

# Technology Adoption, Growth and Human Resource Accumulation: A Study of Banks



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*Technological advancements lead to high end automation, redefine the role of human element in work settings and facilitate business growth. This is faster in banking sector as evidenced by sophistication in operations and delivery. However, banks face pressure from performance, compliance and competition fronts. The present study examines the momentum of business growth in relation to human resource accumulation and technological adoption in the major banks operating in Kerala. Techniques of paired sample t-test is used for examining the relationships. This study provides insights towards the role of banking technologies into business growth leading to branchless banking without human power.*

**Keywords:** Technology, Human Power, Business Growth

## 1. Introduction

The role of technology is inevitable in the business context facilitating transition of input to output irrespective of industry. Recent advancements in technology has made this transition automated completely or partially, redesigning the work settings. The working environment of the banking industry is much influenced by the technological progression. Banks have undergone multifaceted changes in processes, structure, systems and strategy called organizational change for being cadenced with this progression.

Indian banks became operational in 1770s when transactions were branch centred preserving pen and paper mediated relationship between customers and employees. With the digital revolution in 1990s personal computers took over the mediating role of pen and paper continuing branch centred transactions. This mode of relations started visualizing change with the introduction of Automated Teller Machine (ATM), reducing the role of human element. Introduction of debit cards and credit cards accelerated this reduction. In 2004 Reserve Bank of India (RBI) introduced Real Time Gross Settlement (RTGS) followed by National Electronic Fund Transfer (NEFT) in 2005 and Electronic Clearing System (ECS), entrancing the bank customers to a higher level of banking experience. The intensified mobile phone and internet subscriptions stirred customers towards mobile banking. Now Indian banks are progressing in tackling block chain solutions.

The espousal of technological convergence by Indian banks urged them to undergo organizational change. The changes in processes, structure, systems and strategies have profound influence on human resource and human resource practices. Nature of jobs and role of employees got redefined for aligning with the dynamic milieu of technology; nevertheless this led to cost reduction, increased customer reach, faster transactions, intensified core banking, increased quality of service delivery and risen bank image. Thus up-surged business growth and consequently changed the pattern of human resource accumulation.

## 2. Literature Review

Banks utilize technology for improving the internal processes and deliver better facilities and services to customers. Computerization of banks is indispensable for further digital initiatives. In the case of Indian banks, 95 percent of public sector banks achieved full computerization by the end of March 2009 (Reserve Bank of India, 2009). In the past few decades Indian banking sector underwent a rapid change due to changes in technology and intensive competition. The technology up gradation and implementation of new and modern practices seems to be different for different types of banks (George et al., 2015). Likewise the contributors towards satisfaction of customers. Customers of private sector banks emphasizes product knowledge, specific response to need, solving questions, quick connection to the right person, fast service and efforts to reduce queuing time when those of public sector prioritize knowledge of the product and fast service (Paul et al., 2016). Bank customers go for convenience making them prefer service quality and ease of use in banking transactions provided by ATMs, mobile banking and Internet banking (Mansour et al., 2016). Singh et al(2016) identified that ease of use, reliability, convenient accessibility, security, low transaction cost and time consumption are the factors leading to satisfaction of customers as regards to e-banking services provided by Indian banks.

The introduction of technology improves operational efficiency (Dhurkari, 2017). Technological progression leads to automation and deliver benefits in the form of labour cost savings and myriad of other performance enhancing ways (Manyika et al., 2017). Big data analytics enables increased capability to process and analyse data and enables faster response (Chen et al., 2018). Choosing right fin-tech partners for the provision of financial services through a versatile technology platform helps banks in acquiring more customers, better service delivery, reducing cost, better capital allocation and greater revenue generation (Dietz et al., 2016).

Technological innovations are changing all aspects of work settings. Jobs themselves are changing with the changes in digital media and advances in automation. Job description and employee roles get changed. Works get fragmented into distinct tasks that can be performed more efficiently and effectively by manpower as well as machines. Work settings are not bound by space and time. Artificial Intelligence (AI) capture routine aspects of a job (Jesuthasan, 2017). Collection and processing of data becomes much faster displacing large amounts of labour. Introduction of technology on large scale forces Indian banks to shed excess manpower and right size and may simultaneously require recruitment of fresh talent (Kamath et al., 2003). The technological outburst in the banking and financial industries have made them the largest market for analytics and data science professionals (Basu, 2018).

Thus, technologies like RTGS, NEFT, mobile banking, and Automated Teller Machines (ATM) leads to business growth of Indian banks and in turn changes the pattern of human resource accumulation.

### 3. Research Hypothesis

**H1:** The business growth is in line with growth in the usage of banking technology.

**H2:** The growth in human resource accumulation is aligned with the business growth.

**H3:** The growth in the manpower requirements does not line up with the growth in usage of banking technologies.

### 4. Methodology and Data

The study is focused on the momentum of business growth in relation to human resource accumulation and technological adoption in the major banks operating in Kerala. Sampling design is of two stages in which commercial banks having branches in all districts of Kerala were chosen first. There were 24 commercial banks satisfying this. In the second stage composite ranks were created for the banks selected in stage 1 based on factors namely, branches in Kerala, total number of employees, employees per branch, deposits in banks, capital of banks with weights assigned as 5/15,4/15,3/15,2/15 and 1/15 respectively and selected the top ranking 12 banks. The source of data regarding these factors are the statistical data releases by RBI as on 31<sup>st</sup> March 2018. This includes eight public sector banks and four private sector banks.

The volume of transactions using RTGS, NEFT, ATM and mobile devices displays the extent of usage of technology in banking transactions. The growth of capital exhibits the growth of business of banking companies. The head count over the years and its growth presents the human resource accumulation pattern. The average growth rate of these factors for the period 2014 to 2018 are used for analysis.

### 5. Analysis

The sample shows a mean growth rate of 8.31% and 25.66% in the number of transactions performed using RTGS and NEFT respectively over the period from 31<sup>st</sup> March 2014 to 31<sup>st</sup> March 2018. Volume of transactions using ATM exhibited a mean growth rate of 8.65 over this period. Mobile banking portrayed a spectacular growth. The mean volume of transactions using mobile devices on 31<sup>st</sup> March 2018 was 13.34 times that of on 31<sup>st</sup> March 2014. These growth rates in usage of technology was accompanied by the growth of business. Over the above mentioned period the capital and deposits of sample banks displayed a mean growth of 16.96 and 10.07 respectively. Likewise, there was a progression in the number of bank branches and workforce. The sample banks presented a mean growth rate of 4.71 in the number of branches and 3.81% that of human resource.

#### 5.1 Usage of Banking Technologies and Business

**H1** deals with usage of banking technology and business growth. Paired T-test was used for testing the hypothesis. In the paired comparison of mean growth rate of number of transactions using RTGS and mean growth rate of capital, the T-statistic was 1.794, less than table value revealed that they are moving in the same direction.

**Table 1** Paired Sample Test RTGS-Capital

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	RTGS - Capital	-8.65750	16.71529	4.82529	-19.27789	1.96289	-1.794	11	.100

\*Table value of t-distribution at 95% probability for two tailed 1.796

The mean growth rate of volume of transactions making use of NEFT was compared with that of capital and found the test statistic to be 1.169 less than table value. This depicted growth in capital of banks is aligned with growth in the usage of NEFT.

**Table 2** Paired Sample Test NEFT-Capital

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	NEFT - Capital	8.69167	25.75120	7.43373	-7.66986	25.05320	1.169	11	.267

\*Table value of t-distribution at 95% probability for two tailed 1.796

In paired comparison of the mean growth rate of transaction volume over mobile devices with that of capital, found the test statistic to be 1.321 less than table value. This showed growth in capital of banks is integrated with growth in the usage of NEFT.

**Table 3 Paired Sample Test Mobile Banking-Capital**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	MobBanking - Capital	2530.66	6638.58490	1916.39439	-1687.292	6748.619	1.321	11	.213

\*Table Value of T-Distribution at 95% Probability for Two Tailed 1.796

The mean growth rate of the number of transactions using ATM was paired compared with that of capital and the test statistic was 2.316 above the table value showing the volume of transactions using ATM and capital are not cohesive in nature.

**Table 4 Paired Sample Test ATM-Capitals**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair1	ATMvol - Capital	-8.31151	12.43118	3.58857	-16.20990	-.41312	-2.316	11	.041

\*Table value of t-distribution at 95% probability for two tailed 1.796

**5.2 Human Resource Accumulation and Business Growth**

H2 was regarding the human resource accumulation pattern and business growth. The hypothesis was tested using paired T-test. In comparing the mean growth of capital with that of human resource inventory the test statistic was found to be 2.913, greater than table value, indicating the human resource accumulation was not consistent with the growth of capital.

**Table 5 Paired Sample Test Capital-Employees**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Capital - Employees	13.15583	15.64537	4.51643	3.21524	23.09643	2.913	11	.014

\*Table value of T-Distribution at 95% Probability for Two Tailed 1.796

The mean growth rate of branches was also paired compared with the mean growth rate of human resource inventory. Here the test statistic was 1.459, less than table value showing the consistency in the growth of human resource inventory with that of bank branch numbers.

**Table 6 Paired Sample Test Bank Branches-Bank Employees**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Branches - Employees	.89833	2.13267	.61565	-.45670	2.25337	1.459	11	.172

\*Table value of T-Distribution at 95% Probability for two Tailed 1.796

The paired comparison of mean growth rate of capital and that of bank branches displayed that their movement is not in the same direction.

**Table 7 Paired Sample Test Capital-Bank Branches**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Capital - Branches	12.25750	16.50159	4.76360	1.77289	22.74211	2.573	11	.026

*\*Table value of T-Distribution at 95% Probability for two Tailed 1.796*

**5.3 Usage of Banking Technologies and Human Resource Accumulation**

H3 was concerned with the use of banking technologies and human resource accumulation. Paired sample T test was used for testing the hypothesis. In comparing the mean growth of volume of transactions using RTGS and that of bank employees head count the test statistic was 3.313, higher than table value depicting the inconsistency in the growth of human resource inventory with that of RTGS transactions.

**Table 8 Paired Sample Test RTGS-Bank Employees**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	RTGS - Employees	4.49833	4.70388	1.35789	1.50963	7.48704	3.313	11	.007

*\*Table value of T-Distribution at 95% Probability for Two Tailed 1.796*

The mean growth in the transaction volume using NEFT was compared with that of number of bank employees and found the t-statistic to be 6.711, greater than table value demonstrating the irregularity of growth of human power with that of NEFT transaction volume.

**Table 9 Paired Sample Test NEFT-Bank Employees**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	NEFT - Employees	21.84750	11.27746	3.25552	14.68214	29.01286	6.711	11	.000

*\*Table value of T-Distribution at 95% Probability for Two Tailed 1.796*

Apart from above observations the result of paired comparison of the mean growth of banking transactions over mobile devices and that of number of bank employees, the t-statistic was 1.326, within table value portraying consistency in the growth of employees and that of volume of mobile banking.

**Table 10 Paired Sample Test Mobile Banking-Bank Employees**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	MobBanking - Employees	2543.819	6645.09005	1918.27226	-1678.270	6765.908	1.326	11	.212

*\*Table value of T-Distribution at 95% Probability for Two Tailed 1.796*

The result of paired comparison of the mean growth of volume of ATM transactions with that of bank employee head count gives the t statistic 1.963 higher than table value exhibiting both are not aligned together.

**Table 11 Paired Sample Test ATM-Bank Employees**

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	ATMvol - Employees	4.84432	8.54706	2.46732	-.58622	10.27486	1.963	11	.075

*\*Table value of T-Distribution at 95% Probability for Two Tailed 1.796*

## 6. Discussions

The study shows that on-line transactions like RTGS, NEFT and mobile banking are consistent with the growth of capital, when the volume of transactions over ATM shows inconsistency with the growth of capital. This infers the contribution of on-line transactions in the business growth, that too anywhere banking. Customers prefer convenience, ease of use and user experience in e-banking than location centric (Chan et al., 2017).

The business growth is not followed by human resource accumulation. As shown in Table 5, both the capital and employee count are not brought in line similarly capital and bank branches. Simultaneously from Table 6 we can deduce the growth of number of employees with the growth of number of bank branches. This hints towards branchless banking in future.

The mean growth in the usage of banking technologies such as RTGS, NEFT and ATM transactions depicts an irregularity with the that of human resource, when that of volume of mobile transactions are in line with mean growth in the number of employees. This again points towards the reduction in the requirement of man power with the growth of RTGS, NEFT and ATM. IN the case of mobile banking also we can expect this in the very near future. The discrepancy between mobile banking and other technologies may be for other technologies were implemented much earlier than mobile banking. Mobile banking became intense with the increased smart phone usage and internet subscriptions which happened recently.

## 7. Conclusion

The study clearly shows the role banking technologies such as RTGS, NEFT, mobile banking and ATM in the business growth of banking companies. Also these technologies are reducing the role of human element in banking transactions. Branchless banking without human power is not a myth, but a reality, may not be in very near future, but in the horizon.

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