Chapter 1. Preamble

This chapter gives a brief sketch of the Indian banking, followed by efforts for computerization since 1980’s and traces the major milestones of IT deployment in banks in terms of technology adoption, business implications and regulator’s directives. It also provides graph of IT Security in banking over these two decades. This is just a cursory curtain raiser; an elaborate account of Banking, IT in Banking, IT Security and Training is presented in chapters that follow.
1.1 Before we delve into the computerization in Indian banking, it would be pertinent to mention about its heterogeneity. In line with our national characteristic, Indian banking exhibits a sort of diversity in unity across various dimensions:

- **Constitution** There are multiple organizational varieties, viz. public sector banks (e.g. Dena Bank), private sector banks (e.g. IndusInd Bank), cooperative banks (e.g. Rupee Bank) and regional rural banks (e.g. Akola Gramin Bank), etc.

- **Scale** Business volumes show a wide spectrum of banks having a limited size of just few crores (e.g. Rourkela Coop Bank), right up to giants of few lakh crores (State Bank of India).

- **Spread** Broad spectrum of expanse and penetration ranges from banks having branch count in single digit (Surendranagar Coop Bank) and extends to colossal banks having nearly ten thousand branches (e.g. State Bank of India), distributed across length and breadth of nation.

Reflections in this chapter were inspired by some classic texts and periodicals on banking that considerably influenced careers of two generations of bankers. These discussions are correlated to first hand experience, too. These works are gratefully acknowledged in bibliography for the enrichment and enlightenment they brought about for the researcher.
• IT Deployment While some banks are yet toying with an idea of procuring the first ever computer (e.g. Bilaspur Raipur Gramin Bank), some others have a comprehensive, complex and costly IT infrastructure catering to absolutely every single banking need (e.g. HDFC Bank) and use of IT even as a strategic tool for business.

This diverse mix of Indian Banking suggests that ensuing discussions are bound to be a bit generic to denote a common denominator for all the private and public sector banks.

1.2 Some of the landmarks in Indian banking are provided below:

• A social control was emphasized over banks by the Government in mid sixties by delineating the control nexus between industries and banking dominated by industrialists.

• 14 major banks were Nationalized in 1969 followed by expansion of branch network in rural and semi-urban areas to span the length and breadth of the nation and to provide a financial backbone to the society at large.

• Second spell of nationalization of took place in early 1980 to strengthen the government’s propositions by adding 6 more banks. This made PSU banks a major component in Indian banking though some small banks continued to be private
• Re-orienting these nationalized banks towards common man by putting some targets of priority sector lending, thus making the ‘purpose’ as a new yardstick for lending, dislodging the sound criterion of ‘security’ or property that could be charged
• Pendulum swung back in early nineties with a nod to private banks entry when the government opening up of banking sector for the new generation private players.
• Cooperative banks continued their working in a relatively undisturbed manner, except that the new genre of regional rural banks were brought in to serve the local rural populace.

1.3 Taking in stride all these development, the Indian banking today stands tall with following key indicators as at end of March, 2006

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<tr>
<th>Indian Banking Key Indicators</th>
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<tr>
<td>Number of Banks</td>
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<td>Number of Branches</td>
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<td>Average Branches per State</td>
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<td>Population Served per Branch</td>
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<td>Deposits</td>
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<td>Total Assets</td>
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<td>Net Profit</td>
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Table 1 : Indian Banking Key Indicators
1.4 Indian Banks embarked on the massive computerization program in mid eighties when the committee set up by Reserve Bank of India under the chairmanship of its Deputy Governor Dr. Rangarajan presented a broad outline of the programme.

1.5 Computerisation was in infant stage in those days and banks adopted PC with mere floppy drives and later on the PC/ XT having hard disk drive. This essentially meant that all computers were in stand alone mode without any connectivity among them. It had a serious limitation of piecemeal data on each computer that was looked upon as a miraculous monster, quite difficult to tame.

1.6 This stage of banking computerization was marked with:

A) Software architecture was more or less mapped on to the ‘counters’ paradigm of banks, i.e. there would be one PC/XT catering one counter related to say savings bank account numbers 1 to 2000, another one for few more thousand accounts looked after by another ledger keeper, and so on.

B) The data as well as software on one computer would have no linkage with another. In other words, data & software for each computer was completely stand alone without any interchange of data by way of cables or disks exchange.
C) IT also meant that the data was stored on a piece meal basis and software would be copied onto each machine with neither advantages nor botherations of connectivity.

1.7 By the turn of nineties, the PC / AT and the networking technologies evolved and then banks went ahead with partial branch automation (PBA) program and then with total branch automation (TBA), where almost all the functions like savings bank, Current accounts, Cash credit, etc. were computerized. Slowly but surely the awareness of the bank employees started picking up, however, it was confined to those few who operated the computer. Although the computers within a branch were hooked up together, the branches were still isolated, i.e. the computers in one branch were not connected with the computers of other branch.

1.8 At this stage of TBA, the banking computerization exhibited following traits:

A) Instead of earlier scenario of fully stand alone systems, now there was a local area network (LAN) of computers in a branch.

B) The file server in this LAN would store the software for all functions and the data across all account types for that branch.

C) This started concentration of data & software from individual counter to a single computer (server) at the branch.
1.9 In that era, the IT Security was not even dreamt of by bankers. In the hindsight it was due to three major factors, viz.

A) Fragmented data – It meant that data of each branch was segregated from other branches; Naturally there was no risk perceived due to limited size and scope of the data

B) Lack of interconnectivity – It meant nobody, whether staff or others, could operate the computers at one branch from other, thereby confining the span of control to individual branch

C) Low awareness among the public and staff – Given the period of about a decade back, the basic computer literacy itself was too low, let alone the working skills for banking operations or the expertise required for deliberate attacks.

1.10 It would also be interesting to note that Internet had then started picking up. Hence the security menace of hacking, virus, worms, Trojans, breaking of passwords, etc. was in its crawling stage as compared to its advanced nature and far & wide spread today.

1.11 Around this period, some banks went ahead with inter-connectivity among some of the branches. This entailed wide area network (WAN) to share some data that was needed by more than one branch – typically the inter-branch transactions in a limited way– for customer convenience and for bank’s own housekeeping.

1.12 At this phase, banking computerization witnessed following points:
A) An unprecedented swiftness in the customer service was made available, particularly for remittances as a limited way of customer transactions across two branches.

B) For the first time some link between banker and customer went outside the banker’s premises and control, inasmuch as the vulnerabilities of wire tapping, sniffing and snooping on the network opened up.

C) The information security was brought to fore as a palpable factor, in a very miniscule manner though, and bankers started thinking about it.

1.13 During late nineties and early years of the twenty-first century Indian Banking initiated the concept of anywhere and anytime banking by deploying two revolutionary technologies of

A) Centralised Banking Solution also known as Core Banking Solution (CBS) where many / all branches of the bank are connected to a central serve housing the data of customers of all the branches.

B) Multiple delivery channels – viz. Internet Banking, Automated Teller Machine (ATM), Tele-banking, Mobile-banking – that made it possible for customers to transact the banking beyond four walls of a bank and beyond the office hours.
1.14 CBS & ATM was technological leapfrogging that revolutionised customer service and raised it to new height of customer convenience & delight. Equally, it brought about a paradigm shift in IT security also, for several reasons, as under:

A) ATM witnessed an unprecedented human-less banking, which means the criminals could fiddle with it leisurely without much botheration of getting noticed.

B) CBS, with the data of all customers across all branches of a bank concentrated at a single point, went against the age-old security wisdom of not putting all eggs in one basket.

1.15 Two contemporary milestones would be worth noting

A) Y2K – The year 2000 problem commonly known as Y2K was a huge threat looming large on the whole IT world including banking domain, which infused substantial time, energy, funds and manpower to mitigate this issue. After the 21st century began without any hassles, two major afterthoughts came up

  o IT, that seemed to be all roses till then, erupted its ugly potential menace thereby alerting the society that all is not well and IT security could be a major concern, either due to nasty hit or owing to negligent hitch.

  o As there was no major instance reported, world had some apprehensions about the proportion of the
problem; some even felt that there was some ground to raise finger to the IT profession.

B) 911 – This nickname, to the subversion that reduced the American skyscraper of World Trade Centre to ashes, has been a landmark on many dimensions like social, international, political, economical, etc. Besides, it was a jolt to the IT as well which was just resurrecting from Y2K. It changed the perspective of the IT Security due to unprecedent scale and shock, underlining the seriousness of the business continuity plan / disaster recovery plan.

1.16 Yet another development reform of a broader canvas that went relatively un-noticed was the surging trends of e-Commerce fueled by the Internet. As they say, Internet years are like dog years; meaning the pace of corporate business was suddenly put in to the next gear and banking was no exception. Due to intense competition necessitating the acceleration in putting through any business transaction, some low priority steps in the work flow got axed down or trivialized. This has a telling effect on security, as some controls started getting diluted, e.g. testing in software development, tallying the balance transfer during migration and manual checking in routine operations, etc.
1.17 Along side, there were certain the regulatory directives issued by Reserve Bank of India and guidelines issued by Indian Banks' Association. Few major ones are listed below:

A) Reserve Bank of India’s Report on Information Systems Audit and IT Security submitted by the Working Group under chairmanship of Dr. Barman, Executive Director, RBI

B) Indian Banks’ Association’s Booklet on Preventive Vigilance in Indian Banks brought out by a study Group under chairpersonship of Mrs. Ranjana Kumar, Chairperson, Indian Bank

C) Reserve Bank of India’s Directives on Internet Banking for all the commercial banks in India, brought out by the committee under the chairmanship of Mr. Mittal

1.18 Indian banking was responsive to the IT Security implications and many tech-savvy banks have constituted IT Security organization comprising various levels, like directors’ security committee, a separate IT Security section under IT Dept. headed by an executive, etc.

1.19 Top rung of some banks have promulgated IT Security Policy, deployed automated IT Security tools, undertaken campaigns to spread IT security literacy, started security audits, etc.
1.20 The researcher has been associated with Indian banking for over two decades – for over a decade as a bank manager (looking after mainstream banking operations as well as IT management), followed by another decade as IT consultant having a clientele of 25 different banks (as consultant, auditor, mentor, invited IT expert, corporate trainer, etc.) for the topics of software projects, IT security, systems audit.

1.21 It has been humble and yet resolute opinion of the researcher that Indian banking, despite its present efforts, still needs more efforts on educating the workforce on the topic of IT security. This conjecture was based on

A) In-Training interaction with the Participants
B) Cursory glance of some documents provided by the banks
C) An intelligent guess / hunch about the IT security position

There was a considerable ground to believe that this conjecture was based on the subjective view / biased opinion of one person.

1.22 A systematic study is therefore undertaken with a methodical approach comprising formal research methods applied to various banks. As explained later, these methods include questionnaire, depth interviews, secondary survey of published literature on the topic, building up the model, experiments in IT security trainings, etc. The outcome is presented in the ensuing chapters.