Credit policy and credit appraisal of canara bank using ratio analysis

Sathya Varathan¹, Priya Kalyanasundaram² and S.Tamilenthi^{3*}

¹K.V. Institute of Management & Information Studies, Coimbatore, India.
²Nehru Institute of Management Studies, Coimbatore, India.
³Department of Earth Science, Tamil University, Thanjavur, India.

Abstract

Credit appraisal is an important activity carried out by the credit department of the bank to determine whether to accept or reject the proposal for finance. The article deals in banking such as working capital and its management, working capital methods of assessment, compilation of credit reports. The study included working capital, working capital cycle and working capital management of Canara Bank. The methods that are used by the banks in order to calculate the loan limits are Turnover method, MBPF system and Cash budget system. The financial statements were taken for a period of five years from 1st April 2007 to 31st March 2012. The Profit and loss account and Balance sheet were analyzed. The firm's financial performance is analyzed through ratio analyses. The study shows Canara bank has sound system for credit appraisal and the bank has good parameters to appraise the project.

Keywords: Credit appraisal, Ratio analysis, Working capital and Financial performance.

INTRODUCTION

Credit appraisal is a holistic exercise which starts from the time a prospective borrower walks into the branch and culminates in credit delivery and monitoring with the objective of ensuring and maintaining the quality of lending and managing credit risk within acceptable limits.

There are two types of proposals that are received by the bank for funds. The first types of proposals are for starting a new project or for setting up a new company, also known as project financing and the other proposals are for additional funds requirements (working capital).Financial requirements for project finance and working capital purposes are taken care of at the credit department. Companies that intend to seek credit facilities approach the bank. Primarily, credit is required for following purposes:-

- 1. Working capital finance
- 2. Term loan for mega projects
- 3. Non fund based limits like letter of guarantee, letter of credit

Objectives

- 1. To study the credit policy of the bank and the credit appraisal process as a whole.
- To study the credit rating methods followed by the bank for different credit ranges.
- 3. To study a credit appraisal report of a firm.

Received: May 17, 2012; Revised: June 15, 2012; Accepted: July 20, 2012.

*Corresponding Author

S.Tamilenthi

Department of Earth Science, Tamil University, Thanjavur, India

Email: rst_geo2011@yahoo.com

Limitations of the study

- 1. The period is five year. Hence the data cannot be compared to the longer life of the bank.
- 2. There is no information regarding the total amount of credit available to a particular industry thus the inclusion of industry analysis is limited.
- 3. Matters related to Bank's asset classification / income recognition procedures, investment are not given by the bank.

OVERVIEW OF LITERATURE.

Banks have credit policies that guide them in the process of awarding credit. The policy sets the rules on who should access credit, when and why one should obtain the credit including repayment arrangements and necessary collaterals. The method of assessment and evaluation of risk of each prospective applicant are part of a credit control policy (Payle, 1997).

A firm's credit policy may be lenient or stringent. In the case of a lenient policy, the firm lends liberally even to those whose credit worthiness is questionable. This minimizes costs and losses from bad debts but might reduce revenue earning from loans, profitability and cash flow (Bonin and Huang, 2001).

Simonson and Hempel (1999), Hsiu-Kwang (1969) and IMF (1997) observe that sound credit policy would help improve prudential oversight of asset quality, establish a set of minimum standards, and apply a common language and methodology (assessment of risk, pricing, documentation, securities, authorization, and ethics), for measurement and reporting of nonperforming assets, loan classification and provisioning.

Chen and Shimerda (1981) review 26 articles that classify 100 financial indicators, 65 of them financial ratios. They report that 41 financial ratios are considered important, given citation in one more of the 26 articles. In identifying bankrupt firms: Their final model, however, includes only seven financial indicators, namely, return on investment, debt ratio, the current ratio, cash position, net working

capital turnover, inventory turnover and accounts receivable turnover. The bankruptcy model for industrial companies developed by Gombola and Ketz (1983) adds to these factors a cash flow measure.

Sun and Li (2006) have developed a model to predict companies' financial distress, testing 35 financial ratios for 135 pairs of listed companies. Their final distress prediction model includes net profit growth rate, liabilities to tangible net assets, accounts receivable turnover, liabilities to cash flow, liabilities to equity market value, total asset turnover and gross profit margin.

Giacomino and Mielke (1993) propose nine cash flow ratios to evaluate a company's performance and use than to evaluate US companies in the chemical, food and electronic industries, calculating three-year averages per industry. The industries were chosen had the largest number of companies among the Fortune 500.

The extensive research on financial ratios reveals their importance in many important decisions, including financing and investment decisions. For example, Ezzamel et al. (1987) find that in a study of bankrupt British firms in 1973, 1977 and 1981 that no

RATIO ANALYSIS LIQUIDITY RATIOS Current ratio

single model can be used in each year studied, even when the methodology is the same.

METHODS AND MATERIALS

The study is based on secondary source of data. Secondary data have been mainly obtained from reports, records and books of M/s. XYZ CNC PRODUCT P LTD. The data also collected from audited financial statements periodicals and other records maintained by M/s. XYZ PRODUCT P LTD. The financial statements were taken for a period of five years from 1st April 2007 to 31st March 2012.

A tool used by individuals to conduct a quantitative analysis of information in a company's financial statements. Ratios are calculated from current year numbers and are then compared to previous years, other companies, the industry, or even the economy to judge the performance of the company. Ratio analysis is predominately used by proponents of fundamental analysis.

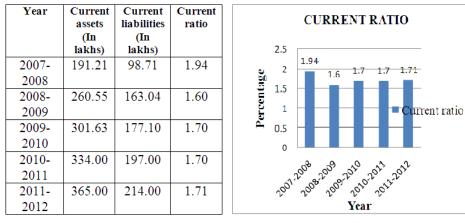


Table 1 and Fig 1.

This ratio indicates the extent to which short term creditors are safe in terms of liquidity of the current assets. Thus, higher the value of the current ratio, more liquid the firm is and more ability it has to pay the bills. However a current ratio of 2:1 is considered generally satisfactory. The ratio was high during the period 2007-2008 and it was low during the period 2008-2009 which is shown in (Table.1 & Figure.1). The ratio was satisfactory during the year 2007-2008.

Quick ratio

Year	Quick assets	Current liabilities	Quick ratio
	(In lakhs)	(In lakhs)	
2007-	144.98	98.71	1.47
2008			
2008-	166.55	163.04	1.02
2009			
2009-	205.63	177.10	1.16
2010			
2010-	228.00	197.00	1.16
2011			
2011-	249.00	214.00	1.16
2012			

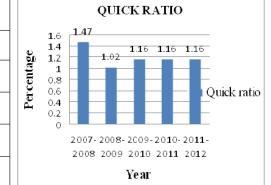


Table 2 and Fig 2.

The quick ratio of 1:1 is considered satisfactory. The quick ratio was high during the period 2007-2008 and it was satisfactory during 2007-2008 and it started to decrease from 2008-2009 and

Super quick assets ratio

Year	Super quick assets	Super quick liabilities	Super quick assets	SUPER QUICKASSET
	(In lakhs)	(In lakhs)	ratio	0.12 0.1 0.1 0.1
2007-	1.89	53.71	0.04	a 0.1
2008				
2008-	2.00	38.04	0.05	0.06 0.04
2009				30 0.1 0.08 0.06 0.04 0.04 0.04 0.05 0.04 0.05 0.04 0.05 0.04
2009-	5.00	52.10	0.10	
2010				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
2010-	6.00	59.00	0.10	200,200,201,201,201
2011				2007 2008 2009 2010 2011 2012
2011-	6.00	63.00	0.10	
2012				Year

CKASSETS RATIO

position till 2012. (Table 2 & Figure.2)

again it is increased from 2009-2010 and it is maintained in same

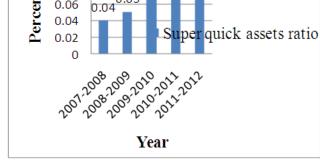


Table 3 and Fig 3.

The firm keeps more liquid assets than that of the specified norm means that excessive liquid assets are held by the firm than the requirement in the form of idle not productive in utility. The ratio was low during the period 2007-2008 and it was high from the period 2009-2012. It shows an increasing trend so it is good for the company (Table 3 & Figure.3).

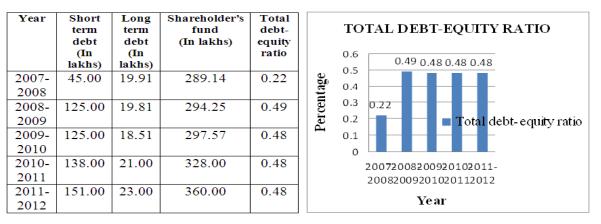
CAPITAL STRUCTURE RATIOS Leverage ratio Debt-equity ratio

Year	Term loans (In lakhs)	Shareholder's fund (In lakhs)	Debt- equity ratio		DEBT-EQUITY RATIO
2007- 2008	3.50	289.14	0.01		0.01 0.01 0.01 0.01 0.01
2008- 2009	3.40	294.25	0.01	rcenta	0.008
2009- 2010	2.35	297.57	0.01		0.004 Debt-equity ratio
2010- 2011	3.00	328.00	0.01		0 20072008200920102011- 20082009201020112012
2011- 2012	3.00	360.00	0.01		Year



Higher ratio indicates the riskier financial status of the firm which means that the firm has been financed by the greater outsiders fund rather than that of the owners fund contribution and vice versa. The firm should have a minimum of 50% margin of safety in meeting the long term financial commitments. The ratio was maintained in the same position from 2008-2012. There was no fluctuation, so it is good for the company (Table.4 & Figure.4).

Total debt-equity ratio



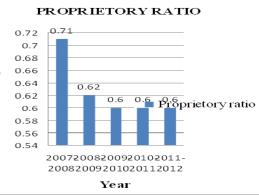


The ratio was low during the period 2007-2008 and it was high during the period 2008-2009 then again is start to decrease from the period 2009-2010. The ratio was maintained in same

position from 2010-2012. It shows a fluctuating trend (Table.5 & Figure.5).

Proprietary ratio

(In lakhs) 289.14	(In lakhs) 407.76	0.71		0.72	0.7
289.14	407.76	0.71			
				0.7	
				0.68	
294.25	477.10	0.62	33	0.66	
			Ita	0.64	
			Cel	0.62	
297.57	493.18	0.60	Pel	0.6	
				0.58	
328.00	546.00	0.60		0.56	
	0.0100			0.54	
					200
360.00	597.00	0.60			200
	294.23 297.57 328.00 360.00	297.57 493.18 328.00 546.00	297.57 493.18 0.60 328.00 546.00 0.60	297.57 493.18 0.60 328.00 546.00 0.60	328.00 546.00 0.60 0.54 0.54 0.54 0.54 0.54



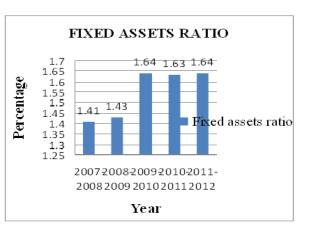


The ratio was high during the period 2007-2008 and it started to decrease from 2008-2012. It shows a decreasing trend so the firm

has to improve (Table.6 & Figure.6).

Fixed assets ratio

Year	Share holder's fund(In lakhs)	Outsider's fund (In lakhs)	Net fixed assets (In lakhs)	Fixed assets ratio
2007- 2008	289.14	16.41	216.55	1.41
2008- 2009	294.25	16.41	216.55	1.43
2009- 2010	297.57	16.16	191.55	1.64
2010- 2011	328.00	18.00	212.00	1.63
2011- 2012	360.00	20.00	232.00	1.64



The ratio was low during the period 2007-2008 and it start to increase from 2008-2010 then it decrease during 2010-2011 then

Coverage ratio Interest coverage ratio

Year	EBIT	Interest	Interest
	(In	(In	coverage
	lakhs)	lakhs)	ratio
2007-	23.37	2.50	9.35
2008			
2008-	31.55	3.00	10.52
2009			
2009-	37.00	12.00	3.08
2010			
2010-	41.00	13.00	3.15
2011			
2011-	45.00	15.00	3.00
2012			

The ratio shows an increasing trend from 2007-2009 and it

decrease during 2009-2010 and again it increase during 2010-2011

again is increase from 2011-2012. It shows a fluctuating trend (Table.7 & Figure.7).

> INTEREST COVERAGE RATIO

9.35^{10.52}

2009-2010

2010-2011 2011-2012

Year

2007-2008 2008-2009

and then it decrease during 2011-2012. It shows a fluctuating trend (Table.8 & Figure.8).

nterest coverage ratio

PROFITABILITY RATIOS Gross profit ratio

Year	Gross profit (In lakhs)	Sales (In lakhs)	Gross profit ratio	GROSS PROFIT RATIO
2007-	262.70	500.00	52.54	60 58.5758.5758.56
2008				ع ⁵⁸
2008-	290.00	540.00	53.70	80 56 53.7 80 54 52.54 53.7 80 54 52.54
2009				54 52.54
2009-	410.00	700.00	58.57	E 52 E Gross profit ratio
2010				
2010-	451.00	770.00	58.57	48
2011				20072008200920102011-
2011-	496.00	847.00	58.56	20082009201020112012
2012				Year

Table 8 and Fig 8

Table 9 and Fig 9

The ratio was low during the period 2007-2008. The ratio was high during the period 2009-2011 and the ratio was better during this period. The ratio start to increase form 2007-2011 it shows an increasing trend and the firm earns more profit during this period (Table.9 & Figure.9)

Net profit ratio

Year	Net profit (In lakhs)	Sales (In lakhs)	Net profit ratio
2007- 2008	14.14	500.00	2.83
2008- 2009	19.25	540.00	3.56
2009- 2010	22.57	700.00	3.22
2010- 2011	25.00	770.00	3.25
2011- 2012	27.00	847.00	3.19



Table 10 and Fig 10.

The ratio was low during the period 2007-2008 and it increased during 2008-2009 and it decreased during the period 2009-2010 and again it increased during 2010-2011 and again in

Operating profit ratio

Year Cost of Operating Net sales Operating profit goods expenses sold (In lakhs) (In ratio (In lakhs) lakhs) 2007-459.74 500.00 139.41 237.3 2008 2008-250.00 535.45 540.00 145.45 2009 2009-290.00 586.00 700.00 125.14 2010 2010-319.00 645.00 770.00 125.19 2011 710.00 351.00 847.00 125.27 2011-2012

OPERATING PROFIT RATIO 150 145 45 145 39.41 140 Percentage 135

125.1425.1925.27

2007-2008-2009-2010-2011-

2008 2009 2010 2011 2012

Year

erating profit ratio

2011-2012 it decreases. It shows a fluctuating trend (Table.10 &

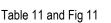


Figure.10).

130

125

120

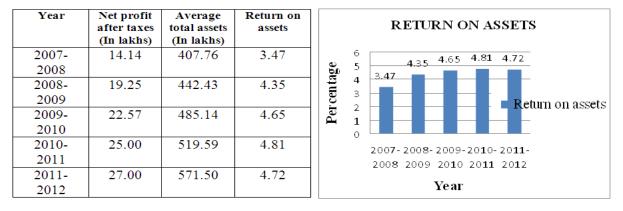
115

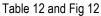
110

The ratio was high during the period 2008-2009 and it was low during the period 2009-2010. The ratio shows increasing trend

from the year 2008-2009 then again it shows a decreasing trend so it is good for the company (Table.11 & Figure.11).

Return on assets



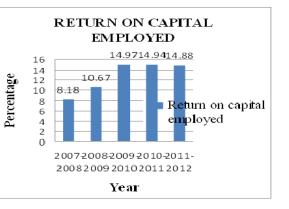


The ratio shows an increasing trend from 2007-2011 and it shows slight decrease in 2011-2012. The ratio shows that the firm

earned better profit during the period 2007-2011. It shows the good position of the firm (Table.12 & Figure.12).

Return on capital employed

Year	Net profit (In lakhs)	Interest (In lakhs)	Tax (In lakhs)	Average capital employed (In lakhs)	Return on capital employe d
2007- 2008	14.14	2.50	9.23	316.12	8.18
2008- 2009	19.25	3.00	12.30	323.69	10.67
2009- 2010	22.57	12.00	14.43	327.37	14.97
2010- 2011	25.00	13.00	16.00	361.50	14.94
2011- 2012	27.00	15.00	17.00	396.50	14.88



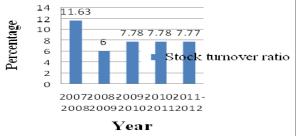
The ratio shows the increasing trend during the period 2007-2010 and it shows the decreasing trend during the period 2010-2012

Activity turnover ratios Stock turnover ratio

Year	Sales (In lakhs)	Closing stock (In	Stock turnover ratio	
		lakhs)	Tado	
2007-	500.00	43.00	11.63	
2008				
2008-	540.00	90.00	6.00	
2009				
2009-	700.00	90.00	7.78	
2010				
2010-	770.00	99.00	7.78	
2011				
2011-	847.00	109.00	7.77	
2012				

STOCK TURNOVER RATIO

so the firm has to utilize the long term funds properly to earn more



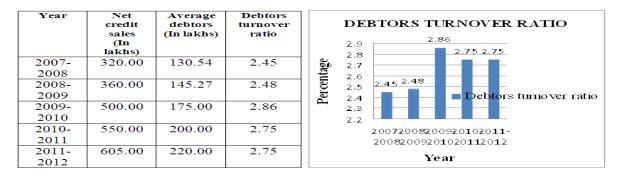
profits (Table.13 & Figure.13).

Table 14 and Fig 14

The ratio was high during the period 2007-2008 and it was low during the period 2008-2009 and again slightly it increases during 2009-2011 then again it decrease during 2011-2012 so the

decreasing trend has to change to get better position(Table.14 & Figure.14).

Debtors turnover ratio



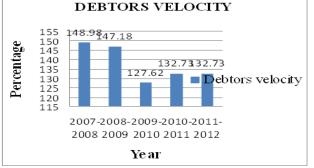


The ratio was low during the period 2007-2008 and it was high during the period 2009-2010. The ratio during 2009-2010 was

satisfactory (Table.15 & Figure.15)

Debtor's velocity

Year	Days	Debtors turnover ratio	Debtors velocity
2007- 2008	365	2.45	148.98
2008- 2009	365	2.48	147.18
2009- 2010	365	2.86	127.62
2010- 2011	365	2.75	132.73
2011- 2012	365	2.75	132.73



The ratio shows decreasing trend from 2007-2010 and it shows an increasing trend from 2010-2012. The ratio during 2009-

Creditor's turnover ratio

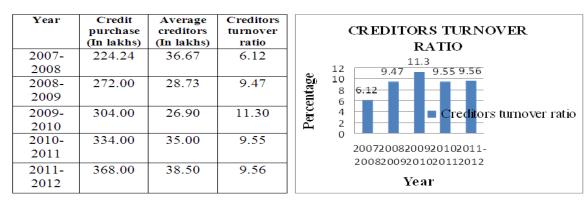


Table 17 and Fig 17.

The ratio was low during the period 2007-2008 and it started to increase during the period 2008-2010 and it was high during the period 2009-2010 then again it decreased during 2010-2011 then it

increased during 2011-2012. It shows a fluctuating trend and the ratio was satisfactory during the year 2007-2008 (Table.17 & Figure.17).

2010 was satisfactory (Table.16 & Figure.16)

Credit velocity

2007- 2008 365 6.12 59.64 2008- 2009 365 9.47 38.54 2009 365 11.30 32.30 2010- 2010 365 9.55 38.22 2011- 2012 365 9.56 38.18	Year	Days	Creditors turnover ratio	Credit velocity	CREDIT VELOCITY
2008 365 9.47 38.54 2009 365 11.30 32.30 2010 365 9.55 38.22 2011 365 9.56 38.18	2007-	365	6.12	59.64	EO CA
2010 0 2010- 365 9.55 38.22 2011 2007-2008-2009-2010-2011- 2011- 365 9.56 38.18	2008				b 60
2010 0 2010- 365 9.55 38.22 2011 2007-2008-2009-2010-2011- 2011- 365 9.56 38.18	2008-	365	9.47	38.54	38.54 32.3 38.2238.18
2010 0 2010- 365 9.55 38.22 2011 2007-2008-2009-2010-2011- 2011- 365 9.56 38.18	2009				Credit velocity
2010 0 2010- 365 9.55 38.22 2011 2007-2008-2009-2010-2011- 2011- 365 9.56 38.18	2009-	365	11.30	32.30	
2011 2007-2008-2009-2010-2011 2011- 365 9.56 38.18	2010				
2011- 365 9.56 38.18 Veer	2010-	365	9.55	38.22	2007-2008-2009-2010-2011-
Veen	2011				2008 2009 2010 2011 2012
2012 Year	2011-	365	9.56	38.18	
	2012				Year

Table 18 and Fig 18.

The ratio was high during the period 2007-2008 and it starts to decrease during the period 2009-2012. The ratio shows the

decreasing trend (Table.18 & Figure.18)

Fixed turnover ratio

Year	Sales (In lakhs)	Net fixed assets (In lakhs)	Fixed turnover ratio	FIXED TURNOVER RATIO
2007-	500.00	216.55	2.31	4 3.65 3.63 3.65
2008				See 3 2.31 2.49
2008-	540.00	216.55	2.49	
2009				
2009-	700.00	191.55	3.65	$\begin{bmatrix} \frac{1}{2} \\ 1 \end{bmatrix}$ Fixed turnover ratio
2010				
2010-	770.00	212.00	3.63	2007-2008-2009-2010-2011-
2011				20082009201020112012
2011-	847.00	232.00	3.65	T.
2012				Year

The ratio shows an increasing trend during the period 2007-2010 and it decrease during 2010-2011 and again it increase during 2011-2012. The ratio shows the fluctuating trend. The ratio was better during the year 2009-2010 and during 2011-2012(Table.19& Figure.19)

FINDINGS, RECOMMENDATIONS AND CONCLUSION Findings.

From this study the credit policy of the bank and the credit appraisal process was found.

(i)The firm's financial performance is analyzed through ratio analyses. From the analyze it shows that the current ratio was high during the period 2007-2008 and it was low during the period 2008-2009.The quick ratio was high during the period 2007-2008 and it was satisfactory during 2007-2008 and it started to decrease from 2008-2009 and again it is increased from 2009-2010 and it is maintained in same position till 2012.The super quick assets was low during the period 2007-2008 and it was high from the period 2009-2012. It shows an increasing trend so it is good for the company. The debt-equity ratio was maintained in the same position from 2007-2012. There were no fluctuations so it is good for the company.

(ii)The total debt equity ratio was low during the period 2007-2008 and it was high during the period 2008-2009 then again is start to decrease from the period 2009-2010. It shows a fluctuating trend. The proprietary ratio was high during the period 2007-2008 and it started to decrease from 2008-2012. It shows a decreasing trend so the firm has to improve. The fixed assets ratio was low during the period 2007-2008 and it start to increase from 2008-2010 then it decrease during 2010-2011 then again is increase from 2011-2012. It shows a fluctuating trend.

The interest coverage ratio shows an increasing trend from 2007-2009 and it decrease during 2009-2010 and again it increase during 2010-2011 and then it decrease during 2011-2012. It shows a fluctuating trend.

(iii)The gross profit ratio was low during the period 2007-2008. The ratio was high during the period 2009-2011 and the ratio was better during this period. The net profit ratio was low during the period 2007-2008 and it increased during 2008-2009 and it decreased during the period 2009-2010 and again it increased during 2010-2011 and again in 2011-2012 it decreases. It shows a fluctuating trend. The operating profit ratio was high during the period 2008-2009 and it was low during the period 2009-2010. It shows a decreasing trend and it is good for the company. The return on asset shows an increasing trend from 2007-2011 and it shows slight decrease in 2011-2012. The ratio shows that the firm earned better profit during the period 2007-2011. It shows the good position of the firm. The return on capital employed shows the increasing trend during the period 2007-2010 and it shows the decreasing trend during the period 2010-2012 so the firm has to utilize the long term funds properly to earn more profits.

(iv)The stock turnover ratio was high during the period 2007-2008 and it was low during the period 2008-2009 so the decreasing trend has to change to get better position. The debtors velocity shows decreasing trend from 2007-2010 and it shows an increasing trend from 2010-2012.The creditors turnover ratio was low during the period 2007-2008 and it was high during the period 2009-2010.The creditors velocity was high during the period 2007-2008 and it start to decrease during the period 2009-2012. The ratio shows the decreasing trend. The fixed turnover ratio shows an increasing trend during the period 2007-2010 and it decrease during 2010-2011 and again it increase during 2011-2012. The ratio shows the fluctuating trend. Based on turnover method the sales is analyzed from that it is projected that the domestic and global sales for the year 2011-2012 will be 242 and 605 lakhs, so the total projection is 847 lakhs from that 20% will be contributed on projected sales.

Recommendations.

- 1. All the documents required to appraise the project should be asked at the time of application only rather than later by the bank
- The bank must bring more transparency in appraisal of the project there should be explanation for a appraisal of the project that was sanctioned by higher authority.
- The bank must not rely on software or information provided by the client the bank should dig in for other sources in order to draw a real picture for the company.
- Credit scoring allows lenders to determine whether or not you fill the profile of the type of customers they are looking for.
- 5. Banks concerned should continuously monitor loans to identify accounts that have potential to become non-performing.
- 6. At the time of projections due to lack of documents, the projections are done.

CONCLUSION

In Canara bank the credit appraisal is done by the study involves the Evaluation of management, Technical feasibility, Financial viability, Risk analysis and Credit rating.

It is on the basis of the credit risk level, collateral securities to be given by the borrower are determined. The credit department thoroughly analyses the credit requirement of the company and the capacity to service the debt. The bank has conservative norms to appraise the project the bank at the max. Allows a 20% hike in projections. The credit appraisal passes through various stages and evaluations before it is appraised.

The financial and banking system has placed before the SME sector a fully dressed up and it is the appreciation of the efforts and also as an incentive to work hard. The sector should avail of the opportunities and scale new heights. With this the sector will be benefited and the society too. This shows Canara bank has sound system for credit appraisal. The credit appraisal process carried out at Canara bank has good parameters to appraise.

REFERENCES

- Bonin P. John and Yiping Huang, 2001, "Dealing with the bad loans of the Chinese banks," Journal of Asian Economics, 12.2, Summer 2001, pp. 197-214.
- [2] Chen, K.H., Shimerda, T.A. 1981, An empirical analysis of useful financial ratios", Financial Management 10, 51-60.
- [3] Ezzamel, M.; Brodie, J. and Mar-Molinero, C., 1987, Financial

patterns of UK manufacturing companies, Journal of Business Finance and Accounting 14, 519-536.

- [4] Giacomino, D.E. and Mielke, D.E. 1993, Cash flows: another approach to ratio analysis, Journal of Accountancy 175, 55-8.
- [5] Gombola, M. J, and Ketz, J. E., 1983, A note on cash flow and classification patterns of financial ratios, The Accounting review LVIII, 105-14.
- [6] Hsiu-Kwang W. (1969), "Bank Examiner Criticisms, Bank Loan Defaults, and Bank Loan Quality" The Journal of Finance, Vol. 24, September, 697-705.
- [7] I.M.F (International Monetary Fund) (1997), " Banking Soundness and Monetary Policy in a World of Global Capital

Flows", Proceedings of the Seventh Central Banking Seminar, Jan. 27-31 Washington D.C.

- [8] Payle D.H. (1997), "Bank Risk Management", Working Paper No.272, University of California., Berkeley Research Program in Finance Working Papers.No:RPF-272. July. Available at http://haas.berkeley.edu/finance/WP/rpflist.html.
- [9] Simson D.N. and Hempel G.H. (1999), Bank Management, text and Cases, Fifth edition, John Wesley and Sons Inc., New York
- [10] Sun, J., & Li, H, (2008).Data mining method for listed companies' financial distress prediction. Knowledge-Based Systems, 21(1), 1–5.