R.K. Uppal
Head Dept. of Economics,
D.A.V. College, Malout (Punjab)

Poonam Rani
Research Investigator ICSSR sponsored
Major, Research Project
Dept. of Economics, D.A.V College,
Malout (Punjab)

Efficiency of Indian Commercial Banks In IT Era - Issues and New Opportunities

Abstract

Indian banking industry has undergone radical changes due to liberalization and globalization measure undertaken since 1991. Today, Indian banking industry is one of the largest in the world. The present study is an attempt to evaluate the average productivity of all bank groups in non e-banking period and e-banking period. The study is concerned with period 1996-2007 and this period has been deliberately divided into two periods. The first five years (1996-2001) considered non ebanking period and remaining part is related ebanking period. The findings of study shows that e-banking period is a better and it is a golden age for foreign banks and new private sector banks. Impact of all e-delivery channels on total productivity index has positive and high correlation during e-banking period.

INTRODUCTION

Banking all over the world during last decade witnessed changes which perhaps it did not see during its entire history. The changes are not only confined to developed countries. Banking in developing countries like ours has also started witnessing these changes it is due to liberalization of economies and related policies, globalization of world markets especially because of increasing interdependence of different developed and developing countries.

During the closing years of 1970s and early 1980s it was realized that slow down in industrial growth was essentially due to low productivity but during 1980s there was some progress in the process of deregulation. The process of economic reforms introduced in India since 1991 has witnessed a gradual dismantling of industrial licensing removal of import licensing from nearly all manufactured intermediate and capital goods, tariff reduction and relaxation of rules for foreign investment.

In this context of changed technological socio-economical factors, the emergence of new financial services has been provided with support of information technology e.g. easy transfer of funds and message across and beyond the national boundaries financial institutions, including banks all over the world are therefore, crucially dependent on products of IT. Though the pace of change has been slow of

Indian banking scene is no exception to this phenomenon of transformation in products and services affected through IT. During the same period, i.e. the last decade with the liberalization and opening up of Indian economy, new private sector banks were established. Foreign banks also expanded their presence in India. The new private sector banks had a distinct advantage over the nationalized banks as they were able to start their operations with fully computerized services from day one. Foreign banks were already offering such services.

A large number of studies have analyzed the productivity performance of the organized manufacturing sector especially after the introduction of reforms (Trivedi et al 2000; Ray 1997; Ray 2002; Trivedi 2004; Kumar 2004). There are also some studies attempted to examine the relationship between economic reforms and productivity in the unorganized manufacturing sector (Unni et al 2001; Mukhregee 2004). But the numbers are not quite large as compared to the organized sector partly on account of non-availability of data. No doubt, Unni et al (2001) studied the productivity performance of organized and unorganized manufacturing sector in India and Gujarat. The study considered only the period up to 1994-95. In addition, the study failed to identify the sources of productivity growth or decline in these sectors. Taking cognizance of it, the paper has made an attempt to identify the role of technical efficiency change and technical change in productivity growth over time by discomposing total factor productivity growth (henceforth, TFPG) into technical change and efficiency change by using Malmquist index. Besides, the study by Unni et.al (2001) considered only the industrially developed state (Gujarat).

Productivity may be defined as the output per unit of a factor of production in a given period. Productivity index thus tells us something about the relationship between input and output in an enterprise.

Productivity is a ratio of input and output. As banking operations are influenced by govt. policy, RBI directives and various other socioeconomic compulsions, it is difficult to set fixed parameters for productivity in banks. The parameters keep changing with the change in banking policy and differ according to the organizational structure. Productivity can reveals a great deal about the future course of improvement or deterioration.

REVIEW OF LITERATURE

Aggarwal, S. (2007) analyzed good governance in any corporation world over is interplay of legal requirement, ethics, effectiveness, board relationships and group dynamics. In banking industry, governance has been extrapolated to cover issues like corporate sustainability, social and financial inclusion, social responsibilities or even Islamic banking etc. Corporate governance in Indian banking industry is by and large satisfactory irrespective of size, profitability or NPA level in banks. While operations, capital and risk management, technological innovations and customer satisfactory shall be the drivers of growth, it's going to be the corporate governance which will lead Indian banking to match best business practices on the global.

Bhattacharya, B and Sinha, T.N. (2008) discusses a recursive vector auto regression methodology to examine the transmission of shocks from major macroeconomic variables on the default rate of banks. This is the first attempt in the Indian context that studies the links between asset quality and macroeconomic shocks using the VAR model. The implication of this study is that with the forth coming fuller capital account convertibility (FCAC) banking sector in India is likely to be under increased stress in view of the exchange rate volatility and consequent rise in interest rates.

Jain, A.K. and Jain, P. (2006) analyzed that th Indian banking industry has undergone radica changes due to liberalization and globalizatio measures undertaken since 1991. There has been great surge in retail banking. The study based o responses received from 200 customers of HDFC

Bank, ICICI Bank and some other private and nationalized banks in Varanasi city was undertaken to identify the various types and services offered by banks, the level of satisfaction about different types of services, expectations about these services and the level of segmentation gap among the services offered.

Lal, R.C. (2007) concludes that the main challenge ahead in the new millennium in banking and financial sector contain changing economic and banking environment, global competition, capital structure, transparency in reporting accounts, employee productivity, risk management, market discipline, sound human resource management , t raining and development

Shobhana, V.K. and Shanthi, G. (2008) assess the operational efficiency of foreign banks in India using the data for the period 1996-97 to 2004-05. Analysis of clearance is used to find that there is no significant relationship between operational efficiency and variables such as size of assets, branch network and staff strength, 31 foreign banks were selected for the study. It is concluded that state bank of Mauritius achieved the highest productivity whereas the operational efficiency of common international bank was the lowest.

Singh, I. and Singh, K. (2007-08) analyzed that commercial banking occupies quite an important role in the framework of every economy because it presents continuing challenges to those who are responsible for managing the affairs of the banks and to those who observe and study their performance. The Indian banks have, after the acceptance of Norseman Committee recommendations, have been striving to achieve an maintain ratio of 8 pc by bringing down their non-performing assets and strengthening their capital base by raising public issues of equity, bonds and concentrating on profit earning areas rather than on populist schemes of post nationalization era. The proposed research work shall be primarily based on secondary data as well as primary data. The long term effects of non achievement of capital adequacy would leave the banks in a batterer condition, with no avenue for capital in fusion either from the government or the public.

Sharma, R.D., Kaur, G. and Sharma, J. (2007) analyzed the service sector is witnessing fast growth, along with intense competition among service providers. It is in this context that the study seeks to identify the core dimensions of consumer banking services that delight the customers. The study reveals that despite of introducing market oriented bank products, customer delight is yet to be achieved. Moreover public sector banks are lagging behind the private sector banks in their efforts to attain customer delight. Thus, delight depends on the level of awareness and it is the expectations formed on the basis of awareness that make a difference. This instrument was pre- tested on the small sample of 50 respondents residing in Sarita Vihar colony in New Delhi. With the variability in the responses from the sample drawn from the population of approximately 5000 households, sample size for the main study thus came out to be approximately 300 respondents. For data collection the respondents were selected with the help of a bridged list of random numbers. Customers delight is contemporary topic both for the industry and academinicians.

Uppal, R.K. and Kaur, R. (2007) analysis the efficiency of all the bank groups in the post banking sector reforms era. Time period of study is related to second post banking sector reforms (1999-2000 to 2004-05). The paper concludes that the efficiency of all the bank groups has increased in the second post banking sector reforms period but these banking sector reforms are more beneficial for new private sector banks and foreign banks. This paper also suggests some measures for the improvement of efficiency of Indian nationalized banks. The sample of the study in Indian banking industry which comprises five different ownership groups and the ratio method is used to calculate the efficiency of different bank groups. New private sector banks are compelling with foreign banks for continuous improvement in their performance.

Uppal, R.K. (2006), made an attempt to study the efficiency of e-banking from the employee's point of view. The objective of the paper is to study and analyze the comparative efficiency of e-bank and traditional banks and to suggest some differentiating strategies for the improvement of e-banking especially for traditional banks. The study is based on a sample of 60 employees working with e-channels and having experience in dealing with customers through e-channels. Customers are also attracted from traditional banks to e-banks which are an indicator of better quality service. Therefore in order to retain customers, traditional banks must seriously think of e-banking.

Verma, S. and Saini, R. (2008) focused on the level of competition and market power in the Indian banking industry. The study concludes the average level of mark in the post reform period level of mark in the post reform period was 10 pc. Also the foreign banks charged nearly double the mark-up as compared to that charged by public sector banks and domestic private sector banks. The study used the C-V model because of its ability to generate consistent annual estimates of competition. This paper presents an interesting area for future research to examine the interrelation between the level of mark-up and operating efficiency of banks, both over time and across different ownerships.

OBJECTIVES, RESEARCH METHODOLOGY AND DATABASE

Objectives

- To study and evaluate the efficiency of bank groups in non-e-banking period and e-banking period.
- To explore new opportunities of low efficiency bank groups.

Research Methodology The presepaper is concerned with Indian banking industry. The whole banking industry has been divided into four bank groups.

G-I Public sector banks (28)

G-II Old private sector banks (20)

G-III New private sector banks (07)

G-IV Foreign banks (29)

The time period has been deliberately divided into two periods.

- Non e-banking period (1996-2001)
- E-banking period (2001-2007)

Parameter of The Study

- Deposit per employee
- Credit per employee
- Business per employee
- Total earnings per employee
- Total Expenditure per employee
- Establishment expenditure per employee
- Employee productivity index
- Total productivity index
- IT index
- Impact of computerized branches on total productivity index
- Impact of ATMs on total productivity index
- Impact of credit cards on total productivity index
- Impact of Internet banking on total productivity index
- Impact of Mobile banking on total productivity index
- Impact of Tele-banking on total productivity index
- Impact of IT on total productivity index

Database

Performance Highlights, Various Issues, 1991 to 2007, IBA Mumbai

RESULTS AND DISCUSSION

Deposits per Employee : The table 1 indicates the deposit per employee of Indian banking industry during two study periods, namely non e-banking period and e-banking period. It is a remarkable achievement of all bank groups that average of deposit per employee has been increased in almost double in e-banking period in G-I, G-II and G-IV. In industry, deposit per employee has been increased almost three times i.e. 0.83 to 2.08 per cent. Study reveals that G-III and G-IV bank groups are more benefited during e-banking period as compared to G-I and G-II. Overall new private sector banks and foreign banks have made remarkable progress as compared public and old private sector banks.

Source: Performance Highlights various issues, (1996-2007) IBA, Mumbai.

Table 1: Deposits per Employee in Percent

Non E-banking Period					
Years	G-I	G-II	G-III	G-IV	Industry
1996-97	0.51	0.65	4.81	2.61	0.56
1997-98	0.60	0.77	3.92	2.91	0.67
1998-99	0.72	0.94	5.31	3.08	0.80
1999-2000	0.84	1.13	6.62	3.65	0.95
2000-2001	1.08	1.32	5.04	5.46	1.21
Average	0.75	0.96	5.14	3.54	0.83
S.D.	0.22	0.26	0.97	1.13	0.25
C.V. (%)	340.90	369.23	18.87	31.92	30.12
E-banking Period					
2001-02	1.28	1.47	4.89	5.84	1.43
2002-03	1.43	1.94	6.17	5.88	1.60
2003-04	1.63	2.08	5.06	5.44	1.85
2004-05	1.92	2.24	4.92	5.03	2.14
2005-06	2.20	2.58	5.09	5.43	2.49
2006-07	2.70	3.05	4.56	5.41	2.99
Average	1.86	2.22	5.11	5.50	2.08
S.D.	0.52	0.54	0.55	0.31	0.58
C.V. (%)	27.95	24.32	10.76	631.27	27.88
Overall Mean	1.35	1.65	5.12	4.61	1.51

Source : Performance Highlights Various Issues, (1996-2007) IBM, Mumbai.

Credits Per Employee

Table 2 exhibits the credit per employee of Indian banking industry during two study periods, namely non e-banking period and e-banking period. It is a remarkable progress of all bank groups that average has been positively increased in e-banking period. The study analyzes that G-III and G-IV bank groups are more benefited during e-banking period as compared to G-I and G-II. Overall G-III and G-IV bank groups have made remarkable progress than G-I and G-II bank groups.

Table 2 : Credits per Employee in Percent

Non E-banking Period					
Years	G-I	G-II	G-III	G-IV	Industry
1996-97	0.25	0.36	2.89	1.89	0.29
1997-98	0.26	0.39	2.58	1.62	0.29
1998-99	0.34	0.47	2.62	1.94	0.38
1999-2000	0.41	0.57	3.14	2.65	0.47
2000-01	0.52	0.68	2.42	3.75	0.60
Average	0.35	0.49	2.73	2.37	0.40
S.D.	0.11	0.13	0.28	0.86	0.13
C.V. (%)	31.42	26.53	10.25	36.28	32.5
E-banking Period					
2001-02	0.63	0.77	4.07	4.23	0.77
2002-03	0.72	1.05	4.77	4.43	0.87
2003-04	0.84	1.10	3.67	4.13	1.02
2004-05	1.14	1.31	3.83	4.38	1.34
2005-06	1.50	1.65	3.94	4.65	1.75
2006-07	1.90	1.90	3.55	4.53	2.15
Average	1.12	1.29	3.97	4.39	1.31
S.D.	0.49	0.41	0.43	0.19	0.54
C.V. (%)	43.75	31.78	10.83	4.32	41.22
Overall Mean	0.77	0.93	3.40	3.47	0.90

Source : Same as Table 1

Business Per Employee

The table 3 indicates the business per employee of Indian banking industry during two study periods namely non e-banking period and e-banking period. In non e-banking period all bank groups has the least average of business per employee but in e-banking period the average has increased of all bank groups. It is a tremendous achievement of all bank groups. The study reveals that G-III and G-IV bank groups are more benefited during e-banking period as compared to G-I and G-II. Overall new private sector banks and foreign banks have made remarkable progress as compared to public and old private sector banks.

Table 3 : Business per Employeei Percent

Non E-banking Period					
Years	G-I	G-II	G-III	G-IV	Industry
1996-97	0.76	1.01	7.70	4.51	0.85
1997-98	0.86	1.16	6.50	4.54	0.96
1998-99	1.06	1.40	7.94	5.03	1.18
1999-2000	1.25	1.70	9.76	6.31	1.41
2000-01	1.60	2.00	7.46	9.03	1.80
Average	1.10	1.45	7.87	5.88	1.24
S.D.	0.33	0.40	1.18	1.90	0.37
C.V. (%)	30.00	27.58	14.99	32.31	29.83
E-banking Period					
2001-02	1.91	2.24	8.96	10.07	2.20
2002-03	2.15	2.99	10.94	10.31	2.47
2003-04	2.47	3.17	8.73	9.57	2.87
2004-05	3.06	3.55	8.75	9.40	3.48
2005-06	3.69	4.23	9.02	10.08	4.24
2006-07	4.61	4.96	8.11	9.95	5.15
Average	2.98	3.52	9.08	9.89	3.40
S.D.	1.02	0.96	0.96	0.34	1.12
C.V. (%)	34.22	27.27	10.57	3.43	32.49
Overall Mean	2.12	2.58	8.53	8.07	2.41

Source : Same as Table 1

Total Expenditure Per Employee

During two study periods namely, non e-banking period and e-banking period, this table indicates the total expenditure per employee of Indian banking industry. Average of total expenditure per employee has been increased in e-banking period. In industry, total expenditure per employee has been increased and it has become double i.e. 0.10 to 0.20 per cent. The study reveals that overall total expenditure of per employee has more in new private sector banks because these banks are in the initial stage.

Table 4 : Total Expenditure per Employee in Percent

Years	G-I	G-II	G-III	G-IV	Industry
Non E-banking Period					
1996-97	0.07	0.09	0.62	0.48	0.07
1997-98	0.07	0.10	0.59	0.54	0.08
1998-99	0.09	0.12	0.66	0.59	0.10
1999-2000	0.10	0.14	0.69	0.69	0.11
2000-01	0.12	0.15	0.55	1.01	0.14
Average	0.09	0.12	0.62	0.78	0.10
S.D.	2.12	2.55	5.54	0.20	2.73
C.V. (%)	2355.55	2125.0	893.54	25.64	2730.0
E-banking Period					
2001-02	0.14	0.18	0.50	1.04	0.17
2002-03	0.15	0.21	1.01	0.87	0.18
2003-04	0.16	0.20	0.61	0.73	0.19
2004-05	0.17	0.20	0.47	0.64	0.20
2005-06	0.20	0.22	0.48	0.69	0.23
2006-07	0.22	0.24	0.48	0.73	0.26
Average	0.17	0.20	0.59	0.78	0.20
S.D.	3.07	2.04	0.21	0.14	3.39
C.V. (%)	1805.88	1020.0	35.59	17.94	1695.0
Overall Mean	0.13	0.16	0.60	0.72	0.15

Source : Same as Table 1

Total Earnings per Employee

This table indicates the total earnings per employee of Indian banking industry. It is a remarkable achievement of all bank groups that average of total earnings per employee has been increased almost double in e-banking period in G-I, G-II and G-IV. In industry, total earnings per employee have been increased almost three times. The study reveals that G-III and G-IV bank groups are more benefited during e-banking period and overall these banks have made remarkable progress as compared to G-I and G-II.

Table 5 : Total Earnings per Employee in Percent

Non E-banking Period					
Years	G-I	G-II	G-III	G-IV	Industry
1996-97	0.06	0.09	0.72	0.53	0.02
1997-98	0.08	0.11	0.68	0.58	0.09
1998-99	0.09	0.12	0.73	0.64	0.10
1999-2000	0.10	0.15	0.77	0.76	0.12
2000-01	0.13	0.16	0.60	0.94	0.15
Average	0.09	0.12	0.70	0.69	0.09
S.D.	2.58	2.88	6.44	0.16	4.82
C.V. (%)	2866.66	240.0	920.0	23.18	5355.5
E-banking Period					
2001-02	0.15	0.20	0.54	1.05	0.18
2002-03	0.17	0.24	1.10	1.02	0.20
2003-04	0.18	0.23	0.71	0.89	0.22
2004-05	0.19	0.20	0.55	0.76	0.22
2005-06	0.22	0.23	0.55	0.83	0.26
2006-07	0.25	0.27	0.54	0.90	0.30
Average	0.19	0.22	0.66	0.90	0.23
S.D.	3.61	2.63	0.22	0.11	4.33
C.V. (%)	1900.0	1195.45	33.33	12.22	1882.60
Overall Mean	0.14	0.18	0.68	0.80	0.16

Source : Same as Table 1

Establishment Expenditure per Employee

During two study periods namely non e-banking period and e-banking period, table 6 indicates the establishment expenditure per employee of Indian banking industry. Average of establishment expenditure per employee has become more than double in e-banking period. The study reveals that G-II and G-IV bank groups have more expenditure during e-banking period as compared to G-I and G-III. Overall establishment expenditure of per employee has more in new private sector banks because these banks are in initial stage.

Table 6 : Establishment Expenditure per Employee in Percent

Non E-banking Period					
Years	G-I	G-II	G-III	G-IV	Industry
1996-97	0.01	0.01	0.01	0.04	0.01
1997-98	0.01	0.01	0.02	0.04	0.01
1998-99	0.02	0.02	0.02	0.05	0.02
1999-2000	0.02	0.02	0.02	0.06	0.02
2000-01	0.03	0.02	0.02	0.07	0.03
Average	0.01	0.01	0.01	0.05	0.01
S.D.	8.36	5.47	4.47	1.30	8.36
C.V. (%)	83600	54700	44700	2600	83600
E-banking Period					
2001-02	0.03	0.02	0.02	0.10	0.03
2002-03	0.03	0.03	0.04	0.09	0.03
2003-04	0.03	0.03	0.04	0.08	0.03
2004-05	0.03	0.03	0.04	0.08	0.03
2005-06	0.04	0.03	0.04	0.09	0.04
2006-07	0.02	0.04	0.08	0.03	0.03
Average	0.03	0.18	0.04	0.07	0.03
S.D.	6.32	6.32	1.96	2.48	4.08
C.V. (%)	21066.66	3511.11	4900	3542.85	13600
Overall Mean	2.45	2.36	3.18	6.63	2.54

Source : Same as Table 1

Employee Productivity Index

Table 7 indicates the index of employee productivity of all bank groups during two study periods, namely, non-e-banking period and e-banking period. Index of employee productivity has been increased in e-banking period of all bank groups. During e-banking period, average of G-III and G-IV bank groups is more as compared to G-I and G-II. Overall new private sector banks and foreign banks have made remarkable progress as compared to public and old private sector banks

Table 7 : Employee Productivity Index in Percent

Non E-banking Period					
Years	G-I	G-II	G-III	G-IV	Industry
1996-97	–	–	–	–	–
1997-98	39.50	40.09	51.25	49.87	39.70
1998-99	40.57	41.21	53.21	51.63	40.78
1999-2000	40.86	41.74	55.45	54.74	41.17
2000-01	42.16	42.15	51.64	60.61	42.57
Average	40.77	41.29	52.88	54.21	41.05
S.D.	1.09	0.89	1.90	4.71	1.18
C.V. (%)	2.67	2.15	3.59	8.68	2.87
E-banking Period					
2001-02	42.67	42.71	53.04	64.55	43.26
2002-03	43.06	44.54	61.30	63.19	43.68
2003-04	43.49	44.65	55.37	60.48	44.24
2004-05	44.24	44.94	54.11	59.42	44.96
2005-06	45.93	45.91	54.46	61.39	46.84
2006-07	–	–	–	–	–
Average	43.87	44.55	55.65	61.80	44.59
S.D.	1.28	1.16	3.26	2.06	1.40
C.V. (%)	2.91	2.60	5.85	3.33	3.13
Overall Mean	42.49	43.10	54.42	58.43	43.02

Source : Same as Table 1

Total Productivity Index

The total productivity index of all bank groups has been presented in table 8. Index of total productivity has been increased in e-banking period of all bank groups. The study reveals that overall G-III and G-IV bank groups have more index of total productivity as compared to G-I and G-II bank groups.

Table 8 : Total Productivity Index in Percent

Years	G-I	G-II	G-III	G-IV	Industry
Non E-banking Period					
1996-97	–	–	–	–	–
1997-98	45.35	44.07	48.00	50.58	45.16
1998-99	45.44	44.60	49.75	51.58	45.23
1999-2000	45.42	44.89	50.90	52.62	45.25
2000-01	46.11	44.88	49.17	55.89	45.80
Average	45.58	44.61	49.45	52.66	45.36
S.D.	0.35	0.38	1.20	2.30	0.29
C.V. (%)	0.76	0.85	2.42	4.36	0.63
E-banking Period					
2001-02	45.98	45.15	49.76	58.25	45.80
2002-03	46.21	46.04	51.69	56.98	45.91
2003-04	46.68	46.47	50.23	55.95	46.46
2004-05	47.19	46.53	50.55	59.60	47.02
2005-06	47.70	47.34	51.02	58.33	47.77
2006-07	–	–	–	–	–
Average	46.75	46.30	50.65	57.82	46.59
S.D.	0.70	0.79	0.74	1.39	0.81
C.V. (%)	1.49	1.70	1.46	2.40	1.73
Overall Mean	46.23	45.55	50.11	55.53	46.04

Source : Same as Table 1

IT Index

The IT index of all bank groups has been presented in table 9. The average of IT index is the maximum in G-III and G-IV during e-banking period. Overall new private sector banks and foreign banks have the highest index as compared to public sector and old private sector banks.

Table 9 : IT Index in Percent

Years	G-I	G-II	G-III	G-IV	Industry
Non E-banking Period					
1996-97	–	–	–	–	–
1997-98	38.94	38.73	46.79	49.40	41.51
1998-99	40.80	39.05	53.83	51.62	41.65
1999-2000	41.25	39.98	55.52	52.83	42.14
2000-01	42.03	41.34	57.58	57.29	43.20
Average	40.75	39.77	53.43	52.78	42.12
S.D.	1.31	1.17	4.68	3.32	0.76
C.V. (%)	3.21	2.94	8.75	6.29	1.80
E-banking Period					
2001-02	42.89	42.01	58.61	57.69	43.97
2002-03	43.88	44.31	61.51	60.76	44.39
2003-04	44.75	44.60	61.29	59.10	44.72
2004-05	45.66	45.86	58.44	69.60	45.40
2005-06	46.70	48.08	59.73	59.52	45.96
2006-07	–	–	–	–	–
Average	44.77	44.97	59.91	61.53	44.88
S.D.	3.30	2.22	1.44	4.73	0.79
C.V. (%)	38.98	4.93	2.40	7.68	1.76
Overall Mean	38.98	42.66	57.03	57.53	43.66

Source : Same as Table 1

Impact of Computerized branches on Total Productivity Index

Computerized branches are positively affecting the total productivity in all bank groups including banking industry. The co-efficient of correlation is 0.97 in G-I and 0.93 in G-II in e-banking period. In case of G-I, 94.8 impacts is observed in e-banking period. Similarly, in G-II it is 88.0 percent.

Table 10 : Impact of Computerized branches on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.66	0.446
	e-banking	0.97	0.948
G-II	Non e-banking	0.93	0.867
	e-banking	0.93	0.880
G-III	Non e-banking	–	–
	e-banking	–	–
G-IV	Non e-banking	–	–
	e-banking	–	–
Industry	Non e-banking	0.95	0.918
	e-banking	0.15	0.225

Source : Same as Table 1

Impact of IT on Total Productivity Index

IT index has positive impact on total productivity correlation in e-banking period. Similarly, industry as a whole has positive and very high correlation. G-I and G-II has more than 95 impacts on total productivity. Similarly, Indian banking industry has 97.4 impacts in e-banking period of IT on total productivity index.

Table 11 : Impact of IT on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.72	0.51
	e-banking	0.99	0.983
G-II	Non e-banking	0.77	0.592
	e-banking	0.97	0.956
G-III	Non e-banking	0.68	0.462
	e-banking	0.54	0.294
G-IV	Non e-banking	0.99	0.980
	e-banking	0.63	0.404
Industry	Non e-banking	0.96	0.932
	e-banking	0.98	0.974

Source : Same as Table 1

Impact of Mobile banking on Total Productivity Index

Mobile banking has drastically cut down the cost of providing service to the customers. For service providers M-banking offers the next surest way to achieve growth so M-banking is more popular in all bank groups. Table 14 describes the impact of M-banking on total productivity index. M banking has positive impact on total productivity in all bank groups. G-I and G-II has high correlation in e-banking period. Indian banking industry has 96.8 impacts in e-banking period of M-banking on total productivity index.

Table 12 : Impact of Mobile banking on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.86	0.754
	e-banking	0.99	0.987
G-II	Non e-banking	0.66	0.444
	e-banking	0.99	0.980
G-III	Non e-banking	0.55	0.306
	e-banking	0.19	0.038
G-IV	Non e-banking	0.99	0.989
	e-banking	0.68	0.469
Industry	Non e-banking	0.99	0.999
	e-banking	0.98	0.968

Source : Same as Table 1

Table 13 : Impact of Tele banking on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.82	0.685
	e-banking	0.98	0.964
G-II	Non e-banking	0.73	0.543
	e-banking	0.92	0.862
G-III	Non e-banking	0.80	0.645
	e-banking	0.48	0.235
G-IV	Non e-banking	0.96	0.930
	e-banking	0.83	0.701
Industry	Non e-banking	0.94	0.900
	e-banking	0.99	0.999

Source : Same as Table 1

Impact of Tele banking on Total Productivity Index

Tele banking is also becoming more popular in this world of technology among all the bank groups. Table 15 describes the impact of T-banking on total productivity index. The impact of T-banking has positive in all bank groups. G-I and G-II has high correlation in e-banking period. Similarly, industry as a whole has positive and very high correlation. During e-banking period G-I and G-II has more than 85 impacts on total productivity and Indian banking industry has 99.9 impacts of T-banking on total productivity in e-banking period.

Impact of ATMs on Total Productivity Index

ATMs have the positive impact on total productivity in all bank groups. G-I and G-II has the high correlation in e-banking period. Indian banking industry has more impact and high correlation in non e-banking period. During e-banking period Indian banking industry has only 79.00 impacts of ATMs on total productivity index.

Table 14 : Impact of ATMs on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.67	0.456
	e-banking	0.96	0.924
G-II	Non e-banking	0.52	0.272
	e-banking	0.84	0.717
G-III	Non e-banking	0.61	0.380
	e-banking	0.44	0.198
G-IV	Non e-banking	0.99	0.991
	e-banking	0.37	0.142
Industry	Non e-banking	0.99	0.983
	e-banking	0.88	0.790

Source : Same as Table 1

Impact of Credit Cards on Total Productivity Index

During e-banking technology credit cards are more popular day to day. Credit cards have positive impact on total productivity index in all bank groups. All bank groups have high and positive correlation in e-banking period. G-I and G-II has near about 90 impacts on total productivity.

Table 15 : Impact of Credit Cards on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.57	0.327
	e-banking	0.96	0.927
G-II	Non e-banking	0.59	0.357
	e-banking	0.94	0.885
G-III	Non e-banking	0.17	0.032
	e-banking	0.39	0.158
G-IV	Non e-banking	0.98	0.967
	e-banking	0.73	0.544
Industry	Non e-banking	0.93	0.873
	e-banking	0.66	0.445

Source : Same as Table 1

Impact of Internet banking on Total Productivity Index

Internet banking is also becoming more popular in this world of technology among all the bank groups. Table 16 describes the impact of internet banking on total productivity index. The impact of I-banking has been more during non e-banking period in all bank groups. Study reveals that impact of I-banking on total productivity is not benefitted to all bank groups during e-banking period as compared to non e-banking period.

Table 16 : Impact of Internet banking on Total Productivity Index

Bank Groups	Study Period	R	R^2
G-I	Non e-banking	0.88	0.777
	e-banking	0.41	0.170
G-II	Non e-banking	0.78	0.612
	e-banking	0.97	0.956
G-III	Non e-banking	0.44	0.197
	e-banking	0.37	0.139
G-IV	Non e-banking	0.97	0.942
	e-banking	0.77	0.607
Industry	Non e-banking	0.90	0.813
	e-banking	0.99	0.98

Source : Same as Table 1

EMERGING ISSUES

After analyzing the productivity of various bank groups the following issues emerges:

- Deposit per employee of public sector bank as compared to foreign banks and new private sector bank is very low.
- Similarly, credit per employee and business per employee in public sector banks are low.
- Total earning are public sector bank is comparatively low.
- Expenditures are more in new private sector banks because these banks are in initial stage.
- Impact of M-banking, Tele-banking and IT is more in G-I and G-II during e-banking period compared to other bank groups.
- Similarly, impact of credit cards, computerized branches and ATMs has more in G-I and G-II compared to other bank groups.

NEW OPPORTUNITIES

There are so many opportunities for the public sector banks and public sector banks should concentrate on the following issues

- Public sector banks should use maximum technology in the bank.
- There should be proper human resources management.
- There should be a proper capital planning.
- Action planning in public sector bank is also necessary.
- There should be customer focus and try to win the normal and potential customer.

CONCLUSION

The paper on the basis of efficiency of all commercial banks in IT era concludes that computerized branches, IT index, M-banking, tele banking, ATMs and credit cards have positive and high impacts on total productivity index in all bank groups. It is a remarkable achievement of all bank groups that averages of deposit per employee credit per employee, business per employee, total earnings per employee have been increased during e-banking period.

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