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Technological Innovations in the Banking Sector and its Impact on the Financial Performance of Banks in India

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ABSTRACT:

The term technological innovations in the field of the banking sector stresses the constant technological advancement of the banks in India as well as the world. The present analysis has been carried out by taking into consideration digital banking parameters like - number of ATMs (Automated Teller Machine), POS (Point of Sales) Terminals, Mobile Banking, Debit, and Credit Card (Banking Card) Transactions are taken as independent variables. To measure the financial performance of the banks (HDFC and AXIS); ROA is taken as the dependent variable. The relationship, between predictors and ROA, is measured by conducting Multiple Regression Analysis and Anova. Out of all the parameters taken into account, except banking cards other digital factors sig. values are less than 0.05. So, it can be said that technological innovations have a significant impact on the ROA of both banks. Therefore, the banks need to pay attention to banking cards to achieve better performance.

Keywords: - (Technological innovations, Banking Sector, Digital Parameters, Financial Performance, Profitability Indicators)

INTRODUCTION: - Banking for any country is an integral part of financial activity and with the time now, digital banking in India has become highly advanced. The financial system plays an important role in making the country financially and economically stable and proves as a prominent tool in the economic development of the country. The Indian Banking System has been a backbone to so many businesses in the past as well as in the present times. The technological innovations in the field of the banking sector, play a significant role in the mobilization of deposits and credit disbursement to all sectors of the economy. The shift from traditional to the virtual form of banking has been gradual and is an ongoing process. It has always been the foremost priority of the government of India to encourage digital transactions among the general public. The usage of the smartphone has made access to digital products easier and more convenient. For any business, development is a key aspect. Every business has long-term goals of continuous improvement and profitability. The paradigm of whether the profitability of the banks is influenced by digitalization or not is still not clear. For observing the economic performance of the banks, the digitalization banking parameters are compared to the profitability of the banks. The present piece of work will help in analyzing, what impact has digitalization of banks done on its economic performance. For observing the economic performance; two private sector banks based on market capitalization have been taken into account. To measure the economic performance, the technological innovations in the banking sector have been compared with the profitability measures. The technological innovations taken into consideration are: - number of ATMs, PoS Terminals, Mobile Banking, Debit, and Credit Card transactions. The profitability measure taken in the study is the ROA of the banks.

REVIEW OF LITERATURE: -

Article written by **(Haq** and **Hossain**, **2020)** focused on the relationship between electronic banking and the performance of banks in Bangladesh. Their study used Multiple regression analysis by taking ROA and ROE of the banks as dependent variables and ATM, Mobile banking, PoS, Electronic fund transfer, and Cheque Clearance as independent variables. Their study found that some variables had a relationship with the performance of banks with a positive or negative coefficient, on the other hand, some did not have any significant relationship with the bank's performance. An article by (**Goel** and **Bajpai)** studied the impact of the Global Recession on the Indian Banking Sector, and noticed that the recession was started in the U.S. in the year 2006, in India it was felt in the year 2007-08 and the study also tried to capture the post effects of the recession by taking into consideration 2008-09. After doing the analysis their study found that there was no significant impact of the recession on the Indian banking sectors. The scope for further research given was that; banks should start exploring new technologies to increase their business and profitability. The suggestion derived from the article was that the banks must look into control over the expenses to increase the profits and try to innovate and offer products related to customer satisfaction and taste. **(Handa, 2019)** her research work showed the importance of digitalization in Indian Banks. It found that the Indian Government is urging people to opt for digital transactions. United Payments Interface (UPI) and Bharat Interface for Money (BHIM) by National Payments Corporation of India (NPCI) are the new technological advancements in the fields of Payment Settlement Methods in India. The five key technological banking trends were the focus of attention. **(Golden S, 2017)** had overviewed digitalization in Indian Banking Sector and suggested offering better services. The advantages and disadvantages of digitalization in the banking sector were also identified in his work. He suggested some ways like giving more emphasis to cyber security, innovation of products and services in the field of banking in India and the quality of network systems should be improved. The study concluded that due to the adoption of digitalization there has been some remarkable change in the field of banking sectors in India. Because of various services provided customers are happy due to the convenience, anytime and anywhere banking is available due to the digitalized banking services. On the other hand, cyber threat is another challenge that needs to be covered by a high protection system. **(K anungo** and **Pati, 2020)** highlighted the innovations in the banking sector taking case studies of two private banks one is an Indian private sector i.e., HDFC, and another is a foreign bank operating in India i.e. Citi bank. Their research work used multiple regression analysis taking Profit of the banks as dependent variable and ATM, PoS, and Banking Cards (Debit and Credit) as independent variables. The study found that in the case of HDFC bank all parameters had a positive impact on profit, but banking cards were more influential. But in the case of Citi Bank except no. of ATMs, all others had a positive impact on the profit, but Credit cards and PoS were found more influential. **(Alexey and Ekaterina, 2019)** had studied the impact of digital performance of banks by taking output as bank profits and input as bank's total assets, IT staff to bank assets, size of the bank's customers base, and age of the bank. Their study found that there was a relationship between the profit of the banks and bank's total assets, IT staff to bank assets, and size of bank's customers, but not influenced by the age of the bank. **(Scott et al., 2017)** highlighted how the adoption of innovations in technology has benefitted the banks in achieving profitability on a long-term basis; and also found that the benefits of these products have more impact on the smaller banks than the bigger banks. Their research concluded that as the number of adopters increases, simultaneously the performance of these banks' increases reflecting the contribution of innovation in the field of technology.

RESEARCH GAP: - Many research works had been carried out taking banks being public, or one being public and the other being private, but to observe the journey of two leading private sector banks is rarely done. There are many works done on digitalization, but the effect of digitalized variables on the economic performance of two leading private sector banks operating in India is very scarce. After studying various journals, articles, and different websites; the present research work will try to find what impact has the technological innovations in the banking sector done on the performance of the banks.

NEED FOR RESEARCH: - Many works have already been done showing the effect of digitalization on the performance of the banks, but rarely any study was made on the Return of Assets (ROA) of the banks. During the COVID 19 pandemic where digital transactions have become essential to handle activities, not only for people but also for financial institutions. Therefore, there is a great need to focus on what effect digital innovations have on the performance of the banks.

OBJECTIVES: - The present piece of work is based on the following objectives: -

1. To highlight various technological innovations in the selected banks (HDFC and AXIS).
2. To analyze whether there is any impact of digitalized parameters on the financial performance of banks.

RESEARCH METHODOLOGY: - The present research work attempts to analyze what effect has technological innovations made on the economic performance of the banks in India. The previous review of literature helped in identifying the various digital innovations in the banking sector and important profitability indicators for measuring the financial performance of the banks. To measure the financial soundness of the banks, the present research work considers ROA; which is referred to as one of the important profitability indicators. For analyzing the data, the following hypothesis is developed: -

Null Hypothesis **(H_0)**: - There is no significant impact of technological innovations in the banking sector on the Return on Asset (ROA) of the banks (HDFC and AXIS)

Alternate Hypothesis **(H_1)**: - There is a significant impact of technological innovations in the banking sector on the ROA of the banks.

Scope of the Study: - The study bounds its scope by taking two leading private sector banks of India namely- HDFC and AXIS. In the present work the term "technological innovations", "banking parameters", "digital innovations" and "digital parameters" are used to denote the total no. of ATMs, PoS Terminals, Mobile Banking Transactions, and Banking Cards (Debit and Credit) Transactions respectively. The data for the study belongs to a period from 2011-12 to 2020-21.

Data Collection: - The data in the present research work has been collected from secondary sources. Various journals, articles, online sites like research gate, academia, and websites of RBI, HDFC, and AXIS banks were used in this study.

Statistical Tools and Techniques: - The analysis of the data collected is done by using different statistical tools and techniques. At first, the Normality Test of the data is done, all data except No. of ATMs in HDFC and Credit Card in Axis banks are found to be normal under the Shapiro-Wilk Test, but with Kolmogorov- Smirnov test the values of all the data (.200) were normal. The research work undergoes a Multiple Linear Regression Analysis test with the help of the SPSS statistical package. The dependent variable in the present research work is Return on Assets (ROA) and the independent variables or the predictors are taken into consideration are: - Total no. of ATMs, Total PoS terminals, Mobile Banking, Debit, and Credit Card transactions. To bring clarity to the analysis, the following regression equation has been formed: -

$$Y= b0 + b1x1 + b2x2+\ldots\ldots +bnxn+ e,$$

Where: -Y= dependent variable; bo= constant; b1, b2…. bn= Model parameters; x1= Predictor 1; x2= Predictor 2; n= number of observations; e = specification error.

Data Analysis and Interpretation: - The data collected is further analyzed and interpreted here.

Table 1- Table showing the Model Summary and Anova results of both the banks

Name of the Bank	Return on Assets		
	R Square	Adjusted R square	p Values
Axis Bank Limited	.969	.908	0.023
HDFC Bank	.975	.890	0.043

Source: SPSS Output

Interpretation: - The Model Summary table determines how well the dependent variable and predictors are associated with each other. In the above model in the case of both the banks i.e.; HDFC and AXIS, the R Square as well as the Adjusted R Square indicate that in the case of AXIS Bank 96.9% proportion of variance in ROA can be explained by the independent variables- No. of ATM, PoS terminals, Mobile Banking, Debit, and Credit Card transactions. But in the case of HDFC Bank, 97.5% of the variance in ROA can be measured by the predictors i.e., the technological innovations are taken into consideration. Hence, it can be said that the regression models are fit for analysis, whereas the impact of digital parameters on the ROA of AXIS Bank is slightly more than that of HDFC bank.

The Anova table specifies that the p-values for both the banks are less than 0.05 i.e.,0.023 in the case of AXIS Bank and 0.043 in the case of HDFC Bank, therefore the null hypothesis(H0) is rejected for both the banks and the alternate hypothesis(H1) is accepted, that there is a significant impact of technological innovations in the field of the banking sector on the financial performance or ROA of AXIS and HDFC banks in India.

Table 2: - Table showing Coefficients for Regression Equation for both the banks

Co-efficient	Return on Asset		Sig values	
	AXIS bank	HDFC bank	AXIS bank	HDFC bank
(Constant)	1.464	1.553	.009	.001
Mobile Banking	-2.225	2.441	.016	.045
No. of ATM	.000	-5.468	.031	.042
POS terminal	4.463	9.955	.034	.031
Credit Card Transaction	-5.846	-7.023	.063	.096
Debit Card transactions	-4.228	4.943	.100	.041

Source: -SPSS Output

Interpretation: - Table 2 shows the values for regression coefficients for both banks.

In the case of AXIS bank the Sig. values for Mobile banking, ATMs, and PoS Terminals are less than 0.05 which means these variables have a significant impact on the ROA of the bank. On the other hand, factors like Credit and Debit Card Transactions have Sig. values of 0.063 and .100 respectively, which notifies that they do not have any significant impact on the bank's financial performance. The negative coefficient in Mobile Banking Transactions is because the ROA of the bank started decreasing due to some reasonsor the other, from 2015-16 to 2018-19. It further increased again in the year 2019-20. However, the Mobile Banking transactions of the banks kept on increasing in all these years; thereby showing an inverse relationship in some of the years. But when compared with the no. of ATMs and PoS Terminals it had been found to have a positive relationship.

In the case of HDFC Bank, the Sig values for ATM, PoS Terminals, Mobile Banking, and Debit Card transactions are 0.042, 0.031, 0.045, and 0.041 respectively. As their sig value is less than 0.05; thereby shows a significant relationship with the ROA of the bank. But the Sig. value for Credit Card transactions is 0.096, as it is more than 0.05, so there is no significant relationship between Credit card transactions and the bank's financial performance. Mobile Banking, PoS terminals, and Debit cards it is found to have a positive relationship. Hence, the increase in the use of technology in banks increases its ROA. The negative coefficient in the total no. of ATMs is because; in some of the years like 2016-17, 2017-18 and 2019-20, it was noticed that the ROA of the bank has decreased but there was a remarkable increase in the Number of ATMs; thereby showing an inverse relationship between them.

FINDINGS: - After studying various l, the technological innovations in the banking sector namely ATM, PoS Terminals, Mobile Banking, Debit, and Credit Transactions were selected. An attempt was made to determine what effect have these made on the ROA of HDFC and AXIS banks. The following findings in the present research work are: -

1. The null hypothesis (H0) for all other variables except banking cards was rejected. Thus, highlighting the fact that the technological innovations have made a significant impact on the performance i.e.; ROA of both the banks.
2. In the case of AXIS bank; except Debit and Credit card transactions, Mobile Banking, ATM, PoS Terminals had a significant effect on the ROA of the bank, stating the fact that

Mobile Banking has an inverse relationship and others have a positive relationship with ROA.

3. In the case of HDFC Bank; except for Credit Card transactions all other technological innovations had a significant impact on the ROA of the bank; stating that all other digital parameters had positive coefficients other than the number of ATMs having a negative coefficient.

CONCLUSION: - The study concludes on the note that, digitalization is the necessity of today's environment; whether it be private or public bank needs to adopt this. During the COVID pandemic, there has been an urging need for digital transactions when shopping platforms and various shops were demanding cashless transactions. All financial institutions need to keep themselves technologically updated to remain competitive in today's era of competition. An increase in the adoption of various digital innovations will be helpful for the banks as well as their customers; which in return will improve the financial performance of the banks.

SUGGESTION: - Out of all digital factors, except banking cards showed an impact on the ROA ofthe banks. Therefore, both the banks must pay attention to banking cards specifically; Credit Card Transactions. However, the default made by the Cardholders or lack of awareness about the Credit Card and its functioning might be a probable obstacle in the use of banking cards. So, the banks need to work on this to enhance their performance.

SCOPE FOR FURTHER RESEARCH: - The present piece of work has confined its scope by taking digital parameters and ROA as a profitability indicator. The other technological innovations in the field of the banking sector and various other profitability indicators can be approached to study what impact will they have on the performance of banks. The number of banks can also be increased to achieve better results.

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