

# Financial Performance Of Cooperative Banks: Correlation And ANOVA Approach

Dr. Vishal Madhukarrao Tidake,<sup>1</sup> Dr. Ashish Rajendrapal Jaswal<sup>2</sup>

<sup>1,2</sup> Department of MBA, Sanjivani College of Engineering, Kopergaon, Maharashtra, 423109, India

tidkevishal@gmail.com

## Abstract

*Financial Performance of Cooperative Banks: Correlation and ANOVA Approach' is an attempt of mapping the financial performance based on- Credibility, Liquidity, Solvency & Profitability. The paper is based on the correlation and variance analysis of certain selected ratios. The various ratios identified for the study are-*

- *Quick Ratio (QR)*
- *Current Ratio (CR)*
- *Credit Deposit Ratio(CDR)*
- *Fixed Asset to Current Asset Ratio (FATCAR)*
- *Capitalization Ratio (CAPTR)*
- *Debt Equity Ratio (DER)*
- *Interest Coverage Ratio (ICR)*
- *Long Term (LT) Debt to Asset Ratio*
- *Total Income (TI) to Asset Utilization Ratio(AUR)*
- *Total Income (TI) to Capital Employed Ratio (CER)*
- *Dividend Per Share (DPS)*
- *Dividend Payout Ratio(DPR)*
- *Return on Fixed Asset (ROFA)*
- *Return on Equity (ROE)*
- *Earnings per Share (EPS)*

*Keywords: Cooperative Banks; Correlation Analysis; Analysis of Variance (ANOVA); Credibility; Liquidity; Solvency; Profitability.*

## INTRODUCTION

India is a rural based Economy as 56.6%<sup>1</sup>Indians are dependent on Agri cum allied activities. In spite of this still just 11.4%<sup>2</sup> Growth is dependent on Agriculture. One of the concerns behind the same is the **shortage** of rural **financing** Infrastructure through **formal means**. In such scenario, the rural Money Lenders filled the gap of provision of Finance, but at a costlier interest rates due to which rural economy has seen a drastic increase in Farmer Suicides further damaging the Economy. In these pandemic times of concern rural Co-operative Banks acted as true supporters by acting as a most trusted and healing finance providers that to at lower rates of Interest. Co-operative Banks helped rural economies by making the provision of several loan and financial assistance programs helping rural India<sup>3</sup> in situations like-

- Agriculture,
- Marriage,

- Disease Cure,
- Child Literacyetc.

In spite of serving with highest potential, rural economies didn't meet up with necessary impetus and conditions gone on becoming more concerned. This paper in that context tried to measure the contribution made by Co-operative Banks with a view to understand the realities and further giving some stimuli by which, the situation could be improved.

## 1. Literature Review

Below are the details in Table I summarizing the Literature Review-

## 2. Research Gap

The comprehensive reviewing has identified following Gap-

- Credibility Position- *By analyzing Credibility Variables.*
- Liquidity Position- *By analyzing Liquidity Variables.*
- Solvency Position- *By analyzing Solvency Variables.*
- Profitability Position<sup>7</sup>- *By analyzing Profitability Variables.*

**Independent Variable (IV)      Dependent Variable (DV)**

Above is a Fig. 1 detailing the identified Dependent Variables and Independent Variables.

## 3. Objectives

**To study & analyze-**

- Credibility position
- Liquidity position
- Solvency position
- Profitability position

## 4. Research Methodology

- Research Type: Analytical Study
- Population: 25 (Census Study)
- Sample Unit: Cooperative Banks
- Data Collection: Secondary Source: Annual Audited Reports

## 5. Results & Discussions

**Pearson Correlation Analysis (APCC):** From the summarized Table II. Analysis of Pearson Correlation following conclusions can be drawn-

**APCC 01: CR:** Change in CR is significant with subsequent changes in-

- QR,
- DER,
- CDR,
- CAPTR (Negative),
- ICR,
- LTD to TAR,
- TI to AUR
- ROE (Negative)

**APCC 02: QR:** Change in QR is significant with subsequent changes in-

- CR,
- DER,
- CDR,
- CAPTR,
- ICR,
- LTD to TAR.

**APCC 03: DER:** Change in DER is significant with subsequent changes in-

- CR,
- QR,
- CDR,
- ICR
- LTD to TAR,
- DPS.

**APCC 04: FA to CA Ratio:** Change in FA to CA Ratio is significant with subsequent changes in-

- CDR (Negative),
- CAPTR (Negative),
- ICR,
- TI to CER (Negative)
- DPS, f) DPR,
- ROFA (Negative),
- ROE (Negative).

**APCC 05: CDR:** Change in CDR is significant with subsequent changes in-

- CR,
- QR,
- DER,
- FA to CAR (Negative)
- CAPTR,
- LTD to TAR,
- TI to AUR,
- TI to CER,
- DPS (Negative),
- DPR (Negative)

**APCC 06: CAPTR:** Change in CAPTR is significant with subsequent changes in-

- CR (Negative),
- QR,
- FA to CAR (Negative)
- CDR, f) ICR (Negative),
- LTD to TAR (Negative),
- TI to AUR (Negative),
- TI to CER,
- DPS,
- ROFA,
- ROE.

**APCC 07: ICR:** Change in ICR is significant with subsequent changes in-

- CR,
- QR,
- DER
- FA to CAR,
- CAPTR (Negative),
- LTD to TAR,
- TI to CER (Negative),
- DPR (Negative),
- ROFA (Negative),
- ROE (Negative).

**APCC 08: LTD to TA Ratio:** Change in LTD to TAR is significant with subsequent changes in-

- CR,
- QR,
- DER
- CDR,
- CAPTR (Negative),
- ICR,
- TI to CER (Negative),
- DPS (Negative),
- ROFA (Negative),
- ROE (Negative),
- EPS (Negative)

**APCC 09: TI to AUR:** Change in the TI to AUR is significant with subsequent changes in-

- CR,
- CDR,
- CAPTR (Negative)
- ROFA,
- ROE,
- EPS.

**APCC 10: TI to CER:** Change in the TI to CER is significant with subsequent changes in-

- FA to CAR (Negative),
- CDR,
- CAPTR,
- ICR (Negative),
- LTD to TAR (Negative),
- DPS,
- ROFA,
- ROE,
- EPS.

**APCC 11: DPS:** Change in DPS is significant with subsequent changes in-

- DER,
- FA to CAR,
- CDR (Negative),
- CAPTR,
- LTD to TAR (Negative),
- TI to CER,
- ROFA,

- ROE,
- EPS.

**APCC 12: DPR:** Change in DPR is significant with subsequent changes in-

- FA to CAR,
- CDR (Negative),
- ICR (Negative)

**APCC 13: ROFA:** Change in ROFA is significant with subsequent changes in-

- FA to CAR (Negative),
- CAPTR,
- ICR (Negative),
- LTD to TAR (Negative),
- TI to AUR,
- TI to CER,
- DPS,
- ROE,
- EPS.

**APCC 14: ROE:** Change in ROE is significant with subsequent changes in-

- CR (Negative),
- FA to CAR (Negative),
- CAPTR,
- ICR (Negative),
- LTD to TAR (Negative),
- TI to AUR,
- TI to CER,
- DPS,
- ROFA,
- EPS

**APCC 15: EPS:** Change in EPS is significant with subsequent changes in-

- LTD to TAR (Negative),
- TI to AUR,
- TI to CER,
- DPS,
- ROFA,
- ROE

#### **Hypotheses Testing:**

- **H1<sub>0</sub>:** Significant difference amongst Credibility Ratios is absent.
- **H1<sub>a</sub>:** Significant difference amongst Credibility Ratios is present.

From the summarized Tab. No. III: ANOVA Summary for Hypothesis 1 following Conclusion can be drawn-As p val. > 0.05, significant difference amongst Credibility Ratios is absent, is accepted (@ 5% LOS).

- **H2<sub>0</sub>:** Significant difference between the Liquidity Ratios is absent.
- **H2<sub>a</sub>:** Significant difference between the Liquidity Ratios is present.

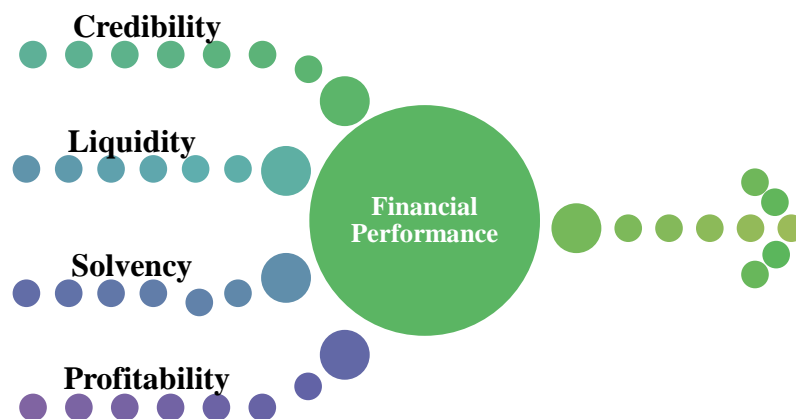
From the summarized Tab. No. IV: ANOVA Summary for Hypothesis 2 following Conclusion can be drawn-As p val. < 0.05, significant difference between the Liquidity Ratios is present, is accepted (@5% LOS)

- **H3<sub>0</sub>**: Significant difference between the Solvency Ratios is absent.
- **H3<sub>a</sub>**: Significant difference between the Solvency Ratios is present.

From the summarized Tab. No. V: ANOVA Summary for Hypothesis 3 following Conclusion can be drawn-As, p val. < 0.05 (except in case of FATCAR & CDR), significant difference between the Solvency Ratios is present, is accepted (@5%LOS).

- **H4<sub>0</sub>**: Significant difference between the Profitability Ratios is absent.
- **H4<sub>a</sub>**: Significant difference between the Profitability Ratios is present.

From the summarized Tab. No. VI: ANOVA Summary for Hypothesis 4 following Conclusion can be drawn-As, p val. > 0.05, significant difference between the Profitability Ratios is absent, is accepted (5%LOS).



**Fig. 1. Independent and Dependent Variables Identified.**

**Table I: Summary of Literature Review**

	<b>Title</b>	<b>Author s</b>	<b>Literatu re Type</b>	<b>Content</b>	<b>Observations / Gap</b>
	<i>Co-operative Banking in Rajasthan - An Appraisal</i>	<b>Dr. G.S Shekha wat,</b>	Internati onal Journal of Economi cs.	<b>The need of Capital raising by means of Shares for strengthenin g Fund Availability</b>	Research was based on- Owned Capital position, Working capital availability, Loan disbursement, Loan recovery, Overdue, Rate of Interest on Borrowing.

	<i>Analytical approach to ST Credit Organizations in Wayanad Kerala.</i>	Dr.Rajshekharan	<b>PhD Thesis</b>	Analyzed COOP's from both Institutional as well as Enterprise aspect for the period of 06 years	<b>The thesis failed in studying-Capital structure. Credibility Analysis. Risk analysis. Profitability analysis.</b>
	The <sup>4</sup> Performance of Agricultural Co-operative Societies under the National Programme on Food Security in Enugu State.	<i>Dr. Onugu Charles Uchenna</i>	International Journal, "Review of Financial Administration and Management	<b>Study emphasized Socio Economic impact on Financial Performance of Co-operative Organizations in Nigeria. The Late Loan Disbursements by the Co-operatives effect on Financial Profitability of Credit Societies.</b>	Failed in Mapping the Financial Factors like-Credibility, Solvency.
	<i>Management<sup>5</sup> Accounting Exercises in Co-operatives in India.</i>	Dr.Samakshit Singh	<b>PhD Thesis</b>	Study focused-Financial Auditing Exercises, Profitability Mapping Transparency and Accuracy in Accounting	<b>The study failed in analyzing factors like-Utility of Financial Products, Credibility, Risk etc.</b>
	The <sup>6</sup> Rise and Fall of the Credit Co-operative system in India	<i>Dr. Hans Dieter Seibel, University of Texas</i>	International Journal of Economics Vol-03	<b>Loss making in Co-operative Organizations is because of-Poor Internal Control Less</b>	His Conclusions also evidences the need of studying-Profitability Position Capital Structure Pattern

					<b>Tightened Auditing Exercise Poor Capital Structure Lowered Profitability due to poor Recovery mechanism</b>	Liquidity Position etc.
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Source: From the Summary of Literature Review  
 Table II: Pearson Correlation Coefficient (Signed 2 tailed)

									L T D t o T A R	T I t o A U R		I H S	I H E	I C H A	I C H E	I H S
	<b>Pe ar so n C or re la ti on</b>								. 5 0 0	. 1 4 6		. 5 0	. 2 0	. 3 0	. 1 4	. 1 0
	<b>Si g.</b>								0	. 0 1		. 2 9	. 7 6	. 4 6	. 0 2	. 3 9
	<b>N</b>								4 9 0	4 9 0		4 9 0	4 9 0	4 9 0	4 9 0	4 9 0
	<b>Pe ar so n C or re la ti on</b>								. 2 5 2	. 0 7 1		. 0 8 1	. 0 2 8	. 1 1 0	. 0 7 4	. 1 0 8
	<b>Si g.</b>								0	. 1 1		. 0 7	. 4 5	. 0 9	. 3 0	. 0 7



										5		4	2		3	8
									4 9 0	4 9 0		4 9 0	4 9 0		4 9 0	4 9 0
									. 6 3 0	- . 0 2 2		. 6 0 0	. 4 0 0		. 1 1 0 0	. 1 8 0 0
										. 3 1		. 3 1	. 3 1		. 3 1	. 3 1
									4 9 0	4 9 0		4 9 0	4 9 0		4 9 0	4 9 0
									. 0 3	- . 0 3		. 0 0 3	. 0 0 3		. 0 3 3	. 0 2 2 3
									. 4 0 7	. 9 4 4		. 0 3 3	. 0 4 2		. 6 6 6	. 6 6 6
									4 9 0	4 9 0		4 9 0	4 9 0		4 9 0	4 9 0
									. 1 2 6 *	. 4 7 0 *		. 0 2 0 *	. 0 3 1 *		. 0 2 0 *	. 0 4 3 *
									. 0 5			. 0 2 1	. 0 4 2		. 0 6 1	. 0 3 2
									4 9	4 9		4 9	4 9		4 9	4 9

									0	0										
	Pe ar so n C or re la ti on								- . 1 0 0 *	- . 1 8 0 *										
	Si g.								. 0 2 7											
	N								4 9 0	4 9 0										
	Pe ar so n C or re la ti on								. 3 4 7 *	- . 0 1 9										
	Si g.									. 6 7 4										
	N								4 9 0	4 9 0										
	Pe ar so n C or re la ti on								1	. 0 6 9										
	Si g.									. 1 2 8										
	N								4 9 0	4 9 0										
	Pe ar								- . 1											



	or re la ti on														
	Si g.							. 6 0 6	. 3 2 9			.		.	.
	N							4 9 0	4 9 0			0	0	0	0
	Pe ar so n C or re la ti on							- .1 3 2 *	. 3 3 9 * *			.	.	.	.
	Si g.							. 0 0 3				.	.	.	.
	N							4 9 0	4 9 0			0	0	0	0
	Pe ar so n C or re la ti on							- .2 5 *	. 2 4 * *			.	.	.	.
	Si g.											.	.	.	.
	N							4 9 0	4 9 0			0	0	0	0
	Pe ar so n C or re la							- .1 7 7 *	. 2 0 1 * *			.	.	.	.

	ti on																		
	Si g.																		
	N							4 9 0	4 9 0			4 9 0	4 9 0	4 9 0	4 9 0	4 9 0	4 9 0	4 9 0	4 9 0

Source: From SPSS Data Analysis

Table. III: ANOVA Summary for Hypothesis 1

		Sum of Square s	df	Mean Squar e	F	Sig .	Remark s
TI to AU R	Between Groups	1279.8 47	5	255.9 69	1.6 49	0.1 46	Not signific ant
	Within Groups	75149. 03	4 8 4	155.2 67			
	Total	76428. 87	4 8 9				
TI to CER	Between Groups	743.50 6	5	148.7 01	0.6 61	0.6 54	Not signific ant
	Within Groups	10894 0.8	4 8 4	225.0 84			
	Total	10968 4.3	4 8 9				
DPS	Between Groups	0.337	5	0.067	1.2 86	0.2 68	Not signific ant
	Within Groups	25.359	4 8 4	0.052			
	Total	25.696	4 8 9				
DPR	Between Groups	5.443	5	1.089	0.6 79	0.6 4	Not signific ant
	Within Groups	776.29 8	4 8 4	1.604			
	Total	781.74 1	4 8 9				

Source: From SPSS Data Analysis

**Table. IV: ANOVA Summary for Hypothesis 2**

		Sum of Squares	df	Mean Square	F	Si g.	Remarks
CR	Between Groups	170.427	5	34.085	70.219	0	Significant
	Within Groups	234.942	484	0.485			
	Total	405.369	489				
QR	Between Groups	10.308	5	2.062	5.973	0	Significant
	Within Groups	167.052	484	0.345			
	Total	177.36	489				

Source: From SPSS Data Analysis

**Table V: ANOVA Summary for Hypothesis 3**

		Sum of Squares	df	Mean Square	F	Si g.	Remarks
DER	Between Groups	342.049	5	68.41	111.976	0	Significant
	Within Groups	295.691	484	0.611			
	Total	637.74	489				
FA to CA Ratio	Between Groups	7.871	5	1.574	1.805	0.11	Not significant
	Within Groups	422.059	484	0.872			
	Total	429.93	489				
CDR	Between Groups	1277.809	5	255.562	2.06	0.069	Not significant
	Within Groups	6005.062	484	124.072			
	Total	6132.843	488				

			9				
CAPTR	Between Groups	2291.533	5	458.307	3.773	0.002	Significant
	Within Groups	58797.83	484	121.483			
	Total	61089.37	489				
ICR	Between Groups	152.591	5	30.518	38.446	0	Significant
	Within Groups	384.201	484	0.794			
	Total	536.793	489				
LTD to TAR	Between Groups	122.991	5	24.598	81.476	0	Significant
	Within Groups	146.123	484	0.302			
	Total	269.114	489				

Source: From SPSS Data Analysis

Table VI: ANOVA Summary for Hypothesis 4

		Sum of Squares	df	Mean Square	F	Si g.	Remarks
ROFA	Between Groups	1760.702	5	352.14	0.505	0.772	Not significant
	Within Groups	337164.2	484	696.62			
	Total	338924.9	489				
ROE	Between Groups	5065.824	5	1013.165	1.342	0.245	Not significant
	Within Groups	365408.2	484	754.976			
	Total	370474	489				
EPS	Between Groups	0.164	5	0.033	0.385	0.859	Not significant

	Within Groups	41.31 4	4 8 4	0.085			
	Total	41.47 8	4 8 9				

**Source: From SPSS Data Analysis**

## 6. CONCLUSION

- Cooperative Banks should lower down **Blockage of Current Assets** for improving **Liquidity**.
- Cooperative Banks should **improve** its **Debt Equity Position** by lowering down Total Debts.
- Cooperative Banks should maintain its **Loan Distribution and Recovery mechanism** showing **Good Liquidity & Solvency position**.
- Banks should lower down Long-term Debt to Total Asset Ratio by improving - **a) Excess Debts, b) Non-Repayment of Debts, c) Poor Profitability and d) Increased Operating Expenses**.
- Cooperative Banks should **improve asset utilization position**.

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