impact that IT can have on the success of their organisation's processes. Managements now with the better understanding of the nuances of IT operations and the potential of successfully attaining competitive advantage are showing intense involvement and influencing policy initiatives at the stage where they are framed. This understanding has made IT governance

a major and distinct sub-set of corporate governance although the guiding principles would be the same for both.

In the banking sector, IT adoption picked up as we crossed over the millennium. On the operations areas, Core Banking Solutions revolutionised the branch concept, customers have stopped going to their bank branches with the facility of interoperable ATM cards and the versatile Internet Banking. In the payment systems area, automation of services beginning with introduction of MICR technology and progressing through electronic payments, RTGS, NEFT, online banking, CTS and now IMPS, NACH, ECSS, etc., a whole gamut of options to suit different needs is more or less met.

With the realisation of the importance of IT in all endeavours, it has assumed an important part of an organisation governance. The US-based IT Governance Institute (ITGI) defines it as: "IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organization's strategies and objectives."

With participation from organizations like ITGI and ISACA, five domains have been identified as the focus areas of IT Governance, which are, strategic alignment of IT with business, value delivery, risk management, resource management and performance measurement. While this is an idea which has taken roots in major banks, it is an evolving process where a convergence of IT and business goals would enhance the deliverables for all stake holders.

IDRB has been playing an active role in bridging the gap in technology awareness in the top management of banks. Special programmes are being convened for independent directors and executive directors of banks. The areas covered in these programmes include, role of the boards in corporate governance with IT governance, IT strategy and security framework, regulatory compliance, looking beyond core-banking, analytics, IT & business alignment, information security, among others.



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'Awareness is the first step towards improvement'

Does building and maintaining systems for operations and analytics not involve cost? How is it possible to keep recruiting and retaining IT skills to manage such large and complex systems?

You raised two concerns - cost and HR skill-set. Cost is easier to understand and manage. Though not essentially for cost-reduction, cloud computing addresses the cost issue to a great extent. Banks can start sharing resources by providing services among themselves through the cloud mode. They can even collaborate and build cloud services from shared pools. It helps in cost reduction.

Cloud can also help in reducing dependence on internal tech experts, as banks source their requirements from cloud service providers. But it may not reduce need for specialised HR skill sets. In the new paradigm, banks need people who understand the complexities of cloud services and get the requirements met at reasonable cost. More importantly, banks have to learn to retain the control over data that no more resides in the bank's systems. I am refraining myself from discussing the HR skill-set issue as it is much more complex and complicated.

You talked about analytics in the context of risk management. Are risk models not highly data centric?

They are. If you need objectivity in decision-making, you need to rely on data. Not just data. But quality data. It is in this context, I would like to emphasize on data and information assurance. There is an interesting situation prevalent in the banking industry in India. As operations need to be given the top-most priority, data is not given its due. In this context, we need to distinguish between accounting data and soft data that is around the accounting data. Soft data pertains to characteristics of the customer and the relationship. It is essential for meaningful analysis. Quality of accounting data is very good though the soft data that is needed for analytics and decision-making is quite poor. A bank may have total credit figure correctly but not sectoral credit data. Data and information assurance technology is the need of the hour, I would say. There is an imperative need to do adequate work for deployment of right technology for this purpose.

You pointed out divergent issues like information security and data quality to be important. Why do you think

these issues are not being fully addressed by the banks?

If I am not misunderstood or misquoted let me say what I consider is the gap. It is governance. There needs to be appropriate structure in place in a bank to ensure that these important issues are discussed and deliberated. Gaps are identified and necessary systems put in place to close the gaps. Some top management person should take it up with missionary zeal. Having said that, let us also recognise that there has been greater awareness of these issues at the top management level. Awareness is the first step towards improvement.

Do you think these are getting adequate focus at IDRB?

Yes, there is considerable research and development going in each one of the areas mentioned. Especially, in the area of mobile payments, cloud computing, analytics, information security and data assurance, there have been several initiatives. I expect much more to happen.

A few words to today's CIOs?

Not a few words, but I have a set of new words that are likely to engage today's CIOs - SecConvergence, TechKnowlogy and IntelliSense.

Cloud Computing Decoded

S. Lalitmohan, Sr Tech Manager and Dr. N P Dhavale, Dy GM, IDRB, give the lowdown on the technology that's poised to improve operational efficiency

Information Technology and the associated infrastructure have deep roots in today's economy. The Indian banking and financial sector has leveraged IT in great strides for operational efficiency. With increased adoption of IT, the focus has been to optimise the usage and consolidate the IT investments. Adoption of cloud computing technologies would improve the operational efficiencies of the banking and financial sector.

Cloud computing can be broadly described as scalable, distributed as well as parallel computing system. It consists networked and virtualised IT resources that are logically treated as one or more unified resources for the IT infrastructure requirements. National Institute of Standards and Technology (NIST, US) describes cloud computing as a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

The five key characteristics of cloud computing distinguishing from other service architectures are:

On-demand self-service: The user getting processing capability, storage on a network without having to deal with another human being.

Broad network access: Obtaining access over the network through standard network connectivity protocols, the access devices can be mobile phones, tablets, laptops or even work stations.

Resource pooling: Multiple users are served through pooled computing resources (storage, memory, network bandwidth, etc).

Rapid elasticity: Provisioning and release of computing resources even automatically. This allows an application to be skilled rapidly outward and inward as per demand requirements.

Measured services: The resource (storage, processing, network, bandwidth and active user accounts) usage is monitored and reported for transparent charging mechanism.

SOME OF THE POPULAR CLOUD COMPUTING SERVICE MODELS ARE:
Infrastructure as a Service (IaaS): In this model, computers, storage and other components such as Firewalls for security, network connectivity and load balancing are provided by the cloud service provider (CSP). Typically, CSPs maintain large pool of processing storage and net-



work resources in their data centers and make these resources available on demand to the users.

Platform as a Service (PaaS): Computing platform including operating system, execution, enrollment of programming language, database, application and web server are provided by the CSPs. Application developers develop and run their software solutions on the cloud platform. The responsibility of maintaining the underlying hardware and software layers lies with the CSP.

Cloud computing can be broadly described as scalable, distributed as well as parallel computing system

Software as a Service (SaaS): Organizations use the application software from CSP. The responsibility of maintenance of the IT infrastructure, the platform of the application, application itself and the people is with the CSP. Organizations do not have to make any capital investment and pay to the CSP based on the software usage.

IaaS is the most widely used Cloud Service model in the world. However, SaaS model adoption is catching up with the increased business automation and process generalization.

Some of the popular deployment models of the Cloud Computing:

Private Cloud: The cloud infrastructure is exclusively for a single organization with many users or business units of the organization. The infrastructure may be in/outside the premises of the organization.

Community Cloud: Cloud Infrastructure for a specific community of users with common interests (for example requirements of Security, Policy, Compliance, Legal requirements etc.) IDRB's Indian Banking Community Cloud (IBCC) is the first community cloud for banking sector in the world. IBCC offers IaaS, PaaS and SaaS solutions for the banking sector. Banks leverage IBCC as a DR solution, for hosting new applications, Dev/Test site, etc.

Public Cloud: As the name suggests this type of deployment is for anybody and everybody i.e., general public. Typically, such clouds are owned, operated, controlled by the business economy or Government organization.

Hybrid Cloud: This is a composition of two or more different cloud infrastructures (private, community or public), the characteristics of the hybrid cloud is that a standardized or proprietary technology that allows easy holding of data and application. **The key advantages of Cloud Computing are:**

Cost Efficiency: Optimal utilization of computing resources and leading to higher cost efficiency.
Accessibility: Anywhere anytime and

from any device, access of all the desired data and information.

Agility: Faster service and reduced product rollout times.

Scalability: No delay in obtaining required hardware and implementation of an application, since the required infrastructure is readily available as a service and can be deployed in production anytime after the requirements are finalized.

High Availability: As cloud computing makes use of parallel and distributed computing resources, high availability is ensured by making use of available resources anywhere in the cloud depending on the exigencies.

SOME OF THE CONCERNS IN TODAY'S WORLD RELEVANT TO CLOUD COMPUTING ARE:

- Data Concerns:** Since the data and information is available on the cloud and not with the owner and there is a concern on data access and data location. For Banks, RBI has recommended that customer data has to reside in India. There may be other legal and regulatory compliance issues on the usage of public clouds in such cases organizations may be forced to accept private cloud deployment which could costlier than public cloud infrastructure.
- Lock-in:** Organizations need to understand and validate the interoperability standards and the ease of removing data from the CSP.

Data Analysis To Data Analytics: A Phenomenal, Productive And Profitable Transition

Prof. V Ravi, Member of faculty and V S Mahesh, Asst GM, IDRB, clear the air on the two different terminologies

Let us suppose, a bank needs to find out the customer value of a customer, whose profile is as follows: (i) An industrialist has a savings bank account in the Bank with an average balance of Rs1 lakh (ii) He is also a partner in a firm which maintains a current account in the Bank with an average balance of Rs 50 lakh; the income on account of guarantees / Lcs which works out to Rs 50 lakh p.a. (iii) He is also the Managing Director of a Goodwill Company which enjoys an overall credit limit of Rs 100 crore for which he has given his personal guarantee. Other income works out to Rs 100 lakh (iv) He has a housing loan of Rs 5 crore with his spouse. (v) He has two children who are planning to pursue higher studies in the USA. The total outlay of the study works out to Rs 2 crore. A form of Data Analytics, implemented after a data warehouse is in place, possibly can provide answers to such complex queries.

Data Analytics plays a significant role in virtually every field, where data could be collected and stored. Data Analytics is vastly different from data analysis. While data analysis, by convention, connotes Descriptive Statistics, data analytics goes beyond descriptive statistics into the fields of computer science and operations research.

Service industries, including banking derive immense advantage from data analytics. Analytics is of three types: (i) Descriptive (ii) Predictive and (iii) Prescriptive. Descriptive analytics concerns various ways of depicting the past and present data using Statistics and Online Analytical Processing, whereas Predictive analytics answers questions like what is going to happen based on the past data using data-mining, text mining and web-mining. However, Prescriptive analytics provides insights from the data that are not necessarily predictive in nature using operations research and optimization techniques.

In banking, analytics is paramount in several areas such as (i) Customer Relationship Management, (ii) Credit risk modeling (iii) Market risk (subsuming FOREX rate, interest rate and liquidity risks) modeling (iv) Operational risk modeling (subsuming bankruptcy prediction, advanced measurement approach etc) (v) ATM Cash replenishment modeling (vi) ALM modeling using optimization (vii) Productivity/profitability-based ranking of banks and (viii) Portfolio optimisation. The list is only illustrative.

Irrespective of the field of application, the success of analytics hinges on the three important dimensions - people, process and quality data. Let us understand use of analyt-

tics with the help of an important field of its application in banking, CRM. While people and data aspects are utmost important in all the areas, process dimension is very critical in CRM related areas. It is because we cannot derive any tangible or intangible benefit from the efforts and investments from other dimensions, if processes remain archaic.

CRM is most-often heard buzzword in marketing which advocates 'customer-centric' philosophy replacing the age-old 'product-centric' philosophy. This paradigmatic shift dramatically changed the way business conducted across all services industries, viz., banks, retail, insurance, telecom, etc. Analytics helps solve problems in all phases of customer lifecycle steps, viz., (i) Acquiring new customers (ii) Serving the extant customers well and making them profitable (iii) and finally, retaining existing profitable customers.

The business problems that fall in the purview of CRM are (i) Credit scoring (ii) Default (NPA) prediction (iii) Target marketing (iv) Market Basket Analysis (Cross-sell/Up-sell) (v) Churn prediction (vi) Fraud detection (transactional and non-transactional) (vii) Customer life value modeling (viii) Customer sentiment analysis (ix) Anti money laundering. Successful implementation of a CRM initiative requires extensive data about customer and his transactions.

Of late, data analytics assumed different proportion altogether thanks to the advent of 'big data'. Big data is characterised by volume, velocity and variety. While people faced dearth of data in all fields about 20 years ago, nowadays, there is a data glut in every sphere of human activity. Volume connotes the sheer size of the dataset or database; velocity refers to the speed with which data comes and goes and finally variety refers to the multitude of data format: structured and unstructured. The former can be stored in an RDBMS, but the latter requires a radically different kind of storage. The latter kind of data includes customer complaints, emails, audio, video files etc. In service industries word-of-mouth marketing is fast gaining acceptance and that is possible only because of big data analytics.

In summary, while analytics can solve virtually any decision-making problem in service industries in general and banking, in particular, it should be remembered that is not a silver bullet. In other words, the other three dimensions viz., people, data and process should be accorded equal importance if not more. Incidentally, IDRB set up a Center of Excellence in CRM and Analytics in 2010, which has been very much utilised by banks in India.



INFORMATION SECURITY

The U.S. National Information Systems Security Glossary defines Information Security as the protection of information and information systems from unauthorised access, use, disclosure, disruption, modification, or destruction in order to provide confidentiality, integrity, and availability. The three key properties namely confidentiality, integrity, and availability; together are more popularly known as the CIA Triad. Confidentiality is the ability to hide information from those people unauthorised to view it. Cryptography and Encryption methods are an example of an attempt to ensure confidentiality of data transferred from one computer to another. While cryptography is the science concerned with the study of secret communication, encryption is the process to transform usable information into a form that renders it unusable by anyone other than an authorised user. Integrity is the ability to ensure that data is an accurate and unchanged representation of the original secure information. One type of security attack is to intercept some important data and make changes to it before sending it on to the intended receiver. These are more popularly known as Man in the Middle attacks. Finally, availability is important to ensure that the information concerned is readily accessible to the authorised user at all times. Some types of security

Dr. N Raghu Kishore, Member of faculty and **Dr. V Radha,** Member of faculty, IDRBT, share the insight on the key issue that has become a cause of concern among banking and financial institutions

attacks, more popularly known as Denial of Service (DoS) and Distributed Denial of Service attacks (DDoS), attempt to deny access to the appropriate user. In case of a bank this is done to disrupt the banking operations so as to inconvenience the customers resulting in loss of the customer's trust in the bank and destruction of the bank's business. Trust is the key to success in banking and financial services. People come to banks because they trust that the bank will honor and hold on to its promises "what may come." The principles of information security explained above lay

the foundation in building, winning and establishing the trust with the customers. Ensuring information security is easier said than done in the 21st century. Unlike in the 20th century, where most transactions took place face-to-face at the bank's premises, today much of the interaction with the customer happens remotely. The customer touch points today are not bank branches but rather ATM kiosks, PoS terminals, Credit and debit cards, internet and mobile banking. One of the key enabler for banks today is information technology. Today, computers, Internet, hardware and software are both a boon and bane to banking industry. IT systems are vital to information processing and improving the overall productivity of the bank; it nevertheless is the primary cause of security risk. Security solutions do not create trust but rather help in moving trust from where it is present to where it is necessary. Given a society that is both global and local at the same time, it becomes necessary for the bank to move data and trust in the data along with it. This is often done through several technical components namely applications to process data, server to make the data available and network to move the data as and

when required. Therefore, information security is no more about protecting the stored data but rather protecting it throughout its life span, from the initial creation of the information, transmission and on through to the final disposal of the information. Public Key Infrastructure (PKI) based on elliptic curve cryptography (ECC) has become an emerging standard for most organisations. Today, advanced symmetric key encryption algorithms like AES256 are used for securing databases and data stored. In India, the key length of the algorithm is mandated by the Controller of Certifying Authorities under the Information Technology Act 2000, as amended. This provides for legal validity and the need for ensuring non-repudiation of digitally signed electronic messages and documents. However, though these RSA-based signatures are strong they require robust infrastructure and complicated application processes to implement. Thus, hampering extensive usage. As banks move towards adoption of virtual and distributed work environments and reaching out to the non-HNI customers, there is a need to explore alternatives, such as "electronic signatures" in addition to digital signatures. Information security is a multi-disciplinary area of study and professional activity, concerned with the development and implementation of security mechanisms of all available types (technical, organizational, human-oriented and legal). Given the remoteness of customer it is vital to keep information stored within (data centres) and outside (on the cloud) the bank's premises secure at all times and under all conditions. Banks should pay equal attention to information systems, where information is created, processed, stored, transmitted and destroyed, free from threats. Based on the business process and technology adopted, banks need to access threats to not only information but also information systems (hardware and software tools), categorize the threats and identify a security goal to each category of threats. That is the bank should develop a detailed risk management policy. Business process and IT systems evolve and so do threats. Information security is a continuous process and therefore banks should periodically revisit and revise their risk management policy to ensure its adequacy and conformance with the evolving work environment. The Information Assurance & Security (IAS) Octave, extends CIA Triad by including five other properties namely privacy, authenticity & trustworthiness, non-repudiation, accountability and auditability. Together with confidentiality, integrity, and availability they form a more robust set of security goals.

Mobile Payments: The way forward

Dr. V. N. Sastry, Member of faculty and **Dr. Rajarshi Pal,** Member of faculty, IDRBT, shed light on this futuristic mode of payment for every transaction

Is it possible to use a mobile phone to (i) pay to a shopkeeper, vegetable vendor and auto-driver; (ii) send money to my relative or friend anywhere; (iii) pay periodic bill payments as electricity, water, newspaper, cable TV, insurance, loans, taxes, gas, school/college fees; (iv) book my movie tickets, bus tickets, train tickets, flight tickets. Yes, is the answer. It can be done by any mobile phone varying from a very low-end feature phone to a very high-end smartphone. Since the mobile phone subscriber base in India is very high with over 900 million users as on May 2014 and is growing at a high rate, there are many advantages and great demand for using a mobile phone to meet day to day payment needs. It provides convenience as we do not need to go to an ATM or bank to withdraw cash to pay to someone else, thereby saving time and cost. It provides comfort and privacy because it can be done from any place and at any time and from own device. Inter-Ministerial Group (IMG) has also recommended greater use of mobile phones for varied financial services. If one has an account in a bank then Mobile Banking Services can be availed by registering the mobile phone number with the bank and get an application installed. It enables to get information services such as balance enquiry, mini-statement, cheque-book request, or payment services such as funds transfer to someone having account in the same or other banks, known as intra-bank or inter-bank payments. The bank account is linked with a number called MMID (mobile Money Identifier). This enables a payment process known as IMPS (Immediate Payment service), which is a unique mobile payment model designed by the Mobile Payment Forum of India (MPFI), implemented by the National Payments Corporation of India (NPCI) and provided by all public sector banks and other major banks in India which is interoperable across all banks, telecom operators and mobile devices. IMPS has become popular because of its simplicity, real time confirmation of payment, least cost and masking of bank account number from being revealed to unknown persons. Mobile phones can also be used to transfer funds



also using (i) the National Electronic Funds Transfer (NEFT) format where the beneficiary's Bank IFSC (International Financial System Code) and Account Number are specified or (ii) Aadhar-Enabled Payment System (AEPS) format where the beneficiary's Aadhar Number issued by the Unique Identification Authority of India (UIDAI) is specified, which is linked to a default bank account number. The challenge for banks is in developing different varieties of mobile banking applications, which are required to work on different platform enabled mobile phones, depending on operating system of the mobile device and its specific model. Efforts are on to include all users, even those who have low-end mobile phones, to access Short Message Service (SMS), Unstructured Supplementary Service Data (USSD) and Interactive Voice Response System (IVRS) channels. Regulators have issued enabling guidelines to the stake holders. Banking Correspondent (BC) with a Micro-ATM Device or merchants already using Point of Sale (PoS) device contribute greatly in this endeavor for cashless payment transactions with proper authentication of the user. Initiatives to make it feasible for citizens to access mobile payments, even if one does not have a bank account or has account in a post-office or insurance company are also under study. Although bank-led model is followed in India, Telco-led mobile payment initiatives such as mobile wallet are emerging. Pre-paid Payment Instrument (PPI)-based mobile payments including RUPAY card are in progress. In the future, hybrid mobile payment model taking multiple stakeholders into account is expected to emerge.

Information ASSURANCE AND MANAGEMENT

Dr. B M Mehtre, Member of faculty and **Dr. G R Gangadharan,** Member of faculty, IDRBT, shed light on the threat of malware and cyber-attacks to any organisation



In recent years, enterprises and government organisations face myriad of cyber-attacks of unprecedented sophistication and reach. Despite spending a huge amount of investment annually for traditional security defences, organizations struggle with a new generation of cyber-attacks, such as advanced malware, targeted attacks, and advanced persistent threats. These are multi-vectored and multi-staged attacks which are dynamic and stealthy in nature and could compromise today's networks to a greater extent. Recent victims of these cyber-attacks included installations of high importance with good security. Some of these attacks could be state-sponsored category. "Know thy enemy", an important theme from Sun Tzu's infamous 'The Art of War' manuscript becomes an important requirement to meet Information Assurance (IA). IA as a requirement has evolved from the necessity of protecting data to ensure information security IA has broader connotations as it addresses the entire gamut of issues and explicitly includes reliability, access control and non-repudiation with a strong emphasis on strategic risk management.

The goals of an enterprise that looks for information assurance include protecting information, defending systems and networks, providing integrated IA situational awareness, enabling IA capabilities, and creating an IA-empowered workforce. Information Assurance is about ensuring that authorised users have access to authentic and authorised information at the authorised time. IA addresses the measures required for protecting computer systems, networks, and information from unauthorised access, use, disclosure, disruption, modification or destruction. IA is a cornerstone of any organisation for getting transformed into a secure interoperable, net-centric Information Technology Enterprise. Generally, a Defence in Depth (DiD) approach is taken to IA, layering IA principles and controls that apply to people, processes, and technology by integrating and controlling all of the organisations. As part of DiD, IA controls should be selected to mitigate both external and insider threats. Strategically, a balance between protection capability along with costs and performance issues with operational considerations has to be struck.

IA accomplishes a net-centric interconnected environment by facilitating confidentiality, integrity, availability, authenticity and non-repudiation. IA is an iterative process where risk assessment, analysis and management have to be periodically revised and enhanced based on the completeness and effectiveness of the gathered data. Following are the five different phases of information assurance process:

- Enumeration and classification of the information assets Risk assessment (vulnerabilities and threats)
- Risk analysis (probabilities/likelihood and impacts)
- Risk management (mitigation, elimination, acceptance or transfer of risk and prevention, detection, and response to threats.)
- Test and evaluation (formal audits)

 Information assurance processes create a path towards achieving the goal of assurance. There are several standard risk management frameworks, such as Risk IT, CobiT, PCI DSS, ISO 17799, and ISO/IEC 27002. Information technology professionals must assure their information systems are compliant with privacy and security laws, regulations, directives, and the secondary policies, procedures, and guidelines. Each organization's information assurance (IA) initiative must include employing measures to protect and defend information leak. The next-generation systems and architecture for information assurance and cyber security include the following:

- Trusted computing base architectures
- Inherently secure, high-assurance, and provably secure systems and architectures
- Composable and scalable secure systems
- Autonomic (self-managing) systems
- Architectures for next-generation Internet infrastructure
- Quantum cryptography

 In view of its importance and relevance to the financial sector in India, IDRBT is setting up the Center for Information Assurance and Management (CIAM) in collaboration with the State University of New York at Buffalo, USA. The Center will work towards becoming a "one stop" resource centre for responding to requirements of standards in information assurance. These standards will be for management technology, tools, literature, etc., and will be developed with inputs from experts from India and abroad for the benefit of Indian banking and financial sector.

Cisco champions Omnichannel FOR BANKS

Arindam Mukherjee shares insight on the technology that is revolutionising the whole banking experience of a customer



OMNICHANNEL ENABLES "VIRTUALIZATION" OF YOUR MOST IMPORTANT ASSET- PEOPLE AND EXPERTISE

With customers expecting banks to be "always mobile" and yet looking for personalized advice, the banks of today need to deploy a true omnichannel approach to meet these expectations. This includes differentiating between transactions that need to be made fast, convenient and automated; and interactions that need to be personalised and media-rich regardless of the channel. Successfully deploying such an approach will help drive customer acquisition and upsell / cross-sell in advice-driven categories (e.g., mortgages, small and medium businesses, lending, wealth management, etc.) leading to increased customer loyalty and profits. To maintain the balance between the cost of talent and having experts at branches, banks are increasingly looking to technologies that give customers access to remote experts at home or office, complementing face-to-face interaction and assisting them in closing the transactions. Think of this as "virtualising" your most important resource - people. Cisco's Omnichannel solutions can help bank's deploy this approach by enabling and equipping its employees to serve the right customer at the right time and place with the right tools. These solutions span full and self-service channels including Remote Expert capability in branch, at interactive kiosks, and via mobile devices and portal. Our customers have already seen significant success with this approach. We realize that banks need to improve their transaction efficiency and enhance the in-branch experience for customers waiting to be served, for which we support transaction automation efforts with Interactive kiosks, supported by a video contact centre and offer a connected mobile experience solution for customer identification, personalised engagement and use-data for queue management at the branch. These next-generation branches can be designed on a low cost model which consumes lesser real estate and limited skills to scale the network with fully automated functions lowering operating expenses and providing a superior experience.

Cisco® Mobile Advisor (MA) helps you transform your customers' online and mobile experience by turning impersonal transactions into personal interactions. It gives you the ability to deliver a consistent video-enabled experience—anywhere, anytime, and on any device. As a result, you can differentiate your bank with superior service, form closer relationships, and meet customers' financial needs. The integrated platform allows seamless Voice & Video Collaboration with embedded capabilities for Web and Mobile users. With Cisco Mobile Advisor, your customers can conduct business through visual, self-service choices on their smart phone, PC, laptop, or tablet computer. Cisco Mobile Advisor uses proven Cisco Unified Communications infrastructure and integrates with your customer relationship management (CRM) and customer information file (CIF), as well as with your mobile and Internet banking applications. Most importantly, this captures sales at point of client interaction making Anytime, anywhere, any channel consistent access to expertise improves close rates & cross-sell ratios.



The writer heads the Banking and Financial Services Business at Cisco (India & SAARC)

Paradigm shift with BANKING TECHNOLOGY

Riding high on the technology wave, the country's banking industry looks set for greater transformation as it looks to tapping the rural market as well

India is considered among the top economies in the world, with tremendous potential for its banking sector to flourish. The last decade witnessed a significant upsurge in transactions through automated teller machines (ATMs), as well as internet and mobile banking.

The country's banking industry looks set for greater transformation. With Parliament passing the Banking Laws (Amendment) Bill in 2012, the landscape of the sector has duly changed. The bill allows the Reserve Bank of India (RBI) to make final guidelines on issuing new licences, which could lead to a greater number of banks in the country. The style of operation is also slowly evolving with the integration of modern technology into the banking industry.

In the next 5-10 years, the sector is expected to create up to two million new jobs driven by the efforts of the RBI and the government to expand financial services into rural areas. The RBI's new norms will offer incentives to banks to spot bad loans and take necessary recourse to curb the practices of rogue borrowers.

These days, banks in India are turning their focus to servicing clients and improving their technology infrastructure, which can help better customer experience and give them a competitive edge. The popularity of the internet and mobile banking is at an all-time high, with customer relationship management (CRM) and data warehousing anticipated driving the next wave of banking technology in the country.

The financial reforms that were initiated in the early 90s and the globalisation and liberalisation measures brought in a completely new operating environment to the banks that were till then operating in a highly protected milieu. The arrival of foreign banks and financial institutions, the setting up of a number of private banks and the measures of de-regulation that encouraged competition has led to a situation where the survival of those who do not join the race will become difficult. Unless the state-of-the-art IT was introduced as early as possible, winning new business and even holding on to the old one will

become increasingly difficult. Services and products like 'anywhere banking', 'tele-banking', 'Internet banking', 'web-banking', e-banking, e-commerce, e-business, among others have become the buzzwords of the day and banks are trying to cope with the competition by offering innovative and attractively packaged technology-based services to their customers.

Simultaneously, the importance of effective MIS for control of operations and of maintaining customer and business/industry data bases for strategic planning has also surfaced; while banks are looking at data warehousing, data mining, business restructuring, among others as most essential things to have as early as possible, they are taking urgent steps to computerise the operations in their administrative and controlling offices (viz. head/zonal/regional offices) as well as the data collection machinery, so as to evolve an effective MIS. In this phase, the new communication revolution sweeping the nation and the world has come in extremely handy, as the communication infrastructure has improved significantly and the Internet technologies are available to network branches at a relatively low and affordable cost with a high degree of reliability.

Today, technology allows people to bank without bankers, this is set revolutionise the Rs80-trillion Indian banking industry.

For example, e-banking kiosk, otherwise called e-lobbies, is the unmanned self-service banking outlets that operate far beyond official banking hours. A customer can undertake routine transactions like cash deposits, passbook updation, cheque deposits, cheque book requests or a pin change, without having to visit the bank. Unlike ATMs, which are primarily used for cash transactions; these self-service, tamper-proof kiosks installed besides ATM outlets are to be used for non-cash transactions. This will not only speed up banking services, it will also save operational costs for banks.

The concept of the e-lobby was initially introduced in 2005-06. However, ATMs were just gaining popularity way back then, so bankers had to wait before they could aggressively roll out these superior services. Then came the recession, and investments in new technology became tight thereby putting e-lobbies on hold once again.

Banking today is a flourishing industry, focused on technological innovation. Internet banking has emerged as the biggest focus area in the 'digital transformation' agenda of banks.

In 2012-13, Indian banks deployed technology-intensive solutions to increase revenue, enhance customer experience, optimise cost structure and manage enterprise risk. However, there is a wide variation in the technology agendas and implementation capability across different players of the banking industry: Enhancing core banking value, revamping the digital agenda, moving from information to insight, dealing with a changing risk regime, from cash to electronic modes of payment, grappling with financial inclusion, empowering employees, accelerating innovation,

among others.

Internet banking: The shift towards internet banking is fuelled by the changing dynamics in India. By 2020, the average age of India will be 29 years and this young consumer base is internet savvy and wants real-time online information. Indian banks, therefore, need to aspire high and move towards implementing a world-class internet banking capability.

Urban areas had a total of 205 million internet users in October 2013 that accounts for 40% year-on-year growth, while rural India have 68 million users and a growth rate of 58% year-on-year.

Business intelligence: India's banking industry is on the cusp of a major transformation, with new banking licenses expected to bring in more players in an already competitive environment. In such an environment, banks across India are increasingly adopting business intelligence (BI) and analytics to drive their overall profitability.

RBI has also encouraged banks to adopt BI to increase transparency and control over the banking business. The Automated Data Flow (ADF) initiative has been a strategic step in this direc-

tion, seeking to ensure submission of correct and consistent data from banks' systems to the RBI without any manual intervention.

Customer management: Banks need to clearly articulate and measure the expected benefits from the winning strategies which would be dependent on the value various initiatives provide customers. These include: Customer segmentation, co-creation, CRM to customer experience, use of alternative channels, effective cross and upsell and risk management and information security.

Core Banking System (CBS) is widely used across the banks for transaction management. However, its integration with risk management and other enterprise level applications is still at preliminary stages.

Some key risk management methods include: Credit systems, enterprise risk management systems, and liquidity risk systems.

With the advent of mobile computing, social media, cloud computing and increasing sophistication of hackers it is evident that the risk environment is changing. With more and more cases being registered under the IT Act 2000, banks can no longer ignore privacy of customers.

Emergence of low-cost channels like Internet banking, mobile banking, and mobile ATMs have been successfully implemented by many

players and have also found wider acceptance in the customer base. This has led to enhanced focus on digital banking and self-service channel usage to reduce the cost of operations.

The introduction of NEFT and RTGS were watershed moments in India's payment landscape which enabled a significant shift to electronic payment forms at a lower cost. The Pan India UID program when linked to financial transactions is expected to significantly plug the current leakages in Government welfare schemes.

In the current environment, the key focus areas of bank are lowering cost of funds, faster rollout of products achieving financial inclusion and priority sector lending targets in a profitable manner, compliance with various national and global regulatory norms and increased customer satisfaction.

Going ahead, disruptive technologies such as SMAC (Social, Mobile, Analytics and Cloud) are carving a new path of innovation in banking functions and strategy. SMAC technologies can improve the loyalty of existing customers, help banks engage these customers in new services, and increase the market share for banks by attracting new customer. India's banking industry could become the fifth largest banking sector globally by 2020 and the third largest by 2025.

SMAC technologies can improve the loyalty of existing customers, help banks engage these customers in new services, and increase the market share for banks by attracting new customer

Financial INCLUSION and TECHNOLOGY

M V N K Prasad, Member of faculty and M V Sivakumaran, Member of faculty, IDRBT, highlight the need to reach out to the low income strata

THE NEED FOR FINANCIAL INCLUSION

Financial Inclusion (FI) means providing low-cost services related to banking transactions, remittances, savings, loans and insurance to the poor and less privileged and people in remote and unbanked areas. The need for Financial Inclusion is widespread, not just in India but in most parts of the world. A recent study says that half the world's population lacks access to formal banking services.

Technology as an Enabler

The delivery channels for FI broadly fall into four different categories: (a) Using offline handheld devices linked to a bank account, (b) 'Kiosk Banking' (c) Use of mobile devices and (d) Mobile van (in a few places). Technology plays an important role in delivery of banking services in FI in two major ways: 1) The kiosk model which operates from a fixed location using the banks' portal through the internet and 2) The handheld device that uses a smart card. Both these modes rely on biometrics for authentication of transactions by customers. The biometrics are collected at the time of opening of the bank account. All the transactions are completed online and are linked to a banks' core banking system. In the case of offline handheld devices, the transactions are updated at the bank's server at frequent intervals. Of late the offline transactions have drastically come down, as matter of policy. Aadhaar enabled Micro ATMs (PoS) have also been introduced recently.

FINANCIAL INCLUSION IN ACTION

The Business Correspondent Model

The Business Correspondents are usually people from the same village/region chosen by banks for this extended banking service at the doorsteps of customers. The BCs are effectively assisted by technology enabled FI delivery mechanisms as mentioned already. The first RBI guidelines regarding the BC model were issued in January 2006. Banks were permitted to appoint BCs for an array of banking services. The impact of the BC model has been significant and the success of this model largely depends on the ability of the bank to supervise and motivate the BCs.

This model has succeeded in under-banked and unbanked areas where the BC operates regularly and without any

REACHING OUT TO THE GRASSROOTS

Although technology plays a major role, improving financial literacy and credit counselling in fact should precede delivery of financial products to ensure real empowerment and emancipation of the poor and underprivileged

hitch. An advantage of the BC model is that it promotes the saving habit among the poor, who often use the bank accounts to keep their savings. An added advantage of an efficient BC outlet is that it helps the poor customers with easy access to Bank Credit, saving them from the clutch-



of the usurious moneylender. And the bank is also better off in recoveries since the BC is in close contact with the borrower he is serving.

Standards for Smart Cards and Micro ATMs

The lack of common technical standards has impaired the pace of technology deployment for Financial Inclusion leading to vendor dependence for technology components. This has restricted customers from having the necessary freedom to use their smart cards across all outlets of the same bank. IDRBT teamed up with the Indian Banks' Association (IBA) to provide a solution to this vexatious problem by constituting a Technical Committee of representatives from banks, IIT Kanpur and National Informatics Centre to develop an Open Standards for Smart Card based Solution for Financial Inclusion.

Similarly, there was a need for open standards for interoperability of the Micro ATMs used in FI. IDRBT joined hands with the Unique Identification Authority of India and IBA to develop open standards in this regard.

Although technology plays a major role, improving financial literacy and credit counselling in fact should precede delivery of financial products to ensure real empowerment and emancipation of the poor and under-privileged.

InfrasoftTech enabling banks & financial enterprises for the next level of growth



Hanuman Tripathi highlights the innovation centric approach that is enabling banks and financial enterprises to gear up for the future

In the past few years, banking is changing fast with advent of new technology taking customer centricity, financial inclusion, risk management, productivity & compliance to a new high.

One of the fastest growing areas is adoption of Mobility as a core platform and focus on multi-channels rather than branches. InfrasoftTech, as a specialist Banking & Financial Industry software

company has built solutions to serve enterprise mobility needs of financial institutions. This includes mobile payments, mobile banking, tab-based CRM application for wealth management and agents banking, microfinance & financial inclusion solution for the masses. Loan Origination and Lead Management Applications are also being included in the mobility stack. InfrasoftTech and Kony Mobility-USA work closely in these areas. Recently, one of the largest banks in India launched its Mobile Payments services on hosted solution built by InfrasoftTech on Kony platform.

It is widely believed that smaller banks worldwide would not spend time & money in creating data centers or IT teams for implementation of in-house enterprise solutions. Cloud/Hosted Core Banking and Payment Solutions will deliver world class systems to small banks & FIs at low cost and thus is of great importance to India as well as all emerging countries. RBI has advised all smaller banks not automated as yet, to go for Core Banking and adopt the sub-sponsor based Shared ATM Switch connectivity in order to provide their customers access to national ATM services, clearing, settlement & payments services of NPCI. InfrasoftTech has launched CAPEX-free Hosted Core Banking, ATM Switch & Payment Solution that already

has more than 30 banks subscribing to the same and is fully geared-up to service large number of banks through its hosted solutions. InfrasoftTech works closely with NPCI to deliver their vision of all banks in the country being hooked-up to the national digital payments platform.

One of the significant changes in technology space in India will be driven by new generation banks including those rebranding themselves. It seems, all of the new generation banks may be ready to experiment with technology on Cloud/Hosted model and would look for diversity of vendor experience of serving rural poor as well as HNIs & Corporate, preferably from one core solution delivering multi-channel services with a centralized GL, P&L and balance sheet. The solutions built by InfrasoftTech namely Core Banking, Trade Finance, Payments Solutions, Financial Inclusion, Anti-Money Laundering, Mobility and Data Management, are all world-class with global sites. These solutions are backed by highly proven track record of InfrasoftTech extending two decades, working with Indian Cooperative Banks, NBFCs, PSU Banks and Insurance companies on one hand and with some of Global Top 10 Banks on the other, delivering custom solutions & services. The company is also right size to look after new banks for the kind of attention and personalization they would need.

Another technology area that will change dimension of MIS forever is Big-Data. InfrasoftTech is building solutions in the area of Predictive Analytics using BigData with Social Media analytics, GIS integration and existing Transaction Data available within the bank. This combination would enhance the potential of having to improve both CRM and Risk



Management. InfrasoftTech will deliver unique competitive edge to banks in this area, the core differentiator for the banks in future.

One area of global interest is use of anti money laundering technology to enhance fraud surveillance and FATCA compliance world over and also eKYC in India. InfrasoftTech has definite advantage here with nearly a decade spent delivering AML solution for compliance jurisdictions of 32 countries. Our AML platform with these advanced modules already has reference sites in international markets.

To summarise, banking technology world over is undergoing a massive unprecedented change. This challenge will be won by companies who have depth, are agile and are committed to the industry for genuine growth of the banks. InfrasoftTech is proud that its customer banks have grown multi-fold in the past few years and is now partnering with the banks globally to fuel their growth rapidly in the new business environment.

The author is Founder & Group Managing Director of Infrasoft Technologies Limited