IMPACT OF TECHNOLOGY ON PERFORMANCE OF CANARA BANK USING CAMEL MODEL

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Abstract:

In the present scenario the banking sector is playing vital role in the economic development of a country like India. The banks are updating themselves with the upgraded technology. The move towards the Digitalization to render the technology based services has changed the path of banks to perform the banking business operations. The present study makes an attempt to evaluate the impact of technology on the financial performance of Canara Bank using the CAMEL model. Different parameters of CAMEL model are identified to study the performance of the Bank. The study is based upon the secondary data, with an attempt to study the performance of bank in the period of Pre and Post IT Enabled era.

Keywords: Digitalization, CAMEL model, Financial Performance of Canara Bank.

I. Introduction:

In practice with the adoption of technological services & IT innovations in the banks, there is a tremendous change in the landscape of banking system in India. In order to achieve strategic & operational goals, the banks are adopting and applying the IT practices to perform all the banking operations smoothly. Application of technology in banks much influence on the financial performance of Bank. The competitive advantage of bank can be gained through the adoption of updated technology in banking sector. Banking technology is influenced by the use of smart- phones and extensive availability of 3G, 4G and 5G networks. The technological innovations in banking have created new expectations of customer and potential product offerings in the banking industry. In order to cope up with the customer expectations banks today have committed to the new challenges and made available the banking services anytime & anywhere. Emerging trend of 'Everyday Banking' is an opportunity to the Banks to gain customer satisfaction. The credible reality of adopting the technological innovations to perform the digitalized banking operations is likely to take the Banking sector in the successful path in India. In order to improve the financial, physical and market performance, the banks need to adopt the upgraded technology. In the eve of technological innovations in the banking sector in India, the Indian banking system has been improving the customer services, and attempting to achieve the set targets of financial inclusion at the best.

In the present study the CAMEL Analysis is used to appraise the financial performance of CanaraBank with an impact of technological change in the Bank. The CAMEL with its factors represented by acronym; C- Capital Adequacy, A- Asset Quality, M- Managerial Efficiency, E- Earnings Ability, L- Liquidity. The CAMEL rating system developed in US to classify bank's overall performance. The ratings are assigned based on a Ratio-analysis of the financial statements.

II. Review Of Literature:

SP.Mathiraj & V.Ramya (2014); the study examined the importance of study of each parameter by giving equal weights. To evaluate the performance of bank, the researcher have chosen the CAMEL model which measures the performance of banks from each of the important parameter like; Capital adequacy, asset quality, management efficiency, earnings quality and liquidity. For the study of different sector banks of India from private sector and nationalized bank. Found that the banks selected for the study maintain CRAR at higher level than the prescribed level and showing very good sign for the banks to survive and expand in future.

G.L.Meena (2016); the study analyzed the financial performance of the selected public and private sector banks in India by using CAMEL approach and determined the factors which predominantly affect the financial performance of the Indian banking sector with efficiently and accurately. In this study return of assets is independent variable and dependent variable as profit per employee, debt equity ratio, total assets to total deposits ratio, and Net NPAs to Total advances ratio were identified.

S.Ranjani & R.Ramya (2022); The study enlightened the financial position of the selected bank and made an attempt to study and compare the financial performance of Canara Bank and Axis Bank using ratios such as liquidity ratio, current ratio, profit and loss ratio and balance sheet in order to have a comparative study. The study concluded that the overall financial position of the bank is very well.

Brinda.K, Kavya.T, & MS.Gayathri (2023); the study examined the financial performance of two public banks SBI and Canara Bank. The researcher evaluated the performance of banking sector by choosing the CAMELS model – capital adequacy, asset quality, management efficiency, earnings quality, liquidity and sensitivity. Through Camel rating analysis the study concluded that the bank is performing well.

III. Scope of the Study

The present study covers the performance of Canara Bank operated during the period of pre and post IT enabled era. This study has used various financial ratios to investigate the bank's performance using CAMEL model such as capital adequacy ratios, asset quality ratios, management efficiency ratios, earnings quality ratios and liquidity ratios. All the required data have been collected through annual reports published by the selected bank.

IV. Objectives:
- To understand the rate of adoption of technology in Canara Bank.
- To analyse the financial performance of Canara Bank in pre and post IT enabled era.

V. **Hypothesis of the study:** The hypothesis set in the study is "There is no significant difference between the financial performance of Canara Bank before and after implementing the banking technology." The sub hypotheses set in the study are;

Ho : There is no significant difference between the Capital Adequacy of Canara Bank before and after implementing the banking technology.

Ho: There is no significant difference between the Asset Quality of Canara Bank before and after implementing the banking technology.

Ho: There is no significant difference between the Management Efficiency of Canara Bank before and after implementing the banking technology.

Ho: There is no significant difference between the Earnings ability of Canara Bank before and after implementing the banking technology.

Ho: There is no significant difference between the Liquidity of Canara Bank before and after implementing the banking technology.

VI.   Research Methodology:

The present study adopts analytical research design and deals with analyisng the financial performance of Canara Bank in India with adoption of technology. The study is made to compare the financial performance of the Bank in the period of partial IT enabled era (1999 – 2010-11) and IT enabled era (2011-12 – 2022-23). The secondary data collected is based on the Annual reports of the Bank, RBI Bulletin Bank wise, Report on Trend & Progress of Banking in India and other related articles and website of the Canara Bank.

VII.   Technological Software Used by the Bank in India:

Canara Bank uses various technologies for its website like; Viewport, Meta, IPhone/Mobile Compatible & Google Analytic etc.. The most popular apps downloaded are Canara ai1- Mobile Banking App, Canara e-passbook etc. In India there are mainly three Core Banking Software used by Public Sector Banks viz; Flexcube, BaNCS and Finacle. Canara Bank uses '**Flexcube**' designed by Oracle. **FLEXCUBE** Core Banking is designed by Oracle Corporation. This software package is used by some of the reputed Banks of the world. It helps large and growing retail banks succeed in improving their profitability and extending their customer reach.
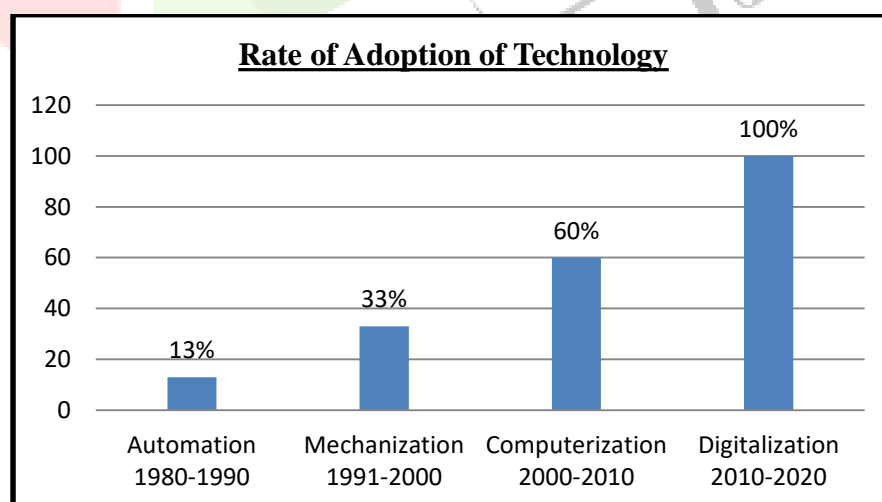
Technology Adoption Index:

For the convenience of the study of phases pertaining to adoption of technology by the bank, an index is developed by the researcher in terms of percent is calculated as the number of technology initiatives adopted by the bank in a decade divided by the total number of technology initiatives. The following formula is applied to arrive at the rate of technology adoption;

$$\text{Rate of technology adoption} = \frac{\text{No. of technological initiatives adopted by Bank}}{\text{Total number of Technological initiatives}}$$

The four phases of adoption of technology are rated in terms of percentage rate of implementation of technological initiatives by Canara Bank within every decade. The graphical presentation of rate of adoption of technology by bank is shown in Chart 1.

Chart 1: Rate of Adoption of Technology in the Bank.

The chart.1 portrays the rate of adoption of technology in the Canara Bank in terms of percentage, in each of the phase over every decade. It is observed that, the rate of adoption of technology by the bank in the Automation phase is rated at 0-13 percent at only head office level from the year 1980 to 1990 over a decade. In the Mechanization phase, the technology adoption rate is 13-33 percent at regional and head office level from the year 1990 to 2000. In the computerization phase, the rate of adoption of technology is around 33-60 percent from the year 2000 to 2010 covering the branches at regional, zonal level and at head office level. In the year 2010 Bank achieved 100 percent bank computerization and bank adopted

the digital utilities to provide the services to the customers, with the advent of Digitalization phase of technology adoption.

VIII. Impact of Technology on Financial Performance:

In the present study the CAMEL Analysis is used to appraise the financial performance of Canara Bank with an impact of technological change in the Bank. The Financial performance of Canara Bank is analysed and interpreted based on CAMEL parameters in the study. For the purpose of analysis, data of the Canara bank during the period of Partially IT enabled era and IT enabled era is taken. The following parameters are considered for analysis:

CAMEL Model:- The CAMEL with its factors represented by acronym; C- Capital Adequacy, A- Asset Quality, M- Managerial Efficiency, E- Earnings Ability, L- Liquidity. The CAMEL rating system developed in US to classify bank's overall performance. The ratings are assigned based on a Ratio-analysis of the financial statements.

Camel Rating Factors and Parameters:

Rating Factors	Parameters
C- Capital Adequacy	a. Capital Adequacy Ratio b. Debt Equity Ratio
A- Asset Quality	a. Net Interest Income to Total Assets b. Non Performing Assets to Net Advances
M- Management Efficiency	a. Profit per employee b. Business per employee c. Return on Earnings
E- Earnings Quality	a. Return on Assets b. Net Interest Margin to Total Assets c. Non Interest Income to Total Assets
L- Liquidity	a. Credit-Deposit Ratio b. Operating Profit to Working funds

The ratings are assigned based on a Ratio-analysis of the financial statements.

1. **Capital Adequacy**: - It is major indicator of the financial health of banking entity. It helps to maintain depositor's confidence and preventing the bank from going bankrupt. It reflects the ability of management to meet the requirement of finance including need of additional capital and enough capital to incur the unexpected losses. It acts as an indicator of bank's financial leverage. The following are the ratios to measure the Capital Adequacy;

a. **Capital Adequacy Ratio:** It is also known as Capital-to-Risk Weighted Assets Ratio **(CRAR)**. It is the ratio used to measure the bank's available capital which is expressed as a percentage of a Bank's risk weighted credit exposure. It is arrived by dividing the sum of Tier –I, Tier-II and Tier-III capital of aggregate risk weighted assets. The formula to calculate the CRAR ratio is;

$$\text{Capital Adequacy Ratio} = \frac{\text{Tier One Capital} + \text{Tier Two Capital}}{\text{Risk Weighted Assets}}$$

b. **Debt-Equity Ratio (D/E ratio):** Debt-Equity ratio shows how much debt a company has compared to its assets. It is calculated by dividing a company's total debt by total shareholder equity. A higher D/E ratio indicates that the company may have a harder time covering its liabilities.

2. **Asset Quality: Asset Quality:** The asset quality parameter of Camel model refers to the assessment of credit risk associated with an asset like bond or stock portfolio. It measures the degree of financial strength of the bank, by ascertaining the component of NPA as a percentage of total assets. This helps to know what types of advances the bank lends to generate and earn the interest income. Asset quality directs the type of debtors the bank have. The following are the ratios to measure the Asset Quality;

a. **Net Interest Income to Total Assets Ratio:** This ratio refers to the interest earned to the Total Assets of a Bank. The higher the ratio, the better indicating the bank is earning a high interest rate or the proportion of interest earning assets (loans) to total assets is high or both of these effects.

$$\text{Interest Income to TA \%} = \frac{\text{Interest income earned}}{\text{Total Assets}}$$

b. **Net NPA's to Net Advances Ratio:** This ratio is the proportion of Net NPA to Total Advances of Bank. This ratio is used as a measure of the overall quality of the bank's loan. Net NPA's are calculated by reducing cumulative balance of provision outstanding at a period end from gross NPA's. Higher ratio reflects rising bad quality of loans.

$$\text{Net NPA to Net advances} = \frac{\text{Net NPAs}}{\text{Net Advances}}$$

3.Managerial Efficiency: The managerial efficiency or the management quality parameter of Camel model determines the bank's ability to handle and manage the financial stress and also control the risk to ensure the safe banking operations, complying with necessary internal and external regulations. In order to safeguard and operate the bank in an efficient manner, the management quality of bank influences on the functioning of banking operations. The management practices of the bank refers to the risks involved such as; credit risks, interest rate, liquidity, compliance reputation and other risks covering all the day to day practices.

a. **Profit per Employee:** This ratio compares the parameters measuring employee's cost like; employee cost to operating expenses and employee cost to total business and employee cost to total assets.

$$\text{Profit per emp} = \frac{\text{Profit after Tax}}{\text{No. of Employees}}$$

b. **Business per Employee:** This ratio measures how much money each employee generates for the Bank. BPE looks at deposits less inter-bank deposits plus advances and pairs it with total employees to look at how each employee in effect generates the business for the bank. This is related to the employee's productivity.

$$\text{Business per emp} = \frac{\text{Total Business of Bank}}{\text{No. of Employees}}$$

c. **Return on Equity (ROE):** It is a measure of the profitability of a business in relation to the equity. It measures how well a company uses investments to generate earnings growth. It is the measure of management's ability to generate income from the equity available to it. The higher the ROE ought to imply the higher stock prices.

$$\text{ROE} = \frac{\text{Profit after Tax}}{\text{Average Net worth}} * 100$$

4. Earnings Ability: It is the parameter of Camel model that measures the financial performance of banks in terms of profitability and productivity. The earnings ability determines the bank's earnings, growth stability, net margins, net worth level and the quality of bank's existing assets. The sources of bank's earnings are through interest earning assets like loans and non interest sources like commission, fees etc.

a. **ROA: Return on Assets:** It is an indication of the capital intensity of the company which will depend on the industry. Companies that require large initial investments will have lower return on assets. It shows the percentage of how profitable Bank's assets are generating revenue.

$$\text{ROA} = \frac{\text{Net Income or Profit after Tax}}{\text{Total Assets}} * 100$$

b. **Net Interest Margin to Total Assets Ratio or Spread ratio:** It is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders relative to the amount of their assets. Spread is the difference between the interest income on loans earned by banks and the amount of interest paid on deposits.

$$\text{Spread Ratio} = \frac{\text{Interest Income} - \text{Interest expended}}{\text{Total Assets}}$$

c. **Non Interest Income to TA Ratio:** Banks provide a number of other services in addition to the lending and depositing money like Debit & Credit card facility and also charge fees for deposit services, processing loans and other services, such income is Non Interest Income. This ratio is calculated to know the financial status in terms of increasing revenue and ensuring liquidity.

$$\text{Non Interest Income to TA \%} = \frac{\text{Non Interest income earned}}{\text{Total Assets}}$$

5. **Liquidity:** It is the fifth indicator of CAMEL model that indicates and evaluates the extent to which a bank can meet its short-term financial obligations by converting the assets into cash. It examines the liquidity risk and the interest rate risk of the bank.

a. **Credit-Deposit Ratio:** It is popularly known as CD ratio. It denotes the value of loans given as a share of deposits held by the banks, indicating how much a bank lends out of the deposits mobilized by the bank. There is no stipulated minimum or oomaximum level for the ratio, but a very low ratio indicates that bank is not making full use of the deposits that are mobilized by the bank. Low CD ratio denotes relatively poor credit growth compared with deposit growth and high CD ratio denotes a strong demand for credit with relatively slower deposit growth. The formula to calculate the CD ratio is as follows;

$$\text{Credit-Deposit Ratio} = \frac{\text{Total Advances}}{\text{Total Deposits}} \times 100$$

b. **Operating Profit to working funds ratio:** This ratio indicates how a bank has employed its working funds in generating operating profit. Average working fund is a measure of bank's short-term financial health and its operational efficiency. All the investment incomes, premium incomes and all other incomes shall be credited and against which all operating costs and other expenses including claims paid shall be debited to arrive at working funds.

$$\text{Operating Profit to Working fund ratio} = \frac{\text{Operating Profit}}{\text{Working funds}}$$

Testing of Hypothesis:

The hypothesis of the study is "There is no significant difference between the financial performance of the Bank in the Partially IT enabled Era and IT enabled Era", which is tested by employing t-test, the result of t-test is presented in the table.

Table – Result of T-Test

CAMEL	Type	Period	Mean	Variance	N	Df	tStat	P value	Sig*	Result
Capital Adequacy	CAR	Pre-IT	11.43	4.60	12	11	-2.8	0.017	2.201	H_0 Rejected
		Post-IT	12.88	3.30	12					
	Debt-Equity	Pre-IT	10.75	1.19	12	11	-14.3	1.86	2.201	H_0 Rejected
		Post-IT	14.87	3.14	12					
Asset Quality	NI/TA	Pre-IT	5.49	2.79	12	11	-2.9	0.014	2.201	H_0 Rejected
		Post-IT	7.39	0.89	12					
	NPA/NA	Pre-IT	2.14	2.30	12	11	-2.0	0.060	2.201	H_0 Rejected
		Post-IT	3.35	3.79	12					
Management Efficiency	PPE	Pre-IT	3.57	7.10	12	11	-0.10	0.918	2.201	H_0 Rejected
		Post-IT	3.75	37.3	12					
	BPE	Pre-IT	6.01	7.08	12	11	-34	1.78	2.201	H_0 Rejected
		Post-IT	16.44	7.23	12					
	ROE	Pre-IT	10.04	2.25	12	11	-2.5	0.031	2.201	H_0 Rejected
		Post-IT	13.13	15.19	12					
Earnings Quality	ROA	Pre-IT	0.67	0.14	12	11	1.4	0.180	2.201	H_0 Rejected
		Post-IT	0.39	0.19	12					
	NIM/TA	Pre-IT	3.10	0.43	12	11	2.6	0.023	2.201	H_0 Rejected
		Post-IT	2.48	0.07	12					
	NII/TA	Pre-IT	1.14	0.10	12	11	-4.2	0.001	2.201	H_0 Rejected
		Post-IT	2.69	1.21	12					
Liquidity	Cr-Dep	Pre-IT	66.78	11.08	12	11	-1.4	0.17	2.201	H_0

	Post-IT	69.06	10.78	12					Rejected
OP/Wf	Pre-IT	1.51	0.13	12	11	-1.5	0.15	2.201	H_0 Rejected
	Post-IT	1.64	0.06	12					

*Level of Significance at 5%

The table portrays the result of paired t-test. The hypothesis of the study is tested employing t-test and the result is as follows;

Capital Adequacy: It can be observed that the CRAR and D/E ratio has significant value and hence the H0 is rejected. The Capital Adequacy of the bank has significant relationship between Pre IT enabled era and Post IT enabled era. This shows that Capital Adequacy of the bank has significantly improved in Post IT enabled era.

Asset Quality: It can be observed that the NI/TA and NPA/NA ratio has significant value and hence the H0 is rejected. The Asset Quality of the bank has significant relationship between Pre IT enabled era and Post IT enabled era. This shows that Asset Quality of the bank has significantly improved in Post IT enabled era.

Management Efficiency: It can be observed that the BPE and ROA ratio has significant value and hence the H0 is rejected. But PPE ratio has insignificant value and H0 is rejected. The Management Efficiency of the bank has significant relationship between Pre IT enabled era and Post IT enabled era. This shows that Management Efficiency of the bank has significantly improved in Post IT enabled era.

Earnings Ability: It can be observed that the ROE, NII/TA and NIM/TA ratio has significant value and hence the H0 is rejected. The Earnings Ability of the bank has significant relationship between Pre IT enabled era and Post IT enabled era. This shows that Earnings Ability of the bank has significantly improved in Post IT enabled era.

Liquidity: It can be observed that the C/D ratio and OP/WF ratio has significant value and hence the H0 is rejected. The Liquidity of the bank has significant relationship between Pre IT enabled era and Post IT enabled era. This shows that Liquidity of the bank needs improvement in Post IT enabled era.

The Canara Bank's management is highly confident about achieving augmented growth across financial performance and all business segments by leveraging the digital technology with robust capital base and beyond in line the bank focus on asset quality, improving its earnings ability, managing the management efficiency, liquidity base and capital conservation. On the basis of the various techniques applied for the financial performance analysis of Canara Bank a satisfactory conclusion can be derived that, after adoption of IT in the bank to perform the banking operations. The adoption of IT in the bank has contributed towards the significant improvement in the financial performance of the bank under the study. Bank has succeeded in maintaining a reasonable profitability position and increasing its capital adequacy which is much beneficial for maintaining the stable solvency.

Conclusion:-

Technology had been a useful tool for the growth and development of the Indian banking sector. The study reveals the impact of technology on both financial and physical performance of Canara Bank in India. It can be observed that there is tremendous increase in the growth rate of deposits, advances and Business after the adoption of IT. There is increased percentage in the number of branches and employees were recorded in the bank. This is positive sign of performance of bank indicating the spread of business in wide area by expanding the number of branches and by providing employment opportunities to various employees joining their hands to the growth of business. Therefore the productivity, profitability and efficiency of the bank have increased after the adoption of IT.

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