International Journal of Innovations & Research Analysis (IJIRA)
ISSN :2583-0295, Impact Factor: 5.449, Volume 02, No. 02 (II), April- June, 2022, pp 41-48

IMPACT OF EMERGING TECHNOLOGIES IN PUBLIC AND PRIVATE SECTOR BANKS OF RAJASTHAN

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ABSTRACT

The banking sector has witnessed the rapid growth in Information technology that brings new experience in shaping the growth of the Indian economy. The Indian banking sector leads and triggered first in adoption of the new innovations. Further this rapid growth has also led the problems including Data security concerns, Big Data, Mobile Payments, customer's attentions and Personalization of services, normalising remote work, Bots (and AI) is now helping the banking professionals. On the other hands, high expectations of customers, and increased competition form the foreign banks, both public and private sector banks are bound to improve their services with the new and emerging technologies in their services. This study analyses the impact of technologies in Indian banks, for that purpose the Primary data have been used which was gathered from 100 respondents (25 each) from SBI, PNB (Public sector) and ICICI and HDFC bank (Private sector) using a close ended structured questionnaire and Multiple Regression method is used for analysing the results. The study revealed that three variables i.e., Instant Payments (ET_5), API (Application Programming Interface) Platforms (ET_10), and Digital Account Opening (ET_9) explains the emerging technologies used by banks of Rajasthan have made the significant improvement on the working of public and private sector banks.

Keywords: *Emerging Technologies, Public and Private Sector Banks, API, Digital Account Opening.*

Introduction

Finance has become an essential way to expand access to banking services in emerging countries. With traditional banking, a person may save money by depositing it in a local bank. The customer might withdraw money via check, counter payment, or bank draught. To get a bank loan, the consumer had to meet the bank manager in person. Also, physical bank and branch sites provide a comprehensive variety of services to customers. Whatever service they desire, they must be physically present in the bank and at a specific time.

Consumers now expect services that are accessible at their convenience. The services requested must now be created to meet client demands. This criterion has allowed for contemporary banking. Current banking is a word used to describe e-banking, which replaces conventional banking with a more modern technological approach. Electronic banking systems enable customers to execute transactions without visiting a bank location. In addition to online banking, E-banking includes additional electronic methods including ATM and mobile banking. Modern Banking Systems (or E-banking Systems) is a Windows-based on-premise supplier of Core Data Processing, Item Capture, Imaging, and Management Information Systems. These tools are all part of the core solution. Today's banking involves Internet, Telephone, and Network Systems! An Internet-connected personal computer allows the customer to check his bank account, pay his bill and print his receipt. E-banking is a modern banking innovation. In other terms, e-banking is electronic banking accessible through standard broadband Internet connections. It is accessible 24/7. Every day. So, customers may work whenever they want. They are not concerned to pay bills or withdraw cash during work hours.

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This is impossible without the assistance of modern technology. Banking and associated technologies have evolved fast in India during the previous decade. Net banking, online banking, Paytm, MPESA, and a mobile phone-based savings and money transfer product run by Unified Payment Interface (UPI), India's leading tele-transfer service, are at the core of these technologies. This is possible thanks to the growth of technology and the application of Financial technologies.

It is no secret that the fast rise in ICT has spurred new ideas in many areas, including finance and banking. These contemporary technology assist financial firms in providing more comfortable banking services. Since the banking services still need to reach all social strata, it is necessary to reevaluate the developing banking and financial services. Superior software, flexibility, simplicity of operation, rapid access to essential information, dependability, and cost efficiency are required. Banks must now embrace proactive technology advances. To survive in this highly competitive industry, businesses must make these adjustments. It's fascinating to note that the same forces impacting banking now also influence the newest rising trends.

While technology is causing all the change in their behaviour, experiences, and thinking you must be willing to change to meet changing customer needs, thought patterns, and expectations. New technology is going to empower customer service reps and give them the tools they need to succeed in their role. They will spend less time worrying about standard operating procedures, and more time focusing on their customers' needs. As a result, customer service personnel will become much more flexible and empathetic. With fewer points of friction in their workflow, they will have more encouragement to provide above-and-beyond customer service. There are so many banking companies which have used or using the emerging technologies, but the effectiveness of those technologies from the side of the customers is yet to be addressed which is the major problem of this study.

Objective of the Study

The main objective of the study is to measure the emerging technologies used by banks of Rajasthan, have made the significant improvement on the working of public and private sector banks.

Review of Literature

Bhasin & Rajesh (2021) expressed that Currently, the Indian banking sector is undergoing dramatic changes from conventional banking to e-collaboration of digital banking products and Fintech enterprises. They cause financial chaos and reshape the payment system. Fintech, or financial technology, is a new term in the banking and finance business. It benefits both Indian banks, who have a large client base and a large branch network. However, although Fintech firms are strong in technology, they need to create confidence with customers to accept new digital and Fintech goods. This study examines the obstacles and potential for Indian banks to collaborate and co-invent with Fintech startups.

Kaur (2020) revealed that India is changing, and we live in 'Digital India.' India's banking industry is also developing and adopting digital technology quicker. With the advent of technology, banking consumers now live in a connected world, affecting their expectations from their financial services provider. To achieve increased customer experience demands, banks must become more client-centric by embedding themselves in consumers' lives. India's banking industry is committed to meeting the needs and goals of every person, company, and Indian. To deliver complete banking solutions that are easy, convenient, and boost overall customer experience, they invest in products and systems that harness technology. This paper examines ICICI Bank's use of new trends and technologies to retain its leadership in digital banking.

Arenas & Gil Lafuente (2020) presented dynamic, time series evidence of daily log return correlations and volatility transmissions from new technologies to Spanish banks, Spanish markets, and the EU financial industry. An equally weighted index was built to describe the rising technological phenomenon from the 7th of July 2015 to the 20th of September 2019. The research uses GARCH and then the diagonal BEKK method. By capturing considerable volatility clustering, spillover, and persistence, the evolving technological environment captures the Spanish banking sector, Spanish market portfolio, and EU finance industry volatility. The results show strong GARCH and modest ARCH effects, implying lengthy shock persistence over volatility. Generally, the Spanish banking industry seems to be the most vulnerable. In terms of volatility and cross-volatility, the banking sector in the EU is most influenced by developing technological shocks. High volatility periods also reveal higher integration and volatility spillover. Adding equities from multiple new technologies to a portfolio does not always reduce risk.

Bradstreet (2019) expressed that Criminals continue to use new financial technology (fintech) to shift money and evade law enforcement. This includes machine learning, digital money, consumer knowledge, and peer-to-peer technology. Lawmakers should update the BSA to suit burgeoning fintech while also addressing monetary thresholds for cash transactions and suspicious activities. These difficulties need a fine balance between expanding legislation to deter crime and inhibiting innovation, consumer convenience, and privacy concerns. This thesis analyses and proposes legal and technical changes to identify financial fraud. Also, policymakers will fully grasp the advantages and drawbacks of various policy actions.

Rodima-Taylor & Grimes (2019) by reorganising cross border flows of people and resources, new distributed ledger technologies influence globalisation and transnational environments. With cryptocode and smart contracts, they allow new types of remittance transfer, resource management, and digital identity verification – but also new risks. Here, we look at how developing blockchain applications are being used to help migrants in Africa, Asia, and Europe. Blockchain technology may help expand diasporas and modify the nature of belonging, sovereignty, migration, and statehood by building on existing social networks of mutual responsibility and quasiethnic sympathies. Through investigating how these networks develop trust and agency to extend commitments and loyalties across borders, we want to better understand the dynamics of trust and agency that these networks generate.

Camilleri (2019) recognised the impact of developing technology on the banking sector, particularly Maltese banks. We will also learn more about how developing technologies are influencing the world and how experts interpret them. The study will finally reveal whether disruption is occurring and how to address it. Questions and Methods: Interviews with bankers and government professionals were conducted in person. The collected data is analysed to answer research questions. Findings: The data obtained showed that disruption is occurring, but it is still in its infancy, since banks have yet to adopt innovative technology. Banks are more likely to be familiar with certain upcoming technologies than others, since some are already in use. Unlike banks, the government is more receptive to firms adopting new technology.

Tunay et.al., (2019) Electronic banking has become almost universal in recent years. Banks spend to recruit customers. So, in a competitive environment, it is possible. Literature also shows that investing in technology enhances banking efficiency and hence financial profitability. Similarly, this chapter investigates how electronic banking affects bank profits and costs. It uses data from 23 developed and developing countries from 2005-2015. On has analysed many performance and cost parameters such as ROI, COI, non-interest income, and overhead expense-to asset ratio. The findings show that using electronic banking technology increases profits while cutting costs. Tech-savvy banks increase productivity, product and service quality, and profit. Given the challenges identified in this study, banks should increase their technological investments to improve financial performance.

Mustapha (2018) emphasised that the financial industry has grown rapidly in all nations, particularly developing ones. The electronic payment system is one of the latest financial advancements. Several research in industrialised nations have confirmed this financial innovation's favourable impact. This work adds to the discussion by introducing three new research innovations: the sortino index, a new measure of bank performance, and interacting dummies to account for “without effects” of these advances on bank performance. The use of electronic payment technology improved bank performance, according to time dimensional and panel least square models. It also shows that bank performance defies autoregressive and random walk processes, implying that investors should be worried about present bank resources rather than past bank success.

Abbas et.al., (2018) explained that the introduction of mobile banking facility as emerging technology in banking, has enabled customers to carry out banking transactions with the use of smartphones and other handheld devices from anywhere. It has become a luxurious and exclusive method of online payments. The recent growth of telecommunication sector and a tremendous increase in mobile usage has opened new doors for sparking future of banking sector industry. The following research is aimed to find out the mobile banking adoption attitudes with the integration of TTF, UTAUT, and ITM models.

Nguyen& Phuong Dang (2018) explained that countries all over the globe have entered and will enter the fourth industrial revolution, the digital age, with technologies like virtual reality, internet connectivity, 3D printing, big data, and AI For progress, the banking sector must be overhauled. Digital Banking is a critical part of this process. Currently, digital banking services are rapidly evolving to assist banks cut transaction times, lower costs, and increase competitiveness. Digital banking is now the industry's future. In a growing nation like Vietnam, digital banking is both an opportunity and a trend.

Bhosale (2018) focuses on financial innovation, banking technology, and financing possibilities. Technology has changed how banks function and provide services. Not all banking transactions need a branch visit. Clients no longer need to visit a bank to do most transactions. Technology increasingly drives business. a "Globalization has transformed banking. IT nowadays is utilised to attract new clients, automate procedures, and deliver "customer-friendly A emphasis on core banking solutions (CBS), branch automation, and centralisation of operations in the CBS was common in the late 1990s/early 2000s. Most banks finished their technical change a decade ago. Before the reforms, a simple cash deposit or withdrawal may take a day. Paying suppliers and utilities online has practically eliminated branch visits. Relationship management centres replace transaction processing units in branches.

Malaquias et.al., (2018) Studies on new technologies are required to better understand their acceptance and possible barriers. This study used a longitudinal method to examine mobile banking usage and its determinants. We gathered data in Brazil, where mobile banking is still in its infancy. Our sample includes data from three separate time periods: December 2014-January 2015, May-June 2016 and November-December 2017. Quantitatively, we found that mobile banking use has risen throughout the time. This impact was significant in the bivariate analysis even when personal innovativeness in information technology (IT) was controlled for. Trusts, simplicity of use, social impact, and task features connected to mobile banking have all increased. Main contribution of this research is quantitative investigation of temporal effects on mobile banking usage (and its factors) in a developing country.

Giorgi et.al., (2017) emphasised that bank reforms have been occurring for years. New technology and organisational structures have altered working conditions and worker lifestyles. The deregulation of labour markets, new job types and technologies have revolutionised employment and working conditions. This predicament impacts both the company and the employees. The banking business warrants particular attention given the recent surge in employee psychosocial diseases. This might be attributable to the industry's massive reorganisation caused by the global economic crisis. Our purpose is to assess the phenomenon's impact on bank operations. Keeping this in mind, we researched work-related stress in banking. A MEDLINE® search yielded 20 publications. There is now widespread agreement that stress in the banking sector is harmful to individuals' mental and physical health, as well as enterprises. Research shows that stress-related mental health disorders have increased in banking. Affective dysregulation leads to occupational fatigue. We looked at the study's flaws and remedies.

Kumar et.al., (2017) demonstrated how educated Indian youngsters have embraced technology and technology-based solutions. The educated young in India are increasingly using computers, the internet, and cellphones. Because this demographic will need to utilise banking services for at least the next 30 years, it is beneficial and vital to examine their attitudes regarding new technology-based goods and services. A prime example of a technology-based delivery channel is ATM, Internet, and mobile banking. This paper examines the variables that influence management students' desire to utilise mobile banking. The research uses two components from the technology adoption model and adds two more. To utilise mobile banking services, the findings reveal that perceived utility and simplicity of use, social influence, and trust are the driving forces.

Research Methodology

Research Design/Methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. The design of the current study is presented as under:

- **Universe/Population:** The universe of the current study includes all the public and private sector banks operating in Rajasthan.
- **Type of Research:** The research is primarily exploratory which intend to measure the Emerging Technologies in Banking and Financial Sector with the views of the Customers of selected Public and private sector Banks.
- **Sample Units:** the sample units are the customers whose views are being gatheredfrom the public sector bank as SBI and PNB is considered while 2 Private Sector banks ICICI and HDFCwere considered.
- **Sample Size:** The study is based upon the views of the customers and thus for the study a sample of 100customers includes 50 from the public sector ad 50 from the private sector banks operating in Rajasthan.

Data Collection

- **Primary Data:** The primary data are collected from the different groups (bank account holders, beneficiaries of the financial institutions and other concerned parties) through questionnaire method. the primary or the first-hand data is gathered from 100 respondents (25 each) from SBI, PNB (Public sector) and ICICI and HDFC bank (Private sector) using a close ended structured questionnaire
- **Secondary Data:** The secondary data for the study was gathered from RBI, Bank publications, Research papers, Journals, Securities market etc.
- **Statistical Tools and Techniques:** To analyse the data gathered on 5 point Likert scale, Descriptive techniques like Mean, Standard deviation, Standard Error with statistical techniques Regression.

DATA Analysis

To analyse the data following hypothesis is made:

H_1: The emerging technologies used by banks of Rajasthan have made the significant improvement on the working of public and private sector banks.

To check the above hypothesis the Regression tool is used with SPSS and the results are presented as under:

Table 1: Result of Regression Analysis

Descriptive Statistics				
Variables	**SPSS code**	**Mean**	**Std. Deviation**	**N**
Do you feel that the emerging technologies used by banks of Rajasthan have made the significant improvement on the working of public and private sector banks?	DV	2.1000	1.01005	100
• Financial Technology (FinTech) Disruption	ET_1	2.2000	1.12815	100
• Cloud Adoption	ET_2	2.4300	1.07548	100
• Cloud Computing and Banking Business Process as service	ET_3	2.0500	.95743	100
• Cyber Security	ET_4	2.1200	1.22499	100
• Instant Payments	ET_5	2.1500	.99874	100
• Distributed ledgers to authenticate IOT devices	ET_6	2.0000	1.30268	100
• Chatbots	ET_7	2.2400	.95473	100
• Robotic Process Automation (RPA)	ET_8	2.2600	1.06950	100
• Digital Account Opening	ET_9	2.6700	1.27964	100
• API (Application Programming Interface) Platforms	ET_10	2.3300	1.12864	100

Correlations												
		DV	**ET_1**	**ET_2**	**ET_3**	**ET_4**	**ET_5**	**ET_6**	**ET_7**	**ET_8**	**ET_9**	**ET_10**
Pearson Correlation	DV	1.000	.248	-.049	.037	.064	.876	-.015	-.151	-.080	.276	.263
	ET_1	.248	1.000	-.163	-.196	-.120	.170	.117	-.026	.049	.165	.027
	ET_2	-.049	-.163	1.000	.165	.037	-.079	.043	-.121	-.089	-.057	-.068
	ET_3	.037	-.196	.165	1.000	-.014	-.061	-.121	-.124	-.082	.063	.087
	ET_4	.064	-.120	.037	-.014	1.000	.043	-.127	.018	.176	.103	.037
	ET_5	.876	.170	-.079	-.061	.043	1.000	-.039	-.091	-.065	.150	.135
	ET_6	-.015	.117	.043	-.121	-.127	-.039	1.000	-.097	.065	.061	-.103
	ET_7	-.151	-.026	-.121	-.124	.018	-.091	-.097	1.000	.057	.041	.001
	ET_8	-.080	.049	-.089	-.082	.176	-.065	.065	.057	1.000	.012	-.055
	ET_9	.276	.165	-.057	.063	.103	.150	.061	.041	.012	1.000	.090
	ET_10	.263	.027	-.068	.087	.037	.135	-.103	.001	-.055	.090	1.000
Sig. (1-tailed)	DV	.	.006	.313	.359	.265	.000	.440	.067	.213	.003	.004
	ET_1	.006	.	.052	.025	.117	.045	.123	.398	.316	.050	.395
	ET_2	.313	.052	.	.050	.357	.216	.335	.115	.188	.286	.250

	ET_3	.359	.025	.050	.	.446	.274	.114	.110	.209	.267	.194
	ET_4	.265	.117	.357	.446	.	.336	.105	.428	.040	.154	.358
	ET_5	.000	.045	.216	.274	.336	.	.351	.184	.259	.068	.090
	ET_6	.440	.123	.335	.114	.105	.351	.	.167	.259	.275	.154
	ET_7	.067	.398	.115	.110	.428	.184	.167	.	.287	.344	.497
	ET_8	.213	.316	.188	.209	.040	.259	.259	.287	.	.454	.293
	ET_9	.003	.050	.286	.267	.154	.068	.275	.344	.454	.	.186
	ET_10	.004	.395	.250	.194	.358	.090	.154	.497	.293	.186	.
N	DV	100	100	100	100	100	100	100	100	100	100	100
	ET_1	100	100	100	100	100	100	100	100	100	100	100
	ET_2	100	100	100	100	100	100	100	100	100	100	100
	ET_3	100	100	100	100	100	100	100	100	100	100	100
	ET_4	100	100	100	100	100	100	100	100	100	100	100
	ET_5	100	100	100	100	100	100	100	100	100	100	100
	ET_6	100	100	100	100	100	100	100	100	100	100	100
	ET_7	100	100	100	100	100	100	100	100	100	100	100
	ET_8	100	100	100	100	100	100	100	100	100	100	100
	ET_9	100	100	100	100	100	100	100	100	100	100	100
	ET_10	100	100	100	100	100	100	100	100	100	100	100

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
3	.899[c]	.808	.802	.44991	.019	9.256	1	96	.003

c. Predictors: (Constant), ET_5, ET_10, ET_9

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
3	Regression	81.568	3	27.189	134.324	.000[d]
	Residual	19.432	96	.202		
	Total	101.000	99			

a. Dependent Variable: DV

d. Predictors: (Constant), ET_5, ET_10, ET_9

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
3	(Constant)	-.298	.154		-1.937	.056			
	ET_5	.846	.046	.837	18.342	.000	.876	.882	.821
	ET_10	.123	.041	.138	3.043	.003	.263	.297	.136
	ET_9	.109	.036	.138	3.042	.003	.276	.297	.136

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
3	ET_1	.083[d]	1.835	.070	.185	.951
	ET_2	.035[d]	.774	.441	.079	.989
	ET_3	.068[d]	1.512	.134	.153	.983
	ET_4	.009[d]	.189	.850	.019	.988
	ET_6	.023[d]	.515	.607	.053	.983
	ET_7	-.081[d]	-1.826	.071	-.184	.989
	ET_8	-.020[d]	-.443	.659	-.045	.993

d. Predictors in the Model: (Constant), ET_5, ET_10, ET_9

Conclusion

The final Regression model with 3 independent variables (ET_5, ET_10, ET_9) explains almost 80.2% of the variance of emerging technologies used by banks of Rajasthan have made the significant improvement on the working of public and private sector banks. Also, the standard errors of the estimate have been reduced to 0.44991. The three regression coefficients, plus the constraints are significant at 0.05 levels. The impact of multi collinearity in the 3 variables is substantial. They all have the tolerance value less than 0.993, indicating that only over 1% of the variance is accounted for by the other variables in the equation.

ANOVA Analysis

The ANOVA analysis provides the statistical test for overall model fit in terms of F Ratio. The total sum of squares (101.000) is the squared error that would accrue if the mean of Independent variables are used to predict the dependent variable. Using the values of ET_5, ET_10, ET_9 this errors can be reduced by 80.76% (81.568/101). This reduction is deemed statistically significant with the F ratio of 134.324 and significance at level of 0.000[d]. With the above analysis it can be conclude that only three variables i.e., Instant Payments (ET_5), API (Application Programming Interface) Platforms (ET_10), and Digital Account Opening (ET_9) explains the emerging technologies used by banks of Rajasthan have made the significant improvement on the working of public and private sector banks.

Findings

It was found in the study that the banking has improved the experience of the customers with the Instant Payments applications, Application Programming Interface (API) Platforms and Digital Account Opening that has denominated as the emerging technologies used by banks of Rajasthan and that has made the significant improvement on the working of public and private sector banks.

Suggestions

It is suggested to the banks operating in the Rajasthan to adopt the technologies that has improved the banking experience of the customers and made it easy handling for the bank employees too. They need to improve their server and the technical specification to improve and provide the new experience to their users as per their convinence.

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SPSS code	Statement	Most insignificant	insignificant	No opinion	significant	Most significant
DV	Do you feel that the emerging technologies used by banks of Rajasthan have made the significant improvement on the working of public and private sector banks?	1	2	3	4	5
	Which technology has made the significant improvement on the working of public and private sector banks					
ET_1	1. Financial Technology (FinTech) Disruption	1	2	3	4	5
ET_2	2. Cloud Adoption	1	2	3	4	5
ET_3	3. Cloud Computing and Banking Business Process as service	1	2	3	4	5
ET_4	4. Cyber Security	1	2	3	4	5
ET_5	5. Instant Payments	1	2	3	4	5
ET_6	6. Distributed ledgers to authenticate IOT devices	1	2	3	4	5
ET_7	7. Chatbots	1	2	3	4	5
ET_8	8. Robotic Process Automation (RPA)	1	2	3	4	5
ET_9	9. Digital Account Opening	1	2	3	4	5
ET_10	10. API (Application Programming Interface) Platforms	1	2	3	4	5