

Technology Impact on Banking Sector Performance with Reference to Select Private Sector Banks



J. Sai Sudha, P. Venkata Durga Rao

Abstract: *The present study is focused on the technology impact on the banking sector growth in 4G period. The usage of technology by the banking customers increased enormously in 4G compared to other telecom generations i.e., 2G and 3G. The study has considered the high technology spending private banks and B2C segment digital transactions (i.e., Neft, Rtgs, ATM, Mobile, Debit card and Credit Card transactions) growth on the business of the banking sector examined with the panel data in E-Views software. The study has considered the time series data of the selected five private sector banks digital transactions and constructed the Banking Technology Index in 4G period. The study result reveals with the ordinary least square that the mobile transactions and RTGS are having the positive impact on the performance of the Banking technology index. The BTI impact has been examined on the business per employee of the selected private sector banks and the result stated that the BPE got reduced significantly in 4G period. This paper is useful to the bankers, regulators and various stakeholders of the bankers.*

Keywords: ATM, Banking, Credit, Debit, NEFT, RTGS, Technology Index

I. INTRODUCTION

The economic reforms that improve economic reforms form part and parcel of financial sector reforms and reforms of the banking sector. The 2000 IT Act brought the Indian financial sector a new dimension. In the banking sector, IT has driven transformation: banking architecture, business processes, working culture, and the development of human resources. It had a significant impact on bank growth, profitability and performance. The main goal of financial sector reforms was to reinforce the financial sector and enhance its functioning. The IT revolution in India began in June 1999 when, with the launch of the Indian Financial Net, the IT market, in general, seemed too free. This Indian financial network included a large satellite network which uses technology for Very Small Aperture Terminals. It is founded jointly by the Reserve Bank of India with the Institute for Banking Technology Development and Research.

Originally only the public sector banks were included in the Indian Financial Network, but then it was opened up to members of other groups, including foreign banks. The first banking section was the payment system, but the introduction of the new technologies was a big advantage.

Earlier, with the advent of automated plate machines (ATMs), the section was the lifeline of a bank. The Internet network, which was also a significantly influenced distribution platform for banks, further extended this system. As an important tool for providing banking products and services the Internet has arisen..

In many cases, the IT Act 2000 allows, except those cases that remain subject to the provisions of the Negotiable Instrument Act of 1881, for this electronic data to also be considered as legitimate evidence in a Court of Justice. RBI has also highlighted the introduction of the unified cash management program, which allows for a consolidated view of account holders ' balance positions at different reserve bank locations in India. This was a two-part operation. The first section equipped the customers with a centralized funds investigation process and, by the end of 2003, the second section coordinated the centralized fund transfer system.

To improve network data protection, the Government of India has approved the Digital Signatures Certification Authority of the Institute for Banking Technology Development and Research. The transfer of electronic funds by means of digital signatures using the facilities provided by the certification authority is being improved with regard to protection. A pilot project on multi-application smart cards, together with a few banks under the leadership of the Ministry of Communications and IT, Government of India, has been launched to recognize further the need for technical payment products. The face of the Indian Banking system has all changed this technological advancement. As mentioned above, each individual customer of current banks receives a variety of technologically advanced steps. An in-depth analysis will then demonstrate that the Automatic Teller Machine Card of ATM is accessible to the customer at the end of the day with its most valuable input from information technology. When we say that the major driver for changing the banking system today is ATM, it will not be correct. Barclay Bank, London internally installed the first ATM on June 1974. ATM was launched in India in 1987 in India. The number of ATMs in the world is 16, 00,000. The ATM card may also be used in other banks' ATMs.

Benefits of Technology in Banking

❖ **Globalisation:** IT has brought the world together and made it easier, fast and efficient to share data. Enable transactions to be carried out regardless of the location of an individual or company. The regional frontiers of information technology have broken down to make the global village so small.

Manuscript received on February 10, 2020.

Revised Manuscript received on February 20, 2020.

Manuscript published on March 30, 2020.

* Correspondence Author

J. Sai Sudha*, Research Scholar, K L Business School, K L (deemed to be) University, KLEF, Vaddeswaram, Guntur Dt., A.P., India.

Dr. P. Venkata Durga Rao, Assistant Professor, K L Business School, K L (deemed to be) University, KLEF, Vaddeswaram, Guntur Dt., A.P., India.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an [open access](http://creativecommons.org/licenses/by-nc-nd/4.0/) article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

- ❖ **Communication:** IT promotes, speeds up, saves and performance in interaction. Citizens from all over the world can now interact with each other. Photo, email, text, instant messages, social networking, on - the-go radio, TV on - the-go, voice calls and VoIP, for example, are all available.
- ❖ **Cost Effectiveness and Operational Excellence:** Transaction automation for individuals and companies transforms our daily lives. Our day-to-day lives are made so much easier and economical. Cost efficiency creates revenue and gives workers a better pay. Easier and less stressful working conditions make everyday life. In contrast to automation days transactions are done in the less time. The use of IT makes fewer errors.
- ❖ **Bridging the Cultural Gap:** People from various nationalities and cultures are able to communicate between each other, which makes it possible to share views and opinions that can improve their lives, boost consciousness and minimize discrimination.
- ❖ **Longer Working Hours:** Business hours are extended Monday through Friday to 8-5 business days. The agency is almost open 24 hours a day, 7 days a week. This is true for all corporations worldwide. The longer hours facilitate the conduct of business transactions every day. Customers can now shop anywhere and anywhere.
- ❖ **Creation of New and Exciting Jobs in the Field of IT:** New and interesting jobs are created in the field of IT. Of starters, computer programmers, system administrators, system analysts, hardware and software technical experts, web development, computer technology and network management would be eligible.
- ❖ **Business Intelligence:** IT is the rivalry leader among other rivals in banking. Important and relevant data is used to make strategic business decisions. Information gathered from competitors, individuals, industry, internal operations and business partners.

II. REVIEW OF LITERATURE

Suman Kumar (2009) study stated that all the banks of both public sector, private sector, foreign banks and cooperative sector banks provide core banking solution facility in a big way. With this facility, banks gave up manual operation in banks with the enjoyment of the benefits of CBS to maintain books of accounts up to date, and also to achieve error free banking operations with no time loss.

Rosy Chawla, Rachana Kumari and Ponam Rani (2009) study made an attempted to study on the changing face of Indian Banking, Financial sector reforms, banking sector reforms are the part and parcel of economic reformat. Computerization, ATMs cash Deposit machine in public sector banks, scheduled commercial banks are the mark of their technological advancement. The study mainly concentrated on two aspects i.e. financial soundness; Technological development like computerization, branch automation, ATM technology etc.

Kulwant Singh Patnania, and Mamatha Sharma (2010) study emphasized on rate of banking technologies. The study identified the operational problem in the usage of modern banking technologies and suggested measures for improvement of technologies. The researchers opined that the banking technologies must be user friendly and able to operate even an illiterate and a layman. The range of

adoption of technologies of different kinds elaborated in their study.

Chakrabarthy K. C, Deputy Governor RBI (2010)³⁰, paper focused on “Processes of growth and development of banks”. The researcher opined that effective use of technology has a multitier impact on growth and development of banking sector. Technology enables increased penetration of banking system. The researcher firmly believed that banking economic development is not possible to scale up without the adoption of and ICT - IT based deliver model. Core banking solution (CBS) enables banks to extend the full benefits of ATM, Tele banking, Mobile banking, Internet banking to all customers allowing banks to offer a multitude of customer centric services on 24 x 7 basis from a single location using CBS, customers can access their accounts from any branch, anywhere irrespective of where they have physically opened their accounts. Banks need to adopt IT to develop comprehensive customer Relation Management Techniques to increase volume quality and profitability of business.

Rajeev Johari (2011) study made an attempt to examine relationship between RBI, SBI and SEBI their portfolio functions. In researchers opinion the corporate governance in banks leads to social responsibility, customer satisfaction and quality service transparent management system in banks opens to customer focus and gains to customer confidence. Corporate governance is trustworthy economic activity and economic development of retail banking in this conclusion the study observed that even SBI a largest bank in public sector stood at a small position in global scenario / Asian standards.

Nadire Cavus, Dambudzo Netsai Christina Chingoka (2016): The paper discusses the benefits and disadvantages of various models to test the effects of the decision to implement mobile banking, the various innovations currently deployed by banks and the potential of mobile banking. There are two categories for IT's position in the banking industry: communications and networking as well as individual and business transactions. In order to connect with people from various nations, industries around the globe, geographic distance and diverse markets, IT allows new goods with better mechanisms to be created and effective strategies applied.

Gayathri G, Suvitha K Vikram (2018): In every sector of the market, Information Technology (IT) plays a major role throughout enhancing operations and productivity in each organization. IT effects on bank profitability and marketing costs are the main objective of this report. The study found that IT expenses have a better impact on bank profitability and performance compared with marketing costs based on data from 21 Indian banks for the period 2011-2015. Findings indicate that investment in IT can improve banks ' productivity in relation to marketing costs. Banks in India must therefore give more attention to the development of their information technology infrastructure in order to increase efficiency and performance.

Ahmed Taha Al Ajlouni, Monir Al-Hakim (2019): The paper aims first to shed light on this wave of financial sector growth, which, combined with high technology, also seeks to explain FinTech's position in the financial sector as a rule, and in particular the banking industry.

In addition to detailing current market trends and environment, and some other potential funding mechanisms, the study will address the history and concept of FinTech. The paper's targets are achieved in two key steps, first of all. In the second phase, the study described FinTech's influence and response to the banking industry. The paper also proposed several future research ideas on FinTech's consequences for the Arab countries' financial and banking sectors.

III. OBJECTIVES OF THE STUDY

1. To study the banking digital transactions impact on select banks technology Index.
2. To study the impact of banking digital transactions on the operating profits of select banks.

IV. HYPOTHESES OF THE STUDY

H0: There is no banking digital transactions impact on select banks technology Index.

H0: There is no impact of banking digital transactions on the operating profit.

SCOPE OF THE STUDY

The present study has been focused on the business to customer transactions of banking segment in 4G periods i.e., 2012 to 2019. The study has considered the four largest Indian private banks based on the highest technological spending.

TABULATION OF DATA ANALYSIS

The present study has considered the six banking B2C digital transactions in the 4G period i.e., 2012-13 to 2018-19. The study mainly focused on the usage of digital transactions impact on the business per employees. The following hypothesis has been framed.

H0: There is no stationary under unit Root for the select digital transactions of Private sector banks

Table – 1: Panel unit root test: Summary

Transaction	Levin, Lin & Chu t	Im, Pesaran and Shin W-stat	ADF – Fisher Chi-square	PP - Fisher Chi-square
ATM	0.782	0.614	0.576	0.588
NEFT	0.512	0.925	0.172	0.494
RTGS	0.285	0.058	0.0625	0.082
Mobile	0.002	0.089	0.189	0.805
Debit Card	0.199	0.074	0.0856	0.528
Credit Card	0.185	0.839	0.285	0.551

Source: Secondary Data

The above table represents the unit root test for the panel data for the private sector digital transactions in the 4G period. The panel unit test result stated that the six selected digital transactions are observed to be greater than the 0.05,

which states that the selected digital transactions are found to be stationary. Hence, the null hypothesis has been rejected and accepted the alternative hypothesis.

Table - 2: Pairwise Granger Causality Tests

Sample: 2013 2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
NEFT does not Granger Cause Banking Technology Index	25	0.03522	0.9655
Banking Technology Index does not Granger Cause NEFT		0.67418	0.5208
RTGS does not Granger Cause Banking Technology Index	25	0.08778	0.9163
Banking Technology Index does not Granger Cause RTGS		23.6302	5.E-06
Mobile_Transaction does not Granger Cause Banking Technology Index	25	2.57249	0.1013
Banking Technology Index does not Granger Cause Mobile_Transaction		4.08332	0.0326
Debit Does Not Granger Cause Banking Technology Index	25	1.58433	0.2298
Banking Technology Index Does Not Granger Cause Debit		0.16671	0.8476
Credit Does Not Granger Cause Banking Technology Index	25	0.15234	0.8597
Banking Technology Index Does Not Granger Cause Credit		0.32650	0.7252
ATM Does Not Granger Cause Banking Technology Index	25	0.53273	0.5951
Banking Technology Index Does Not Granger Cause ATM		1.48278	0.2509

Source: Secondary Data

Granger Cause table illustrate the NEFT transaction with Banking technology Index and RTGS with Banking Technology Index's f-statistic value is greater than critical value. Similarly, Mobile transaction with banking technology Index, Debit and Credit with banking technology

index's calculated value of f-statistic are observed to be greater than critical and found that these digital transaction have unidirectional effect with Banking Technology Index.

Whereas, ATM with Banking technology index and Banking technology index with ATM had observed significant effect which indicates the bidirectional effect

exist between them. Therefore, it signifies that Digital transaction are granger cause to Banking technology index.

Table -3. Panel Least Square with respect to Digital transaction with Technology Index

Dependent Variable: BANKING_TECHNOLOGY_INDEX				
Method: Panel Least Squares				
Sample: 2013 2019				
Periods included: 7				
Cross-sections included: 5				
Total panel (balanced) observations: 35				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.1192.0	0.150334	6.095550	0.0000
NEFT	-0.12876	-0.052886	-2.434819	0.0215
RTGS	0.363074	0.309571	1.172832	0.0107
Mobile Transaction	0.447503	0.007935	5.986760	0.0000
DEBIT	0.025032	0.015770	1.587258	0.0237
CREDIT	-0.04175	-0.217579	-0.191910	0.0412
ATM	0.110876	43.58748	0.362690	0.0196
R-squared	0.672472	Mean dependent var		1124997.
Adjusted R-squared	0.602288	S.D. dependent var		565732.7
S.E. of regression	356776.1	Akaike info criterion		28.58446
Sum squared resid	3.561212	Schwarz criterion		28.89553
Log likelihood	-493.2281	Hannan-Quinn criter.		28.69184
F-statistic	9.581494	Durbin-Watson stat		1.536777
Prob(F-statistic)	0.000009			

Source: Secondary Data

The table represents that Digital transaction impact on the Banking Technology Index. Mobile transaction, NEFT and RTGS transaction has significant positive and high influence on the Baking Technology index, meaning that with the increase in these transaction will increase the Index ratio. Debit, credit had also shown significant influence on the banking technology Index but had observed slight influence.

ATM transaction coefficient value is 0.1108 which is positive impacted on the Index. Further, Adjusted r square of the model is strong and probability of the model is statistically significant. Thereby confirming that Reject H0 and Accept H1 i.e., Digital Transaction has significant influence on Banking Technology Index.

Table-4. Pairwise Granger Causality Tests with respect to Technology Index on Business per Employee

Pairwise Granger Causality Tests			
Sample: 2013 2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
BANKING_TECHNOLOGY_INDEX does not Granger Cause BUSINEES_PER_EMPLOYEE	25	5.69234	0.0120
BUSINEES_PER_EMPLOYEE does not Granger Cause BANKING_TECHNOLOGY_INDEX		0.13135	0.8777

Source: Secondary Data

The F-statistic calculated value observed to be greater than table value (i.e., 5.6923 > 4.1701) which indicates that Banking technology index grange cause to Business per

Employee. Hence it is concluded that Reject H0 and Accept H1.

Table -5. Panel Least Square with respect to Technology Index on Business per Employee

Dependent Variable: BUSINEES_PER_EMPLOYEE				
Method: Panel Least Squares				
Sample: 2013 2019				
Periods included: 7				
Cross-sections included: 5				
Total panel (balanced) observations: 35				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.5275738	3.3275408	-0.106231	0.9160
BANKING_TECHNOLOGY_INDEX	-0.228203	0.4692	-2.035096	0.0399

R-squared	0.811509	Mean dependent var	5.707408
Adjusted R-squared	0.884585	S.D. dependent var	9.127408
S.E. of regression	8.726408	Akaike info criterion	44.06689
Sum squared resid	2.518519	Schwarz criterion	44.15576
Log likelihood	-769.1705	Hannan-Quinn criter.	44.09757
F-statistic	4.141617	Durbin-Watson stat	0.179529
Prob(F-statistic)	0.039938		

Source: Secondary Data

Table illustrates the influence of Banking Technology Index on Business per employee. The result indicates that banking technology index coefficient value seems to be negative (i.e., -0.228203), meaning that, as Index ratio increases, business per employee ratio is decreasing gradually. Further the R-square of model is 0.8115 (i.e., indicates model is strong) and

Probability of the model is less than 0.05, therefore it concluded that Reject the H0 and Accept the H1 i.e., banking technology Index has significant influence on Business per employee of private banks.

V. FINDINGS OF THE STUDY

1. The study has focused on the impact of select digital transactions on the banking technology index (BTI) of private sector banks in 4G period. The study examined the 5 private sector banks digital transactions on the BTI with the ordinary least square method. The study result stated that the Mobile transactions (0.447503) is having the higher impact on the private banking sector BTI followed by the RTGS (0.363074).
2. The study found that the NEFT (-0.12876) and Credit Card (-0.04175) are having the negative influence on the private banking sector – BTI during the 4G period i.e., 2012-13 to 2018-19.
3. The private banks banking technology Index impact has been examined on the business per employee and the result stated that the coefficient value of BTI (-0.228203) on the BPE and the p value also found to be significant (i.e., <0.05). The technology of B2C is having the significant negative impact on the business of private banking sector, which states that the technology is effectively influencing the employees.

VI. CONCLUSION OF THE STUDY

The study has been emphasized on the technology impact on the banking performance of select private sector banks. The study mainly focused in the 4G period i.e., 2012-13 to 2018-19 B2C segment digital transactions were considered and designed the banking technology index with the six digital transactions volumes. The study has selected top five private sector banks and collected secondary data which is in time series nature. The study framed the panel data and tested for the stationary and applied the various statistical tools for the framed objectives. The study found that the Mobile transactions and RTGS have significantly influenced the banking technology Index but ATM and NEFT transactions have impacted negatively to the private sector banking technology index. The study also observed that with the BTI impact on the Business per employee has been found significantly. The study result reveals that the usage of technology to render the banking services influenced the business significantly positive. Hence, there is a need to do further research in this area by considering the B2B segment

so that the usage of technology effectively reduced the cost of the business operations of the Indian banking sector after the implementation of technology.

REFERENCES

1. **Suman Kumar (2009)**, "An empirical study on banking solution facility in public and private banks", IUP journal of Bank Management, Volume 51(1), pp. 43-48.
2. **Rosy Chawla, Rachana Kumari and Ponam Rani (2009)**, "Technology development with Indian banking sectors", Volume 45(2), pp. 112-117.
3. **Kulwant Singh Patnania, and Mamatha Sharma (2010)**, "An Empirical investigation of the Adoption of modern Banking Technologies" International e-journal of commerce and management, Volume 25(1), pp. 56-63.
4. **Chakravarthy K. C (2010)**, "An Empirical study Mobile banking in India", Volume 28(2), pp.273-277.
5. **Rajeev Johari (2011)**, A Relationship between RBI, SBI, and SEBI with special reference to corporate governance, Volume 9, pp. 67-79.
6. **Nadire Cavus, Dambudzo Netsai Christina Chingoka (2016)**, Information technology in the banking sector: Review of mobile banking, Global Journal of Information Technology, Volume 05, Issue 2, pg. 62-70
7. **Gayathri G, Suvitha K Vikram (2018)**, Impact of Information Technology on the Profitability of Banks in India, International Journal of Pure and Applied Mathematics, Volume 118 No. 20 2018, 225-232
8. **Ahmed Taha Al Ajlouni, Monir Al-Hakim (2019)**, Financial Technology in Banking Industry: Challenges and Opportunities, Conference: International Conference on Economics and Administrative Sciences ICEAS 2018., At Applied Sciences University, Jordan.

AUTHORS PROFILE



J. Sai Sudha working as an Assistant Professor in St. Ann's PG College for Women, Mallapur has 3 Years of Teaching Experience, Dealing with the Subjects Financial Markets and Services and Management Organization Behavior. Her Areas of Interest are Finance and HR. She is Research Scholar Pursuing Ph.d in K.L. Business School KLEF Vaddeswaram in the field of Finance. She attended Various Faculty Development Programs.



Dr. P. Venkata Durga Rao working as an Assistant Professor in K L Business School, KLEF (deemed University) Vaddeswaram, had 16 years of teaching, research experience in India and Ethiopia (Foreign). He qualified NET (National Eligibility Test) and awarded UGC-JRF in the field of Management in the year 2011. He awarded M.Phil., in the year 2008 and Ph.D. in the year 2014. He published 17 articles in National, International, Scopus indexed journals. His area of interest is Accounting & Finance. He presented and participated in various national and international conferences, workshops and guest lectures.