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E-Delivery Channels and Banking Performance in India: A Pragmatic Approach

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I. INTRODUCTION

Innovate or evaporate is the success mantra followed by banking sector to exist in the competitive market by focusing on inventions and improvements in electronic delivery channels. The use of technology in expanding banking has been a key focus area of the Reserve Bank. Technological innovation not only enables a broader reach for consumer banking and financial services, but also enhances its capacity for continued and inclusive growth. There are several factors attributed to India's high growth in the recent period- improved productivity, growing entrepreneurial spirit, and higher savings, to name the most important. But one factor usually goes unacknowledged – that is financial intermediation. Improvement in the quantum and quality of financial intermediation ranks along with other factors mentioned above as a key growth driver. And one of the factors that drove the improvement in the quantum and quality of financial intermediation is more wide spread and more efficient use of IT in banking sector. Shastri, (2000), studied the emergence of IT in banking sector. He highlighted some challenges faced by banks regarding IT implementation. Rao (2002) analyzed the impact of new technology on banking

sector. The technology is changing the way the business is done and opened new vistas for doing the same work differently in most cost effective manner. Tele-banking and internet banking are making forays such that branch banking may give to home banking. He provided some policies to protect their profitability.

Electronification is a relatively new concept in consumer transactions and these are mostly cash and paper-based. In this segment, less than 3% of the consumer-to-business flow value is electronic. With over US\$133 billion payments from bank accounts via ECS and NEFT, electronic fund transfers have emerged as the much-preferred option for transactions, with an increasing orientation toward cashless and even cheque-less payments in India. Presently almost 98 per cent of the branches of public sector banks are fully computerized in India, and within which almost 90 per cent of the branches are on core (Centralized online real time exchange) banking platform. Joint ventures have been set up between telecommunication companies and banking sector that envisages opening bank accounts, cashless transfers, cashless spending and payment facilities, targeting the rural and urban poor etc. The regulators believes that mobile banking is yet to show remarkable growth even after the daily transaction limits have been raised to Rs. 50,000 per day per customer. Apart from major banks such as SBI and ICICI & other banks are still to gain numbers in terms of volume and value of transactions. With an objective to deliver higher value for the savings account customers, banks have designed savings accounts with an auto sweep facility with the help of technology. Some banks have established virtual or self- banking branches where the customer enters the branch, explores services on the touch screen and at any time calls up members of the bank staff by video conferencing.

Traditional banking has always been a brick and mortar building where people go to deposit or withdraw money. However, the banking Internet sector has exploded in the past ten years in India. ICICI was the first bank in India to introduce e-banking services in India. Online banking can be a bit confusing because it has so many names from internet banking to personal computer (PC) banking as well as electronic banking and banking online. Shetty, (2000), technology is dramatically altering the ways in which financial services are delivered to consumers and continue to do so in future too. Electronic banking or the use of computers

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and electronic technology as a substitute for traditional paper based transactions, is here to stay.

With the popularity of the Internet and the power it gives people to take control of their lives, many traditional banks have created banking Internet web pages where customers could transfer money, set up bill payments recurring or otherwise, quickly check items that have cleared, and many other functions that can be accessed 24 hours per day 7 days a week. Internet banking option has been very popular not only for customers who want to have some control over their account without having to go to the bank but for banks as well whose man hours have been freed up from performing simple tasks like balance inquiries, account transfers, and the likes because the customer does it himself with banking Internet.

Internet banking options also include virtual banks. This is the truest form of banking Internet simply because these banks only exist online. Internet banking options have become popular because they save customers time and money, which is a very trendy combination. Banking Internet which only exist online means you will have to transfer your money to the new account or else mail a payment via cheque. Uppal, and Kaur (2007) studied the impact of Information Technology on various parameters of bank performance and concluded that Indian banking industry is quickly moving towards IT. The future of e-channels is very bright.

II. OVERVIEW OF ELECTRONIC PAYMENTS MARKETS GLOBALLY AND IN INDIA

The development of an internet-based electronic payment system permits goods and services to be ordered and paid for irrespective of location, thereby providing opportunities for the creation of completely new business structures and sets of global trading relationships. The internet offers the possibility of 'open systems' for payment and settlement than can operate in parallel to existing, more traditional bank based networks. Consequently, online banking has now become a significant aspect of both wholesale and retail financial services.

With the rapid diffusion of the internet, banking in cyberspace is fast becoming an alternative channel to provide banking services and products. Numerous studies have shown that the internet has become the most popular electronic delivery platform for electronic delivery platform for electronic banking (Karjaluo et al, 2002).

Major highlights of electronic payments markets globally and in India:

- The total turnover of various payment and settlement systems in India grew by 16% in value terms in 2009-10. The annual turnover in payment systems has been increasing as a ratio of GDP,

consistent with the financial deepening of the economy.

- In 2010, India's electronic payments were US\$17 trillion (Rs.786trillion). In 2009, McKinsey estimated India's payments industry revenues at US\$14 billion. Payment flows (both electronic and paper) are 7.8 times the GDP, comparable to many Western countries and emerging economies such as Brazil (7.3), Italy (7.2) and the US. (7.0).
- There has been significant growth in the electronic payments from below 5% of the total value in 2005 to 88% in FY10, largely due to the Electronification of business-to-business payments.
- Electronification is a relatively new concept in consumer transactions and the transactions are mostly cash and paper-based. In this segment, less than 3% of the consumer-to-business flow value is electronic.exdw
- Subject to variance between banks, payments contributed about 30% of bank revenues; most of this was from transaction banking (including cash management plus trade and supply-chain financing), credit cards and cash and paper transactions. The majority of payment flows occur to and within the business sector.
- With over US\$133 billion payments from bank accounts via ECS and NEFT, electronic fund transfers have emerged as the much-preferred option for transactions, with an increasing orientation toward cashless and even cheque-less payments in India.

The payment system in India has gone through significant transition over the past decade. Based in the Payment and Settlement Systems Act 2009, RBI has regulated the charges being imposed by banks to their customers. Some of the examples of these regulations are:

- RBI, effective 8 October 2008, rationalized the charges levied by banks for outstation cheque collections as well as electronic products such as RTGS/NEFT/ECS.
- RBI had set a ceiling on cheque collection charges as Rs.50, Rs.100 and Rs.150 for cheque amounts, respectively, up to Rs.10, 000, Rs.10,001 to Rs.1,00,000 and more than Rs.1,00,000.
- For Inward RTGS/NEFT/ECS transactions, RBI has mandated that no charge is to be levied. For outward transactions, the limits for RTGS of Rs.1,00, 000 to 5,00,000 should not exceed Rs.25 and Rs.5,00,000 and above should not exceed Rs.50 per transaction. Similarly, for NEFT, the limits are Rs.5 for up to 100,000 and Rs.25 for 100,000 and above per transaction.

The payment business in India is currently witnessing a phase of a rapid transition, enabled by the

growing acceptance of electronic payment systems across various segments. A look at the electronic payments in India over the years reveals the growth in

electronic payments in India both in terms of value as well as volume.

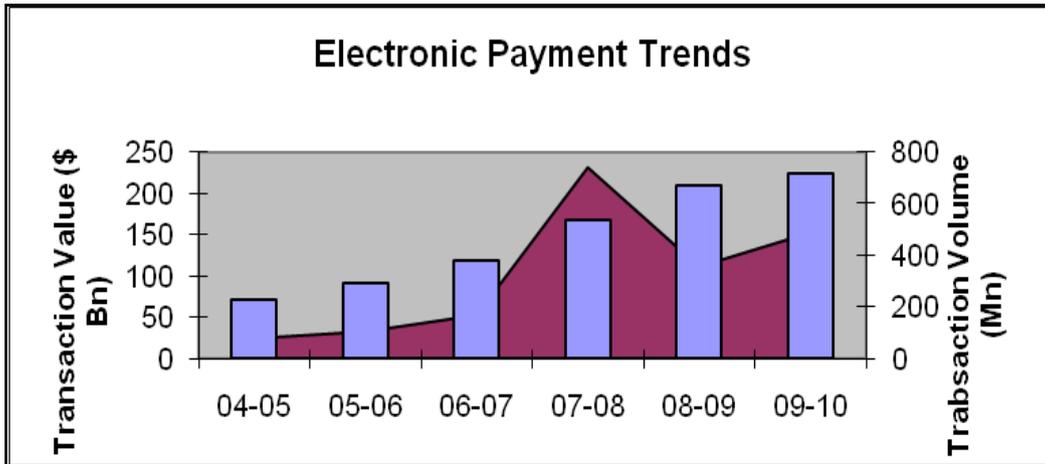


Figure 1 : Electronic Payment Trends

Figure 1 illustrates how paper-based payments have fared vis-à-vis electronic payments in the recent past, in terms of transaction volume and transaction value. While paper based payments, which are essentially payments made through cheques, still command a lion's share in terms of volume, electronic payments overtook cheque payments in terms of value in 2006-07 and command a larger share of the total payments pie today. (Figure 2) The percentage of

electronic transactions in terms of volume has also been growing y-o-y since 2006-07. However, the credit for the shift in transaction volumes toward electronic transactions goes to regulators. After RBI made it mandatory for banks to route high-ticket transfers through RTGS, 96% of the value of payments made electronically come through RTGS, while just about 1% of the electronic transactions are done through RTGS.

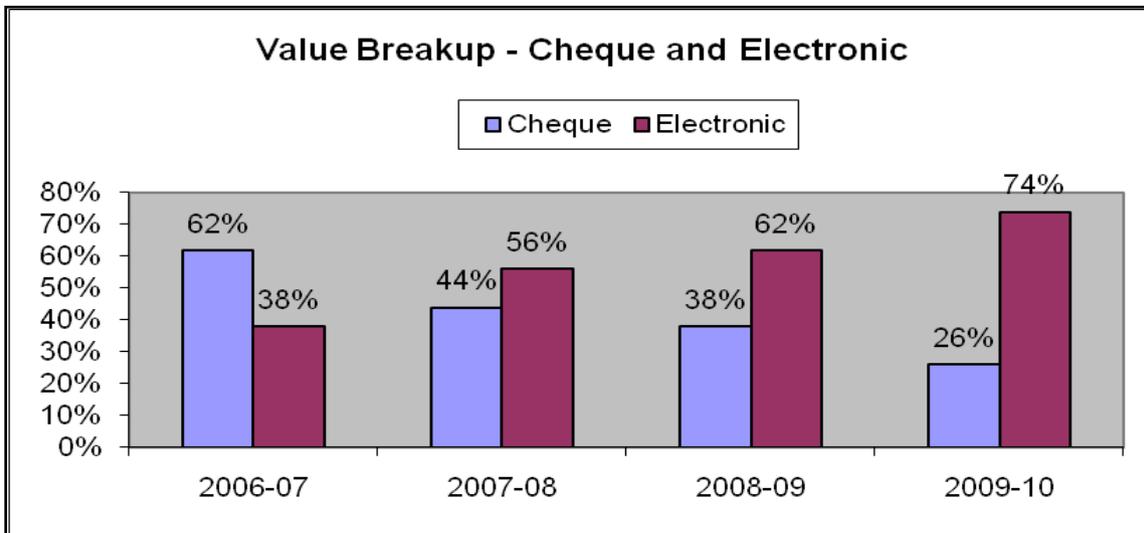


Figure 2 : Value breakup – Cheque and Electronic

If we consider the value for the paper-based transactions and the average daily value of electronic transactions, we can clearly see that the electronic transactions have been doing better than the traditional payment systems. Large banks and private banks are doing really well in the electronic transactions space.

There are 26 public sector banks (State Bank of India and its five associates, 19 nationalised banks and IDBI Bank Ltd.), 7 new private sector banks, 14 old

private sector banks and 36 foreign banks operating in India. The number of SCBs increased to 83 in 2010-11 from 81 in 2009-10.

Presently almost 98 per cent of the branches of public sector banks are fully computerised in India, and within which almost 90 per cent of the branches are on core (Centralised online real time exchange) banking platform.

III. EXPANSION OF BANKING BRANCHES

Branch wise Growth status of banks reveals that the rate of growth has been highest for rural banks, followed by semi-urban banks. Thus this throws light on the Govt. policies to provide banking facilities to all

citizens in all areas. This is a good sign. Although in absolute numbers there is still quite a lot of difference in bank branches in urban (14248) and metropolitans (13257) compared to 22188 branches in urban areas and 17773 branches in semi-urban areas.

Table 1 : Branch wise Growth status of Public Sector Banks

S. No.	Year	Branches				Total	Growth Rate (Y-O-Y)
		Rural	Semi-urban	Urban	Metro-politan		
1	2005	19068	11371	9269	7580	47288	-
2	2006	18219	11146	9439	9039	47843	1.17
3	2007	18112	11728	10168	9658	49666	3.81
4	2008	18526	12685	11260	10409	52880	6.47
5	2009	18941	13504	11994	10999	55438	4.84
6	2010	19567	14595	12920	11743	58825	6.11
7	2011	20387	15978	13569	12277	62211	5.76
8	2012	22188	17773	14248	13257	67466	8.45
Overall Growth Rate		3.41	2.15	1.67	1.21	1.90	

Year on year growth of banking branches has been highest (8.85) in 2012. Recessionary trends prevalent in the economy had their effect here as shown by lower growth rate in 2009. Recovery started in year

2010 with arise to 6.11 per cent. A slight fall recorded in 2011. Overall trend depicts an increase during the period.

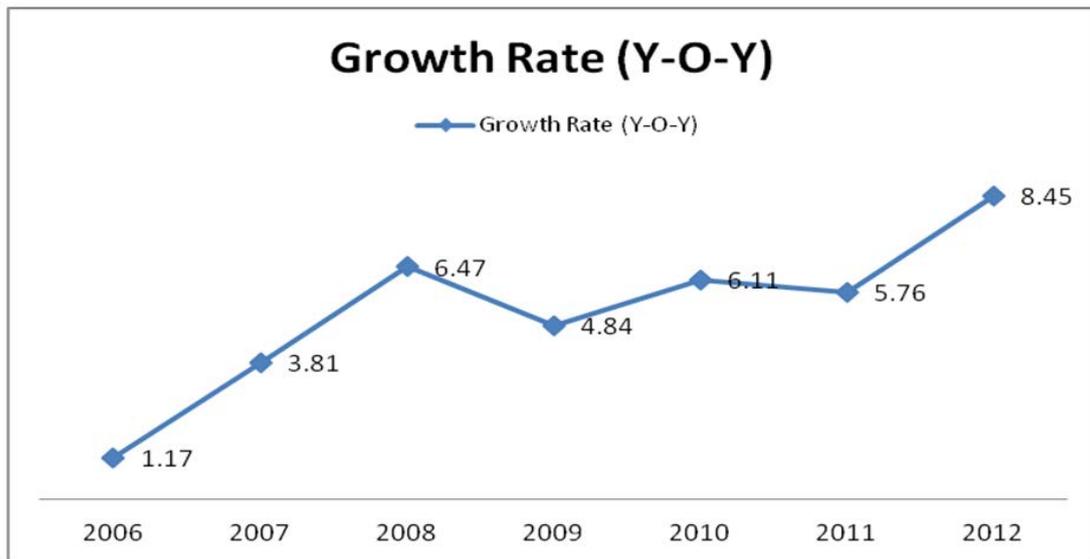
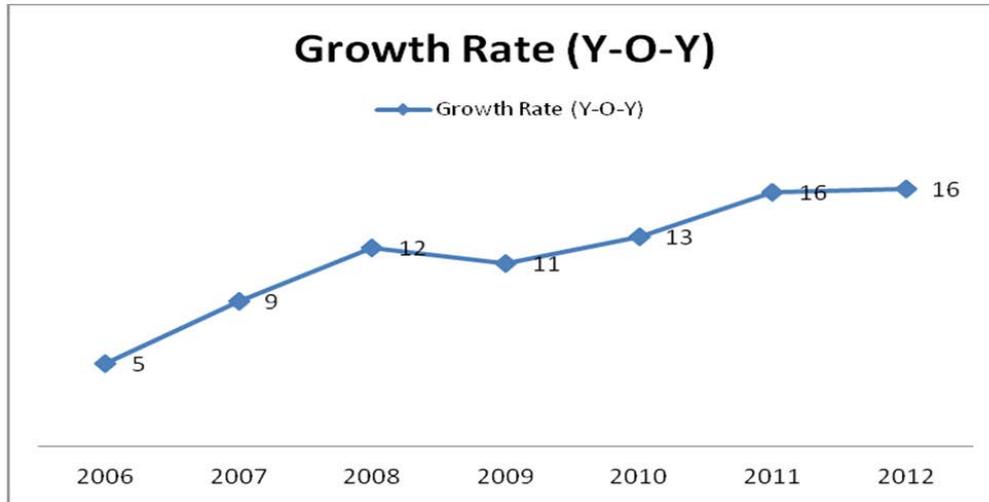


Figure 1 : Year on year growth of banking branches

Branch wise Growth status of private banks as shown in table 2 depicts similar trends to that of public sector banks. The rate of growth is highest for rural sector, viz. 3.23, although this is slightly lower than that of public sector banks. In absolute numbers there is still quite a lot of difference in bank branches in metropolitans (3615) and urban (3569) compared to 4687 branches in semi-urban areas and only 1581 branches in rural areas.

Table 2 : Branch wise Growth status of Private Sector Banks

S No	Year	Rural	Semi-urban	Urban	Metropolitan	Total	Growth Rate (Y-O-Y)
1	2005	1102	1847	1739	1508	6196	
2	2006	1033	1769	1910	1804	6516	5
3	2007	985	2064	2118	1936	7103	9
4	2008	1031	2368	2417	2159	7975	12
5	2009	1113	2638	2715	2411	8877	11
6	2010	1201	3037	3027	2762	10027	13
7	2011	1311	3814	3315	3162	11602	16
8	2012	1581	4687	3569	3615	13452	16
Overall Growth Rate		3.23	2.22	1.61	1.67	1.94	

*Figure 2* : Year on Year Growth Rates of number of branches in Private sector banks

In terms of Year on Year growth of private sector bank branches, the growth rates depict a rising trend from 5 per cent growth to 16 per cent. Recessionary trends are visible in private sector banking as well.

Table 3 : Branch wise Growth status of Foreign Sector Banks

S No.	Year	Rural	Semi-urban	Urban	Metropolitan	Total	Growth Rate (Y-O-Y)
1	2005	0	0	38	204	242	
2	2006	0	1	37	221	259	7.02
3	2007	0	2	44	227	273	5.41
4	2008	0	2	49	226	277	1.47
5	2009	4	4	52	233	293	5.78
6	2010	5	6	60	237	308	5.12
7	2011	7	8	61	241	317	2.92
8	2012	7	8	61	246	322	1.58
Overall Growth Rate		2.25	1.72	1.68	1.00	1.30	

Branch-wise status of Foreign sector banks is indicating that although foreign banks had their presence in metropolitan and urban areas in 2005. They made their presence in rural areas in 2009 with four banks and now there are seven banks. Foreign banks in semi-urban areas have improved from 1 in 2006 to 8 in 2012.

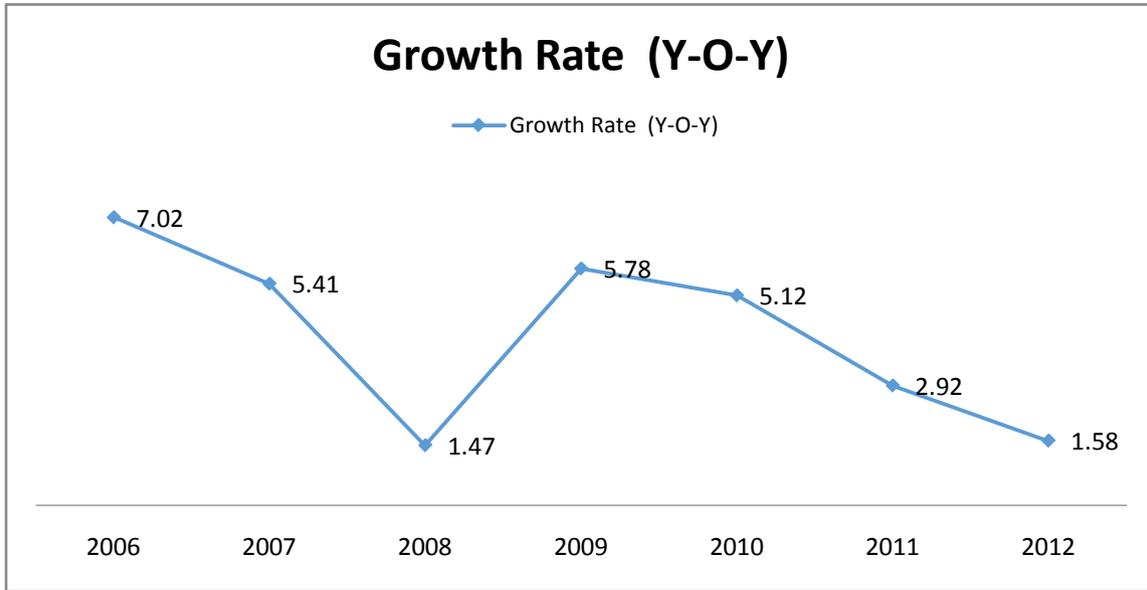


Figure 3 : Year on Year Growth Rates of number of branches in Foreign sector banks

As shown in figure III Year on year growth rates of total Foreign sector banks depict a declining trend. The surprising results are that while public sector banks and private sector banks showed lower growth rates in 2009, foreign sector banks in the same year depicts the highest growth.

Table 4 : Relation between Nature of Banks and Branches of Banks

Groups	Mean (S.D.)	F-Test (p- value)	Post Hoc Test (Levene Test)		
			Groups	p-Value	Remarks
Public Sector Bank Branches	55202.13	355.451 p < .001	Private Sector Bank Branches	.000	There is significant difference
	(7226.329)		Foreign Sector Bank Branches	.000	There is significant difference
Private Sector Bank Branches	8968.50		Public Sector Bank Branches	.000	There is significant difference
	(2572.784)		Foreign Sector Bank Branches	.002	There is significant difference
Foreign Sector Bank Branches	286.38		Public Sector Bank Branches	.000	There is significant difference
	(28.545)		Private Sector Bank Branches	.002	There is significant difference

H₀: There is no difference in the means of Number of branches of Public, Private and Foreign sector banks.

H₁: There is significant difference in the means of Number of branches of Public, Private and Foreign sector banks.

significant difference in the means of Number of branches of Public, Private and Foreign sector banks has been accepted.

Overall results highlight that there is a significant difference between public sector, private sector and foreign banks regarding Number of ATMS as F-value is 355.451 and is significant as p < 0.001. Post-Hoc test were also conducted and results highlight that there is significant difference regarding Public Sector Bank branches and Foreign Sector Bank branches as p < .001. Regarding Public Sector Bank branches and Private Sector Bank branches, results highlight that there is no significant difference. All post hoc tests are significant. Thus the alternate hypothesis H₁: There is

a) Status of ATMs in Indian Banks

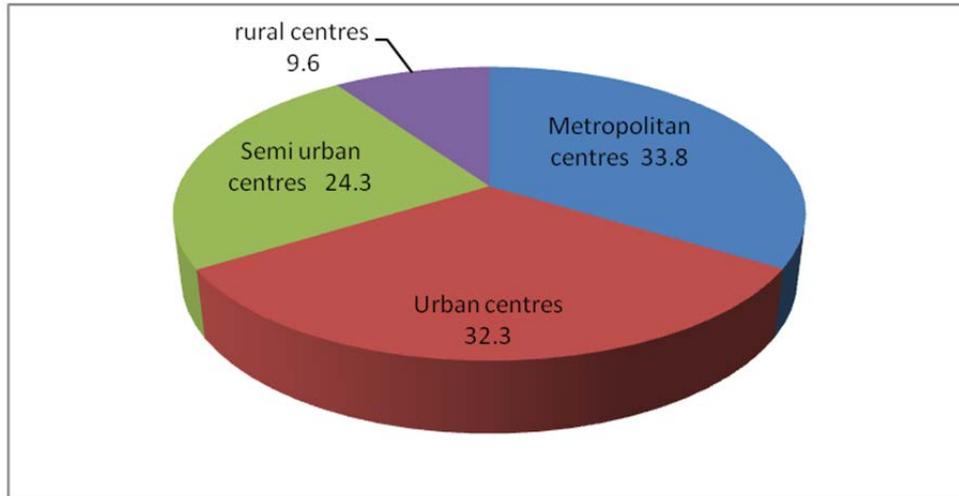


Figure 4 : Area-wise distribution of ATMs.

Area-wise distribution status (Figure IV) of ATMs by urban areas with 32.3%. Rural centres have the least reveals that metropolis dominate with 33.8%, followed percentage of 9.6%.

Table 4 : Comparative Status of ATMS in Different banks

S No	Year	Public Sector Banks	Private Sector Banks	Foreign Sector Banks
1	2005	9992	6853	797
2	2006	12608	7659	880
3	2007	16329	9799	960
4	2008	21788	11967	1034
5	2009	27277	15320	1054
6	2010	40680	18447	1026
7	2011	49487	23651	1367
8	2012	58193	36079	1414
Overall Growth Rate		1.92	2.18	1.80

As shown in table 4 the number of ATMs in banks has seen a rising trend since 2005. A comparative status of ATMS in different types of banks highlights that Private sector banks witnessed the

highest growth compared to public sector banks and foreign sector banks in terms of ATMs. In terms of absolute numbers the public sector banks have highest number of ATMs, viz. 58193.

Table 5 : Growth Statistics of ATMs in Public Sector Banks

S No.	Year	Public Sector ATMs					
		On-site	Off-site	Total	Growth Rate (Y-O-Y)	Per cent of Off-site to total ATMs	Per cent of ATMs to Branches
1	2005	4753	5239	9992	-	52.4	21.1
2	2006	6587	6021	12608	26.2	47.8	26.4
3	2007	10289	6040	16329	29.5	37.0	32.9
4	2008	12902	8886	21788	33.4	40.8	41.2
5	2009	17379	9898	27277	25.2	36.3	49.2
6	2010	23797	16883	40680	49.1	41.5	69.2
7	2011	29795	19692	49487	21.6	39.8	79.5
8	2012	34012	24181	58193	17.6	41.6	86.3
Overall Growth Rate		1.78	2.15	1.92			

Off-site ATMs indicate a higher growth than on-site ATMs. Per cent of ATMs to branches have improved from 21.1 percent in 2005 to 86.3 in 2012. The

total number of ATMs has increased from 9992 in 2005 to 58193 in 2012.

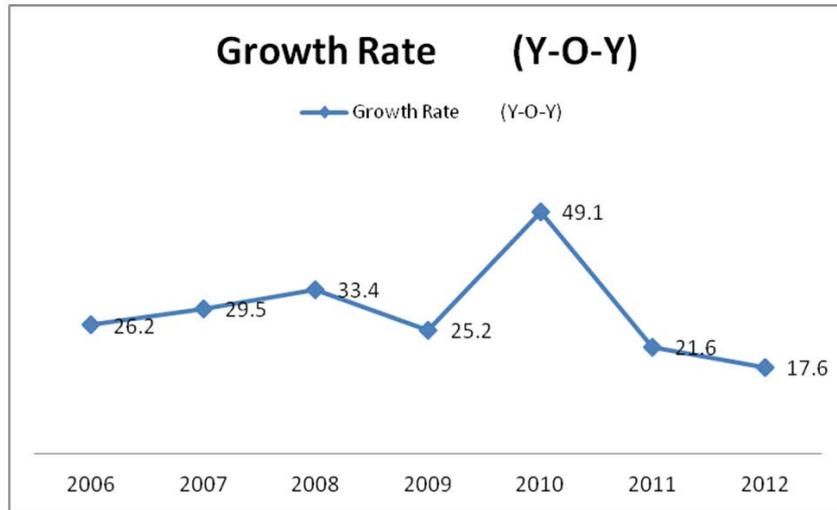


Figure 5 : Year on Year of ATM Growth rates of Public Sector Banks

Year on Year growth rates of public sector ATMs as depicted in Figure V shows the highest growth in 2010. The lower growth is reported in 2009, the time period of recessionary trends in India. In 2011 and 2012 there was again a deceleration in growth rates.

Table 6 : Growth Statistics of ATMs in Private Sector banks

S. No.	Year	On-site	Off-site	Total	Growth rate (Y-O-Y)	Per cent of Off-site to Total ATMs	Per cent of ATMs to Branches
1	2005	2683	4170	6853	-	60.85	110.60
2	2006	3309	4350	7659	11.76	56.80	117.54
3	2007	4258	5541	9799	27.94	56.55	137.96
4	2008	5315	6652	11967	22.12	55.59	150.06
5	2009	6996	8324	15320	28.02	54.33	172.58
6	2010	8603	9844	18447	20.41	53.36	183.97
7	2011	10648	13003	23651	28.21	54.98	203.85
8	2012	13249	22830	36079	52.55	63.28	268.21
Overall Growth Rate		1.86	2.42	2.18			

Per cent of ATMs to Branches has increased from 110.60 per cent to 268.21 per cent. The growth rate of offsite ATMs is higher than that of on-site ATMs. Overall growth statistics highlights an increase at the rate of 2.42 per cent.

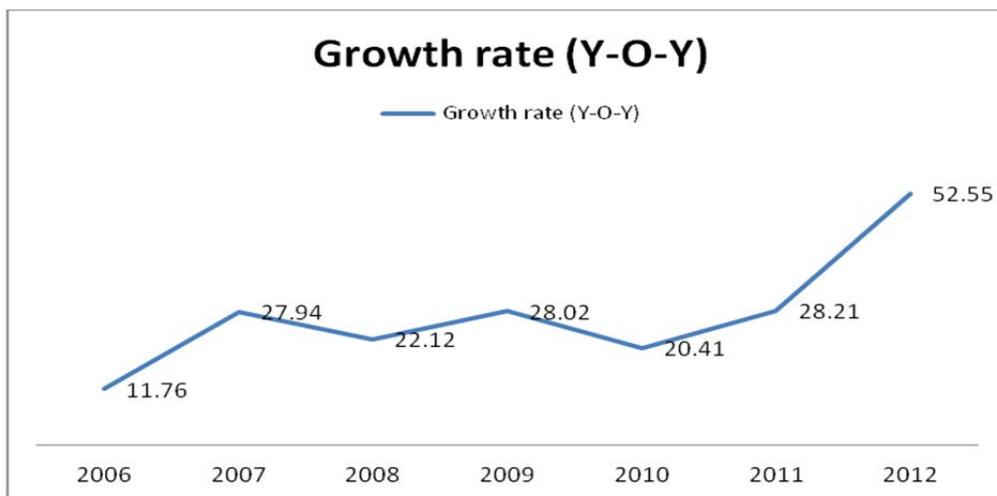


Figure 5 : Year on Year of ATM Growth rates of Private Sector Banks

Year on year ATM growth of private sector banks depicts an increasing trend. The growth rates improved from 11.76 percent to 52.55 percent.

Table 7 : Growth Statistics of ATMs in Foreign Sector Banks

S No.	Year	On-site	Off-site	Total	Growth Rate (Y-O-Y)	Per cent of Off-site to total ATMs	Per cent of ATMs to Branches
1	2005	218	579	797		72.65	329.34
2	2006	232	648	880	10.41	73.64	339.77
3	2007	249	711	960	9.09	74.06	351.65
4	2008	269	765	1034	7.71	73.98	373.29
5	2009	270	784	1054	1.93	74.38	359.73
6	2010	279	747	1026	-2.66	72.81	333.12
7	2011	286	1081	1367	33.24	79.08	431.23
8	2012	284	1130	1414	3.44	79.92	439.13
Overall Growth Rate		1.16	1.93	1.78			

Growth Statistics of ATMs in Foreign Sector Bank is again indicative of similar trends as observed for public and private sector bank ATMs, i.e. the growth rate is higher for off-site ATMs than for on-site ATMs. Per

cent of ATMs to Branches has increased from 329.34 per cent in 2005 to 439.13 per cent in 2012. While on-site ATMs increased from 218 in 2005 to 284 in 2012.

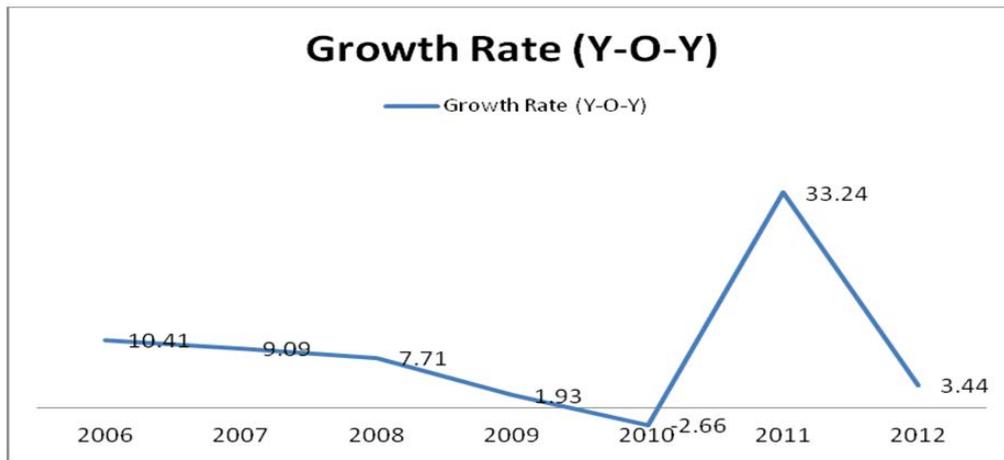


Figure 6 : Year on Year of ATM Growth rates of Private Sector Banks

Year on year ATM growth of private sector banks depicts a mixed trend. The growth rate has been

highest in 2011. In the year 2010, there was deceleration in growth.

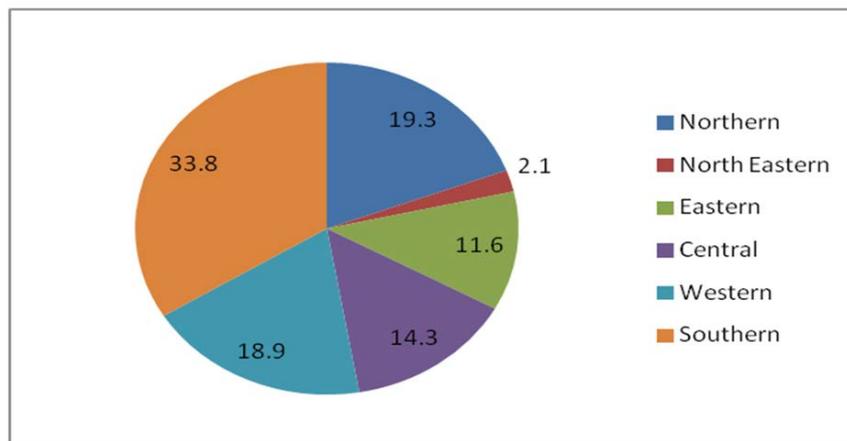


Chart 4 : Share of Regions in Total Net Increase in ATMs 2010-2011

In case of regional growth, the southern sectors share has been 33.8 and that of Northern region is 19.3. North-eastern region contributed a smallest share of the pie.

b) *Relation between Nature of Bank and ATMs*

ANOVA Results					
GROUPS	MEAN	F-Test (p- value)	POST HOC TEST		
	(S.D.)		Groups	p-value	Remarks
ATMs Public Sector Banks	29544.25	11.651 p<0.001	ATM Private Sector Banks	.085	There is no significant difference
	(17934.56)		ATM Foreign Sector Banks	.000	There is significant difference
ATMs Private Sector Banks	16221.88		ATM Public Sector Banks	.085	There is no significant difference
	(9825.02)		ATM Foreign Sector Banks	.045	There is significant difference
ATMs Foreign Sector Banks	1066.50		ATM Public Sector Banks	.000	There is significant difference
	(218.00)		ATM Private Sector Banks	.045	There is significant difference

H₀: There is no difference in the means of Number of ATMs of Public, Private and Foreign sector banks.

H₁: There is significant difference in the means of Number of ATMs of Public, Private and Foreign sector banks.

Overall results highlight that there is a significant difference between public sector, private sector and foreign banks regarding Number of ATMS as F-value is 11.651 and is significant as p<0.001. Post-Hoc test were also conducted and results highlight that there is significant difference regarding ATM Public Sector Banks and ATM Foreign Sector Banks as p<.001. Regarding ATM Public Sector Banks and ATM Private Sector Banks results highlight that there is no significant difference in the mean score. Post hoc tests for ATMs Private Sector Banks and ATM Public Sector Banks are indicative of the fact that there is no significant difference as already highlighted, but in case of ATM Private Sector Banks and ATMs foreign sector banks there is a significant difference. Post hoc tests for foreign sector banks reveals that in case of both ATMs foreign sector Banks and ATM Public Sector Banks as well as ATMs foreign sector Banks and ATM Public Sector Banks there is a significant difference as p values for both are significant. Thus the hypothesis H₁: There is significant difference in the means of Number of ATMs

of Public, Private and Foreign sector banks has been accepted.

After analyzing a detailed analysis of growth of branches and ATMs the next step was to find the scenario of debit cards.

IV. DEBIT CARD & CREDIT CARD PERFORMANCE IN INDIA

a) *Debit Card Market in India*

During 2010-11, the number of debit cards grew at the rate of 25 per cent over the previous year.

- In sync with the trend observed in case of ATMs, nearly three fourths of the total debit cards were issued by PSBs as at end March 2011.
- The share of PSBs in outstanding debit cards witnessed an increase during the recent years, while that of new private sector banks and foreign banks witnessed a decline over the same period.
- However, in absolute terms, the number of outstanding debit cards witnessed an increase for new private sector banks during the recent years, while that of new private sector banks and foreign banks witnessed a decline over the same period.

Table 2 : Debit Carrds Issued by Scheduled Commercial Banks

S No.	Bank Group	Outstanding Number of Debit cards (in millions)				
		Year-->	2007-08	2008-09	2009-10	2010-2011
I	Public sector banks		64.33	91.70	129.69	170.34
	a) Nationalised banks		28.29	40.71	58.82	80.27
	b) SBI group		36.04	50.99	70.87	90.07
II	Private sector banks		34.10	41.34	47.85	53.58
	a) Old private sector banks		5.34	7.09	9.81	12.44
	b) New private sector banks		28.76	34.25	38.04	41.14
III	Foreign banks		4.02	4.39	4.43	3.92

On the operational side, despite the convenience offered by ATMs in providing banking services, the debit card penetration continued to be low with only 30 per cent of deposit account holders having a debit card. The status of credit card penetration was worse with only less than two per cent of the population having a credit card. Further, the number of outstanding credit cards witnessed a declining trend during the recent years. As these technological advancements improve the pace and quality of banking services, there is a need to make efforts to improve card penetration in the country.

b) Credit Card Market in India

The issuance of credit cards facilitates transactions without having to carry paper money. Despite the

decline in the number of outstanding number of credit cards, the volume and value of transactions with credit card recorded a growth of 13 per cent and 22 per cent, respectively in 2010-11. New private sector banks and foreign banks accounted for more than 80 per cent of the total outstanding credit cards as at end March 2011. The electronic payment systems such as Electronic Clearing Service (ECS) credit and debit, National Electronic Fund Transfer (NEFT) for retail transactions and Real Time Gross Settlement (RTGS) for large value, improved the speed of financial transactions, across the country.

Table 3 : Credit Cards Issued by Scheduled Commercial Banks (as at end March 2011)

Sr.No.	Bank Group	Outstanding Number of Debit cards (in millions)			
		2007-08	2008-09	2009-10	2010-2011
	Year-->				
I	Public sector banks	3.93	3.44	3.26	3.08
a)	Nationalised banks	0.72	0.72	0.73	0.78
b)	SBI group	3.21	2.72	2.53	2.30
II	Private sector banks	13.29	12.18	9.50	9.32
a)	Old private sector banks	0.04	0.06	0.06	0.04
b)	New private sector banks	13.25	12.12	9.44	9.28
III	Foreign banks	10.33	9.08	5.57	5.64

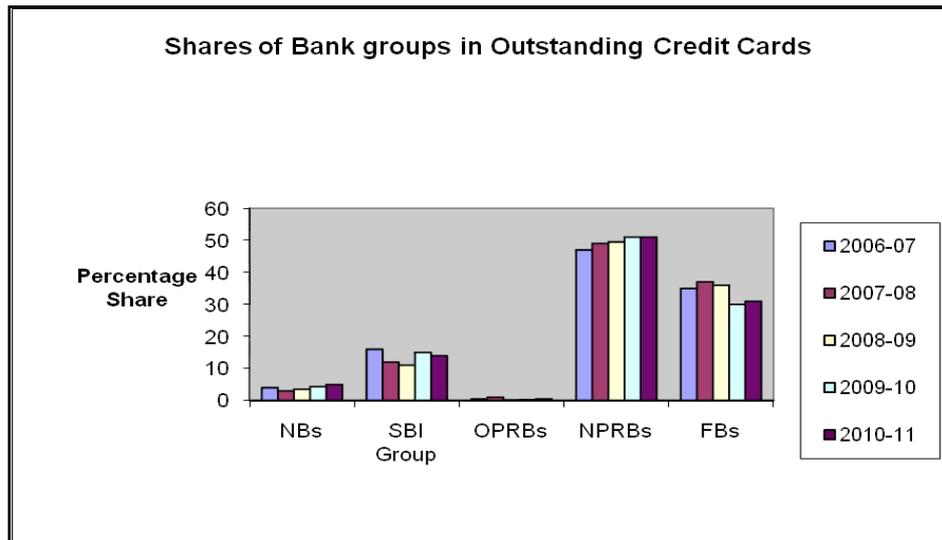


Chart 5 : Shares of Bank Groups in outstanding Credit Cards

V. MOBILE BANKING

India has 700 million (approx) mobile subscribers, but only 240 million individuals with bank accounts, 20 million credit cards, 88,000 bank branches and 70,000 ATMs. Of the households without a bank account, 42% have at least one mobile phone. This is just a snapshot into the penetration that mobile has achieved in a relatively small period of time.

Mobile banking could be a revolution in banking. It has been in the news for quite a while and, very

recently, the transaction limit for mobile wallet cards was increased to Rs.50K. Mobile banking in India is set to generate a fee-based income of Rs.202.5 billion (approx. US\$4.5 billion) over the next five years, mainly driven by lower transaction costs, favorable regulatory environment and the UID project.

By 2015, US\$350 billion in payment and banking transactions could flow through mobile phones, compared with about US\$235 billion of total credit-and debit-card transactions today. This forecast depends on

the willingness of banks, telecom operators, regulators and consumers collectively to embrace this form of payment.

The RBI introduced operative guidelines for banks for mobile banking transactions in India in October 2008 under the umbrella of the Payments & Settlements Act 2007 with a few revisions and clarifications outlined in subsequent releases. The key highlights of the act are:

- Only rupee based domestic services are permissible, clearly prohibiting the use of cross-border inward and outward transfers.
- Banks are allowed to use the services of business correspondents to extend this facility to customers.
- Only banks with core banking solutions would be permitted to provide mobile banking services on their platform.
- The customer registration for mobile banking is mandatory.
- The mobile banking service offered by banks should be network operator-agnostic and should work across the entire mobile spectrum of operators.
- To ensure inter-operability between banks, message formats such as ISO 8583 were to be adopted for transactions.

There are essentially two mobile banking meta-markets in India: rural and urban. Over the next five years, unbanked rural markets could begin to rival the urban market in size. In urban areas, many consumers have bank accounts, but still rely on cash for 90% to 95% of small-ticket transactions.

Mobile payments would not only seek to change the cash-based nature of transactions, but also would be a tremendous convenience for these consumers. The mobile banking industry in India is ready to take off, especially with the ecosystem players, i.e., operators, banks and mobile manufacturers coming together and launching pilot services.

The Inter Bank Mobile Payment Service (IMPS) facility was launched with much fanfare in November 2010, under the aegis of the National Payment Corporation of India (NPCI). It promised an instant interbank electronic fund transfer service that customers could conveniently access using their mobile phones. However, although the facility is being offered by more than 20 banks across the country, the adoption rate has been low. Industry analysts have attributed this to the fact that the service in its current format is custom-made for Smartphone users who can download an application from their respective banks and use it to make a fund transfer. Users with basic phones have the option of transferring funds via an SMS, which limits the transaction value. With more than 600 million connections and over 15 million being added each

month, currently just 5% of mobile phone subscribers are registered for the service. Even among the registered users, only a small fraction uses it regularly. Approximately 680,000 transactions worth Rs.610 million (US\$13.55 million) are conducted every month.

a) *Developments in the Mobile Banking Arena*

RBI has been insisting repeatedly that mobile payments in India have to be driven by a bank-led model. This has prompted several stakeholders such as handset manufacturers, network providers and telecom operators to enter into strategic tie ups with banks to develop a scalable model. Several offerings have emerged or are around the corner over the past year.

- RBI came up with the regulation of an additional factor across IVR and mobile channels. This affected mobile service aggregators such as ngpay, Mchek and Paymate.
- Several new banks have come up with their mobile banking offering through java-based applications. Newer channels such as USSD and SMS have also gained in prominence after RBI increased the limit for unencrypted transactions over mobile channel to Rs.5,000 per day.
- Banks such as SBI offer certain value-added services such as prepaid mobile recharge, which has been a hugely successful functionality. SBI boasts of more than 1 million customers in its mobile banking platform freedom by virtue of balanced service offerings as well as effective customer communication.
- Apparently, the regulator believes that mobile banking is yet to show remarkable growth even after the daily transaction limits have been raised to Rs. 50,000 per day per customer. Apart from major banks such as SBI and ICICI, other banks are still to gain numbers in terms of volume and value of transactions.
- Nokia Money launched its services with Yes Bank and Union Bank of India to provide financial services to customers. Nokia plans to use its distribution network coupled with the financial prowess of the banks to provide a service of its kind.
- Airtel received approval to issue prepaid instruments from regulators and launch it in the name of Airtel Money. Other mobile operators too are defining models wherein payment and/or transfer enabling instruments would be launched either on their own or with banks, leveraging the principles of business correspondents.
- In the area of proximity payments, Citibank, in conjunction with Vodafone and Nokia conducted an NFC (near field communication)-based mobile payments trial in Bangalore, which saw considerable success. However, the scalability would depend on the proliferation and adoption of

NFC-enabled handsets and acceptance capabilities at merchant outlets. There are several players in the space of financial inclusion such as FINO, ATOM, Eko and ALW who offer a bouquet of services such as deposits, cash withdrawals and payment & transfer transactions via the mobile channel.

b) Telecommunication Operator Bank Tie-ups

Following three of India's largest mobile operators have tied up with India's largest banks to offer a bouquet of mobile-based banking and financial services to their customers:

1. Airtel and State Bank of India: A joint venture company has been set up that envisages opening bank accounts, cashless transfers, cashless spending and payment facilities, targeting the rural and urban poor. Customers would be offered a no-frills banking account from SBI, across Airtel's 1.5 million+ retailer network. Both partners have envisaged investing more than Rs.1 billion in this enterprise. The JV plans to acquire more than 2 million accounts annually.
2. Vodafone and the ICICI Bank: Similar arrangement being entered offering financial products ranging from savings accounts, prepaid instruments and credit products through a mobile phone platform.
3. Idea and Axis Bank: They have entered into an association to offer financial services to customers under the Idea Mycash brand. These players have partnered a pilot launch in the Dharavi-Allahabad corridor and have plans to shortly launch the service at a pan-India scale.

VI. TRENDS IN INNOVATION IN PRODUCTS AND SERVICES OFFERED BY BANKING SECTOR

a) Savings Accounts with Auto Sweep Facility

With an objective to deliver higher value for the savings account customers, banks have designed savings accounts with an auto sweep facility with the help of technology. The product feature works in a way that when the balance exceeds a given threshold value, the same is converted into a fixed deposit. If the balance falls, the fixed deposit is automatically broken and the balance is automatically credited back to the savings account of the customer. This facility provides a greater yield for customers on ideal funds and help banks retain low-cost deposits.

b) Smart Cards

The processor type smart cards with built-in integrated circuits (ICs) or microchips offer a wide range of transactional opportunities even from remote areas. Smart cards are extensively used for transactions such as cash withdrawals from ATMs, payment of bills and online purchases.

c) Virtual Banks

Multimedia technology has been quite effective in bringing banking services to the doorstep of its customers. The customer-activated terminal (CAT) or self-banking kiosks are an interactive multimedia display unit, housed in a small enclosure, which typically consists of a computer workstation, monitor, video disk player and a card reader. It enables customers to browse through the information and use the available banking services at their own speed. Some banks have established virtual or self-banking branches where the customer enters the branch, explores services on the touch screen and at any time calls up members of the bank staff by video conferencing. While customers get the convenience of 24X7 banking, the bank saves in heavy real estate and manpower costs when compared to establishing a branch.

d) Electronic Funds Transfers

Real time gross settlements (RTGS) and national electronic funds transfer (NEFT) have transformed the way funds transfers are done. Moving from three to four days for clearing and funds transferred, banks have moved to real-time transfers using online channels and mobile phones.

VII. CONCLUSION

Major developments in banking sector due to technology are taking place. In the face of the new competitive pressures, inherent rigidities in public sector banks to enhance serious challenges. The gap between partially using IT in banks and fully using IT in banks has widened. Financial sector reforms experienced that as compared to new private sector banks and foreign banks, in public sector banks very less IT has taken place. This IT in new private sector and foreign banks is becoming threat and also motivation for Indian public sector banks. Thus in this competition those banks will survive in the future which will manage technology infrastructure and innovations in the products and services offered by them.

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