

# Impact of Technology on the Operational Performance of Indian Banking Sector

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## Abstract:

Banking industry is a backbone of Indian financial system and it is plagued by many challenging forces. One such force is revolution of information technology. In past many years onwards, banks in India have invested heavily in the technology such as Tele Banking, Mobile Banking, Net Banking, ATMs, Credit Cards, Debit Cards, Electronic Payment Systems and Data Warehousing and Data Mining Solutions, to bring improvements in quality of customer services and the fast processing of banking operation. Heavy investments in IT have been made by the banks in the expectation of improvement in their performance. But important in the performance depends upon, differences in the deployment, use and effectiveness of IT.

**Key words:** Banking Technology Index, Employee Cost, Digital Transactions, Technology Enabled Services.

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### Introduction:

The banking industry is going through a period of rapid change to meet competition, challenges of technology and the demand of end user. Clearly technology is a key differentiator in the performance of banks. Banks need to look at innovation not just for product but for process also. Today, technology is not only changing the environment but also the relationship with customers. Technology has not broken barriers but has also brought about superior products and channels. This has brought customer relationship into greater focus. It is also viewed as an instrument of cost reduction and effective communication with people and institutions associated with the banking business. The RBI has assigned priority to the up gradation of technological infrastructure in financial system. Technology has opened new products and services, new market and efficient delivery channels for banking industry. IT also provides the framework for banking industry to meet challenges in the present competitive environment. IT enables to cut the cost of global fund transfer.

Information Technology offers enormous potential and various opportunities to the Indian Banking sector. It provides cost-effective, rapid and systematic provision of services to the customer. The efficient use of technology has facilitated accurate and timely management of the increased transaction volumes of banks which comes with larger customer base. Indian banking industry is greatly benefiting from IT revolution all over the world. Another concept i.e., Virtual Banking or Direct Banking is now gaining importance all over the world. According to this concept Banks offer products, services and financial transaction only through electronic delivery channels generally without any physical branch. Owing to lower branch maintenance and manpower cost such banks are able to offer competitive pricing for their product and services as compared to traditional banks.

The Indian banks lag far behind the international banks in providing online banking. In fact, this is not possible without creating sufficient infrastructure or presence of sufficient number of users. Technology is going to hold the keys to future of banking. So banks should try to find out the trigger of change. Indian Banks need to focus on swift and continued infusion of technology.

### Objectives of the Study:

The present study focused to know the technology enabled services impact on the operational performance of public and private sector banks. The basic objectives of the study are as follows.

1. To analyse the technology impact on operational performance of Public and Private Sector Banks separately.
2. To examine the technology impact on operational performance of overall Banking Sector in India.

### Research Methodology:

The data on Impact of Banking Technology on Financial Performance of Banks is collected from RBI Bulletins, Banks Annual Reports, Websites of Indian Banks Association and Websites. The study covers a period of Ten Years starting from 2012-13 to 2021-22. The rapid implementation of 4G Banking Technologies is the factor that prompted to choose the starting year 2012-13. The public and private sector banks were selected on the basis of the higher volume of digital transactions for the required analysis of the study. The study emphasized on the following Six technology enabled services of the Business to Customers (B2C); 1. RTGS

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2. NEFT 3.ATM 4.Mobile 5. Debit Card 6 Card. The study considered the six digital transaction proxies variable BTI has been considered as Banking Technology Index and Employee cost for the Operational Performance.

### Technology Impact on Operational Performance of Public and Private Sector Banks:

This section deals with the panel data public and private sector separately. The study considered ten banks from both the segments and examined the technology impact on the operational performance.

### The Impact Technology on the Employee Cost of Public Sector Banks

The study framed the panel data by considering the five public sector banks for the period of 2012-13 to 2021-22. The study examines the influence direction of BTI to Employee Cost of Public sector banks with the statistical analysis of Granger Causality Test. The following is the results of statistical analysis.

**Table -1: Granger Causality Test for BTI to Employee Cost of Public Sector Banks**

Pair wise Granger Causality Tests			
Sample: 2012 2022			
Lags: 2			
Null Hypothesis:	Obs.	F-Statistic	Prob.
EC does not Granger Cause BTI	60	0.17005	0.6359
BTI does not Granger Cause EC		3.51689	0.0482

Source: Banks Annual Reports.

The above table represents the Granger causality between Public Bank employee cost and BTI, here BTI act an independent variable and Public Bank employee cost is considered as a dependent variable, as the probability value observed to be  $< 0.05$  i.e., 0.0482. Thus, the study states that BTI Granger causes the Employee cost for the Public Sector Banks. Therefore, BTI observed to be having the influence direction towards employee cost in Public sector banks.

The study examined the banking technology index services impact on employee cost of Public Sector Banks. The study framed the hypothesis by considered the independent and dependent variable of Public Sector Banks. The study applied the ordinary least square method for the examination of hypothesis.

**H<sub>0</sub>:** There is no significant impact of BTI on the Employee Cost of the Public Sector Banks.

**H<sub>1</sub>:** There is a significant impact of BTI on the Employee Cost of Public Sector Banks.

**Table -2: Impact of BTI on the Employee Cost of Public Sector Banks**

Dependent Variable: EC				
Method: Panel Least Squares				
Sample: 2012 - 2022				
Periods included: 10				
Cross-sections included: 5				
Total panel (balanced) observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1718711.	657651.9	2.613406	0.0110
BTI	-0.004753	0.008482	-0.560375	0.0577
R-squared	0.004597	Mean dependent var		1639318.
Adjusted R-squared	-0.010042	S.D. dependent var		5346336.
S.E. of Regression	5373111.	Akaike info criterion		33.85987
Sum Squared Resid.	1.96E+15	Schwarz criterion		33.92411
Log likelihood	-1183.095	Hannan-Quinn criter.		33.88539
F-statistic	0.314021	Durbin-Watson stat		0.745372
Prob.(F-statistic)	0.577065			

Source: Banks Annual Reports

The above table explains the impact of BTI on the Employee Cost. The study considered the least square test to know the impact of independent variables (BTI) on the dependent variable (i.e., Employee Cost) for Public Sector Banks. The coefficient of BTI (-0.004753) observed to be having a negative influence on the employee cost and the p value (0.0577) appears to be significant. Therefore, it states that Null hypothesis rejected and alternative hypothesis has been accepted. Thus, the study reveals that impact of BTI on the employee cost of public sector banks observed to be having the significant influence on the employee cost.

### The Impact Technology on the Employee Cost of Private Sector Banks

The study framed the panel data by considering the five private sector banks for the period of 2012-13 to 2021-22. The study examines the influence direction of BTI to Employee Cost of Private Sector Banks with the statistical analysis of Granger Causality Test. The following is the results of statistical analysis.

**Table -3: Granger Causality Test for BTI to Employee Cost of Private Sector Banks**

Pair wise Granger Causality Tests			
Sample: 2012- 2022			
Lags: 2			
Null Hypothesis:	Obs.	F-Statistic	Prob.
EC does not Granger Cause BTI	60	0.17005	0.0125
BTI does not Granger Cause EC		3.51689	0.0526

Source: Banks Annual Reports.

The above table represents the Granger causality between Private Bank Employee Cost and BTI here BTI act as an independent variable and Private Bank Employee Cost is considered as a dependent variable, as the probability value observed to be < 0.05 i.e., 0.0526. Thus, the study states that BTI Granger causes the Employee Cost for the Private banking sector. Therefore, BTI observed to be having the influence direction towards employee cost in private sector banks.

The study examined the banking technology index services impact on employee cost of Private Sector Banks. The study framed the hypothesis by considered the independent and dependent variable of Private sector banks. The study applied the ordinary least square method for the examination of hypothesis.

**H0:** There is no significant impact of BTI on the Employee Cost of Private Sector Bank.

**H1:** There is a significant impact of BTI on the Employee Cost of Private Sector Bank.

**Table -4: Impact of BTI on the Employee Cost of Private Sector Banks**

Dependent Variable: EC				
Method: Panel Least Squares				
Sample: 2012- 2022				
Periods included: 10				
Cross-sections included: 5				
Total panel (balanced) observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2244528.	993757.7	2.258627	0.0271
BTI	-0.584717	0.518833	-1.126985	0.0263
R-squared	0.018335	Mean dependent var		1679219.
Adjusted R-squared	0.003899	S.D. dependent var		7191484.
S.E. of Regression	7177450.	Akaike info criterion		34.43894
Sum Squared Resid.	3.50E+15	Schwarz criterion		34.50318
Log likelihood	-1203.363	Hannan-Quinn criter.		34.46446
F-statistic	1.270096	Durbin-Watson stat		1.927240
Prob.(F-statistic)	0.263710			

Source: Banks Annual Reports.

The above table defines the impact of BTI on the Employee Cost. The study considered the least square test to know the impact of independent variables (BTI) on the dependent variable (i.e., Employee Cost) for Private Sector Banks. The coefficient of BTI (-0.584717) observed to be having a negative influence on the employee cost and the p value (0.0263) appears to be significant. Therefore, it states that Null hypothesis rejected and alternative hypothesis has been accepted. Thus, the study reveals that impact of BTI on the employee cost of Private sector Banks observed to be having the significant influence on the employee cost.

### Technology Impact on Operational Performance of Overall Banking Sector in India:

This section deals with the panel data of combined public and private sector banks. The study considered ten banks from both the segments and examined the technology impact on the operational performance. The study framed the panel data by considering the five from Public and five from Private sector banks for the period of 2012-13 to 2021-22. The study examines the influence direction of BTI to Employee Cost of Public and Private Sector Banks with the statistical analysis of Granger Causality Test. The following is the results of statistical analysis.

**Table -5: Granger Causality Test for BTI to Employee Cost of Indian Banking Sector**

Pair wise Granger Causality Tests	
Sample: 2012 – 2022	

Lags: 2			
Null Hypothesis:	Obs.	F-Statistic	Prob.
EC does not Granger Cause BTI	60	0.17005	0.8441
BTI does not Granger Cause EC		3.51689	0.0365

Source: Banks Annual Reports.

The above table represents the Granger causality between Private Bank Employee Cost and BTI. In the study the BTI has been considered as an independent variable and the employee cost has been considered as a dependent variable. As the probability value observed to be  $< 0.05$  i.e., 0.0365, which states that Banking Technology Index having the influence direction towards employee cost for the considered Public and Private sector Banks.

The study examined the impact of banking technological services impact on the Operational Performance of Indian Banking Sector. The study framed the panel data of considered five of Public and five of Private sector banks. The study framed the following hypothesis and applied the statistical method of ordinary least square.

**H<sub>0</sub>:** There is no significant impact of BTI on the Employee Cost of Indian Banking Sector.

**H<sub>1</sub>:** There is a significant impact of BTI on the Employee Cost of Indian Banking Sector.

**Table -6: Impact of BTI on the Employee Cost of Indian Banking Sector**

Dependent Variable: EC				
Method: Least Squares				
Sample: 1 140				
Included observations: 140				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1703239.	542118.9	3.141818	0.0021
BTI	-0.004977	0.009885	-0.503472	0.0154
R-squared	0.001833	Mean dependent var		1659268.
Adjusted R-squared	-0.005400	S.D. dependent var		6313630.
S.E. of regression	6330652.	Akaike info criterion		34.17389
Sum squared Resid.	5.53E+15	Schwarz criterion		34.21591
Log likelihood	-2390.172	Hannan-Quinn criter.		34.19096
F-statistic	0.253484	Durbin-Watson stat		1.603586
Prob.(F-statistic)	0.615435			

Source: Banks Annual Reports.

The above table defines the impact of BTI on the Employee Cost in Indian Banking Sector. The study framed the panel and applied the panel least square test to know the impact of independent variables (BTI) on the dependent variable (i.e., Employee Cost) in Indian Banking Sector. The coefficient of BTI (-0.004977) observed to be having a negative influence on the employee cost and the p value (0.0154) appears to be significant. Therefore, it states that Null hypothesis rejected and alternative hypothesis has been accepted. Thus, the study reveals that Impact of BTI on the employee cost in Indian Banking Sector observed to be having the significant influence on the employee cost. The study reveals that Banking technology reducing the employee cost significantly.

### Conclusion:

Information Technology offers enormous potential and various opportunities to the Indian Banking Sector. It provides cost-effective, rapid and systematic provision of services to the customer. The efficient use of technology has facilitated accurate and timely management of the increased transaction volumes of banks which comes with larger customer base. Indian banking industry is greatly benefiting from IT revolution all over the world. Another concept i.e., virtual Banking or Direct Banking is now gaining importance all over the world. According to this concept banks offer products, services and financial transaction only through electronic delivery channels generally without any physical branch. Owing to lower branch maintenance and manpower cost such banks are able to offer competitive pricing for their product and services as compared to traditional banks.

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