

# TECHNOLOGICAL INNOVATIONS IN INDIAN BANKING SECTOR

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**Abstract :** The new trend in India in last few years have been digitalization and with that banking sector in the country has also transformed and is offering better services to the customers using the internet and mobiles. ATM,RTGS,NEFT,online banking, M-banking are some of the innovative techniques used by both public as well as private banks in the country. So in Modern and Educated India, along with simple currency notes transactions the E-Banking system is also growing

**Keywords:** ICT, Indian Banking sector, New Technological Changes

## Introduction

ICT is the use of audio-visual and computer networks to interact with people and organizations in the modern world. These changes in information technology have had a major impact on the working of banking sector. Technological efficiency can result in lower transaction costs and increased revenue for banks.

As Mishkin and Strahan (1999) notes, information technology can make it easier for banks “to screen out good from bad credit risk or to monitor corporations, thus reducing the adverse selection and moral hazards problems”, that would increase the efficiency of financial markets.

In India there have been an increasing trend in the use of technology, the following figure justifies the same

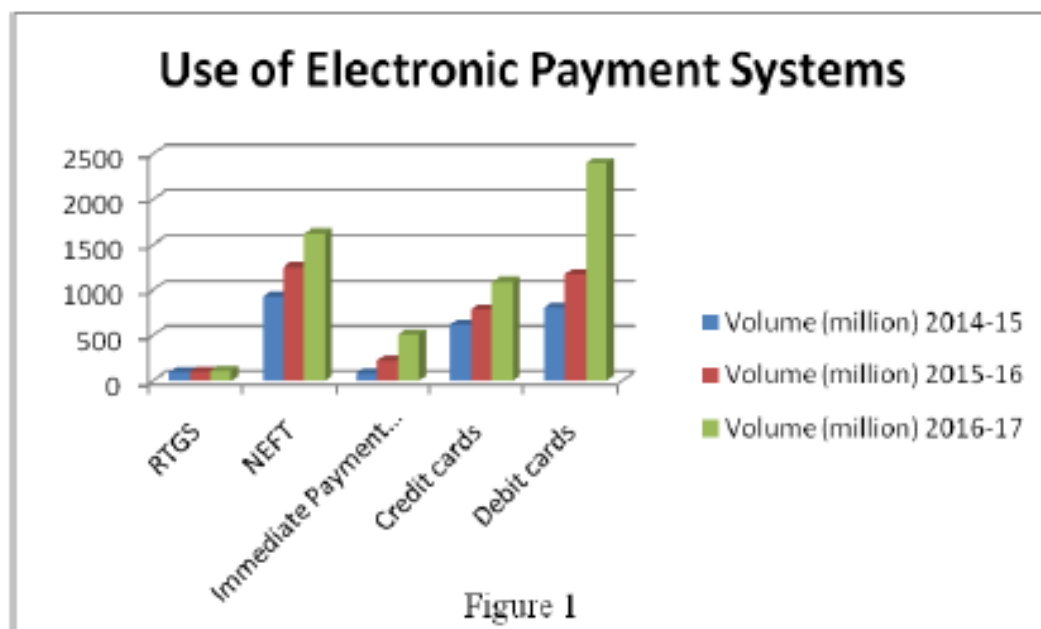


Figure 1

(Source: <https://rbi.org.in/scripts/AnnualReportPublications.aspx?Id=1209>, Table IX.1 Payment System Indicators – Annual Turnover)

## New Innovations in banking sector

Due to digitalization, the Indian banks have realized the need to adopt new technologies like mobiles, internet and other innovations to meet the changing demands from customers. The various factors of innovations in banking and financial sectors are RTGS,ATM,NEFT ETC and including more products and services

## ATM

Automatic Teller Machine enables the customers to withdraw their money 24\*7, it can also be used to withdraw cash, transfer of funds, balance inquiry etc. In India we have in approx. more than 21000 ATMs.

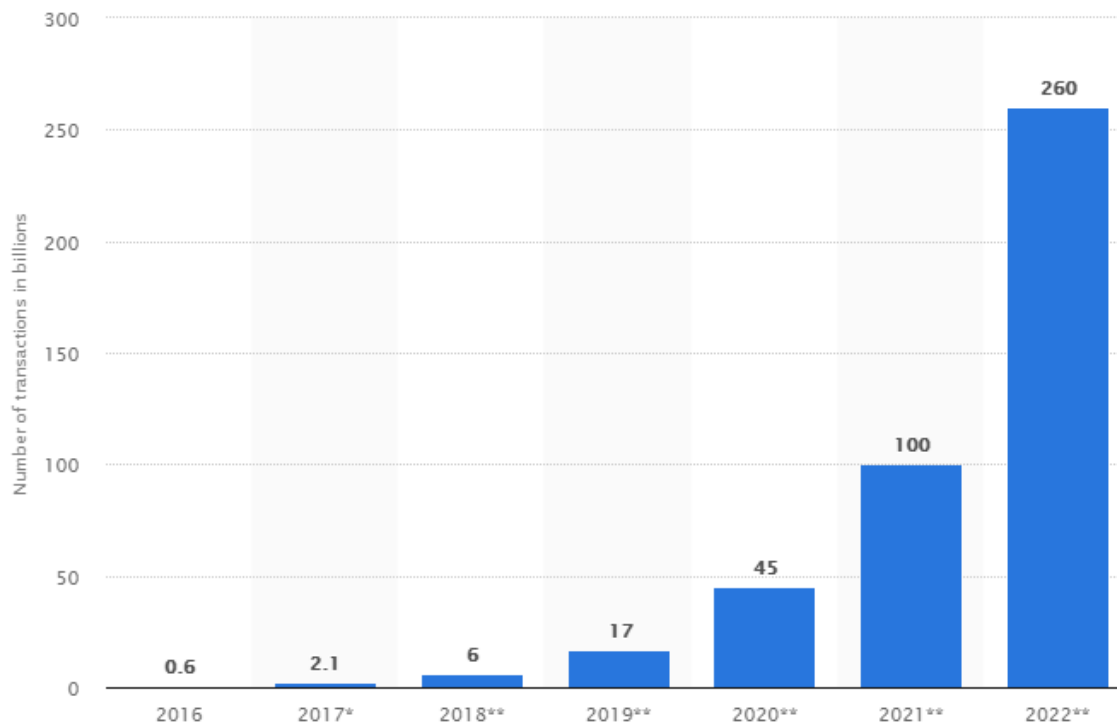
Sr. No.	Bank Name	ATMs	
		On-site	Off-site
		1	2
1	ALLAHABAD BANK	844	265
2	ANDHRA BANK	3194	816
3	BANK OF BARODA	3428	4918
4	BANK OF INDIA	3328	4095
5	BANK OF MAHARASHTRA	1305	559
6	CANARA BANK	5082	4248
7	CENTRAL BANK OF INDIA	3426	1463
8	CORPORATION BANK	2355	751
9	DENA BANK	351	1334
10	INDIAN BANK	2717	647
11	INDIAN OVERSEAS BANK	2238	755
12	ORIENTAL BANK OF COMMERCE	2336	299
13	PUNJAB AND SIND BANK	1077	129
14	PUNJAB NATIONAL BANK	5424	4245
15	SYNDICATE BANK	3880	398
16	UCO BANK	2143	431
17	UNION BANK OF INDIA	4545	3099
18	UNITED BANK OF INDIA	1037	1103
19	VJAYA BANK	1672	490
20	IDBI LTD	2199	1569
21	STATE BANK OF INDIA	26343	32949
22	AXIS BANK LTD	2596	11053
23	BANDHAN BANK LTD	472	0
24	CATHOLIC SYRIAN BANK LTD	212	43
25	CITY UNION BANK	923	706
26	DCB BANK LTD.	281	253
27	DHANALAKSHMI BANK LTD	203	143
28	FEDERAL BANK LTD	1194	504
29	HDFC BANK LTD	5874	6764
30	ICICI BANK LTD	5244	9135
31	IDFC Bank Limited	53	2
32	INDUSIND BANK LTD	986	1236
33	JAMMU AND KASHMIR BANK	685	517
34	KARNATAKA BANK LTD	539	824
35	KARUR VYSYA BANK LTD	766	1032
36	KOTAK MAHINDRA BANK LTD	1073	1148
37	RATNAKAR BANK LIMITED	189	182
38	SOUTH INDIAN BANK	740	587
39	TAMILNAD MERCANTILE BANK LTD	467	666
40	THE LAXMI VILAS BANK LTD	427	595
41	YES BANK LTD	865	468
42	AMERICAN EXPRESS	0	0
43	BANK OF AMERICA	0	0
44	BARCLAYS BANK PLC	0	0
45	CITI BANK	47	496
46	DBS BANK	23	7

47	DEUTSCHE BANK LTD	13	19
48	HONGKONG AND SHANGHAI BKG COF	45	52
49	STANDARD CHARTERED BANK LTD	102	136
50	Aditya Birla Idea Payments Bank	0	0
51	Airtel Payments Bank	0	0
52	FINO Payments Bank	0	0
53	India Post Payments Bank	0	0
54	Jio Payments Bank	0	0
55	NGDL Payments Bank	0	0
56	Paytm Payments Bank	1	0
57	Au Small Finance Bank Limited	290	2
58	Capital Small Finance Bank Limited	102	2
59	Fincare Small Finance Bank Limited	34	0
60	Equitas Small Finance Bank Limited	320	0
61	ESAF Small Finance Bank Limited	84	0
62	Jana Small Finance Bank Limited	0	0
63	North East Small Finance Bank Limited	0	0
64	Suryoday Small Finance Bank Limited	25	1
65	Ujjivan Small Finance Bank Limited	152	3
66	Utkarsh Small Finance Bank Limited	60	34
	<b>Total</b>	<b>104011</b>	<b>101173</b>

Source: RBI

### Digital Wallets

Digital wallets allow an individual to make electronic transactions using mobile phones. Many top digital wallets apps in India are Paytm, BHIM app, Mobikwik, PhonePE, JioMoney, Chillr, Airtelmoney, MomoXpress etc. The following chart shows the number of mobile wallet transaction across India from 2016 to 2022 (in billions)



Source: Stastica.com, Published in December 2018

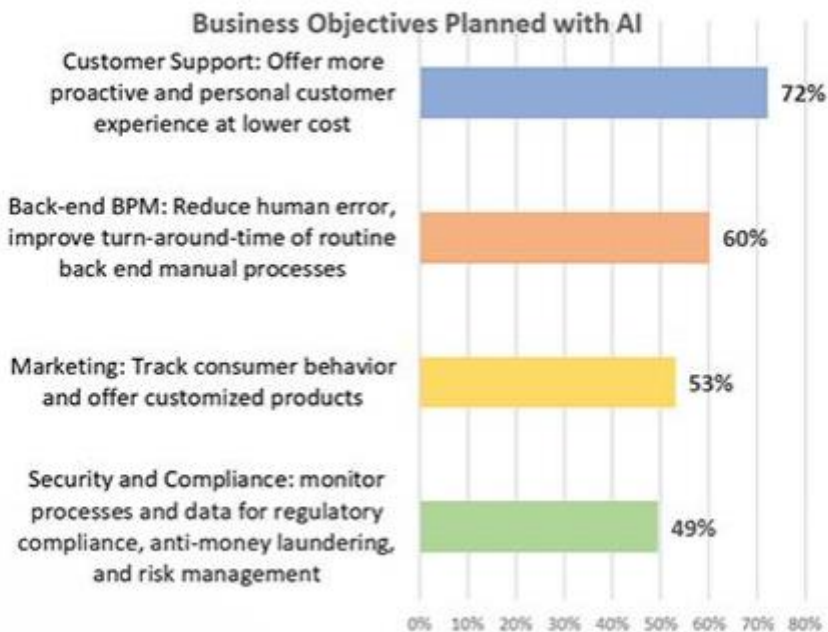
### Artificial Intelligence

Indian Banks are investing a lot in the automation through Artificial Intelligence. These machines are being installed to fulfill the needs of modern technological savvy customers.

Examples:

ICICI Bank have Software Robots in its 200 business processes in 2016. these robots have reduced the response time to customers by 60% and have a accuracy level of 100%

NASSCOM CMR report on AI covers the growing eco system of AI based startups in India, the following chart summarize the report published by them as how AI is used in Banking, Financial services and in Insurance Sector.



Source: NASSCOM.in

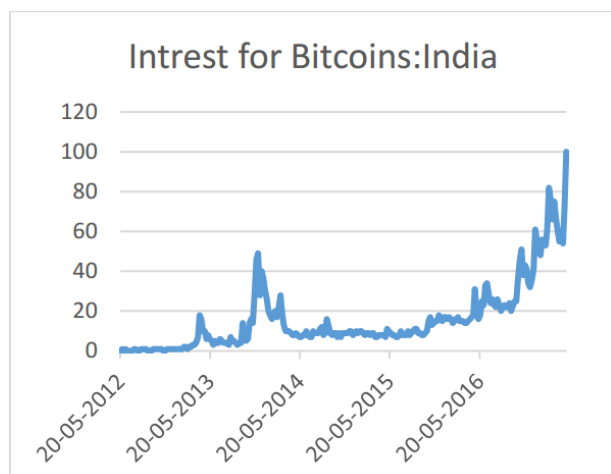
**Biometrics**

Memorizing multiple passwords for authentication is becoming a task and biometrics are the solution to this problem. Voice Pattern, Fingerprints, iris scan, facial recognition are the replacement of password. It eliminates the burden of remembering PINs, Passwords even reduce the stress of theft of vital information.

Biometric type	Example
Fingerprint	UIDAI uses fingerprints to issue Adhaar Numbers which are linked with the bank accounts
Voice Recognition	ICICI Bank introduced voice recognition for its customers to transact smoothly through the banks call center. The Voice of the acts as the password.
Face Recognition	Federal Bank has introduced zero balance selfie account which uses scanned PAN card, Adhaar Card and a selfie to open the account
Iris Scan	UIDAI also uses Iris scan to issue Adhaar Card

**Block chain**

Block chain technology is used for Bitcoin. A block chain is a data structure that is used to create digital ledger of transactions and share it to various computer networks.



Source:<https://www.bitcoinisle.com/2017/06/07/bitcoin-the-dark-web-and-india/>

### Big Data Analytics

Indian banks have millions of customers and this data is stored in a big database and Big Data Analytics solve the complicated data of unorganized customers.



(Source: <https://analyticsindiamag.com/analytics-india-industry-study-2016/>)

### Challenges

Though technological advancement have been a boost and blessing for Indian banks but still there are many challenges or problems which may occur if Indian banks completely adopt ICT. Few of them are discussed below:

#### Operational Issues

Fingerprints fades with age and even the voice of teenagers change with the passage of time, so all these software can fail to authenticate the correct customer

#### Rural Population

India is a country with almost 50 % rural population and the literacy rate is quite low in the villages, so it's difficult to implement innovations in rural sector

#### Security problems

With the advent of technology many cyber-crimes have increased hence there are many security issues attached with technological innovations

#### Unemployment

Technologies do provide many benefits but its taking away jobs of people and the problem of unemployment is increasing

### Conclusion

Indian banks have realized that in this globalized world if the foreign banks have adopted the latest technologies, it is mandatory for the Indian banks to even do so to survive in this competitive world. Private Banks have adopted all these innovations earlier than the public sector banks, but government banks are also following the footsteps of private banks as well. Adoption of technological innovation reforms have changed the face of Indian banks

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