CHAPTER-5

LIQUIDITY ANALYSIS

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LIQUIDITY ANALYSIS

5.1 Introduction

"Liquidity for a financial institution is its ability to raise cash quickly (within 30 days), without principal loss and at a reasonable loss" **(Darling, 1999)**[1]. In other words, in an insurance company, liquidity is the capacity to settle the demand for foreseeable and unforeseeable insurance claims or benefits due to the policyholders and creditors."Liquidity is usually a less pressing problems for insurance companies at least as compared to Banks since liquidity of their liabilities is predictable" **(Das et al, 2003)**[2]. Liquidity risks may arise because of non-availability of cash although other assets are sufficiently available or can secure cash to meet liabilities only at excessive cost and in an insurance context, liquidity problems can be handled by breaking the liquidity management into three levels- 1) day-to-day cash management; 2) ongoing cash flow management, which typically monitor cash needs for next six months to twenty four months; and 3) stress liquidity risks management which is concerned on the catastrophic risks **(Kelleher, 2005)**[3]

The liquidity ratios are most popularly applied tool to determine where the ratio of liquidity adjusted assets for a certain period are divided by liquidity adjusted liabilities are found out and if this is seen that the ratio is higher compared to some target number, the company is not to worry and if the ratio is much less, the company should take steps to improve liquidity **(Report of the American Academy of Actuaries' Life Liquidity work group, 2000)**[4].

Liquidity ratios used to measure liquidity are also known as working capital ratios. However, some researchers while studying financial performance of insurance business have used total assets and total liabilities in the numerator or denominator of liquidity ratios to present the liquidity risks in different ways.

5.2 Analysis of Liquidity Ratios

The researcher selects four liquidity ratios reviewing the existing literature. Ratios selected include the ratio of current assets to current liabilities, the ratio of cash and bank balances to current liabilities, the ratio of current assets to total assets and the

ratio of total liabilities to liquid assets. The analysis of these ratios is made by using average, standard deviation, ANOVA and post hoc ANOVA.

5.2.1 RATIO OF CURRENT ASSETS TO CURRENT IABILITIES (CA/CL)

The ratio of current assets to current liabilities is called current ratio. The higher is the current ratio, the more is the firms' ability to meet current obligations, and the greater is the safety of funds of short term creditors. The standard norm of current ratio is 2:1 which may vary from industry to industry (**Khan and Jain, 2000)**[5]. In life insurance business, current assets include cash and bank balances, prepayments, advances to employees and agents, accrued income on investment, due from reinsurers, due from investing company etc. Current liabilities comprise of claims o/s, annuities due, due to agents, due to other insurance companies for reinsurance, premiums received in advance, tax deducted to be remitted, service tax liability, investments purchased to be settled, provisions for employees' benefits etc.

5.2.1.1 Descriptive Analysis of the Ratio of (CA/CL)

For the purpose of descriptive analysis of the ratio of CA/CL, 130 ratios for ten years of thirteen selected companies have been computed on the basis of IRDA Annual Reports (Various Issues) and shown in the following table:

Table-5.1

Descriptive Analysis of the Ratio of Current Assets to Current Liabilities

Name of the Company	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Average	SD	Kolmgorov-Smirnov Z	Sig.
AVIVA	1.33	1.24	0.56	1.03	1.03	0.68	1.00	0.65	0.60	0.62	0.87	0.27	0.78	0.57
BAJAJ ALLIANZ	1.12	0.79	0.94	0.62	0.48	0.63	0.47	0.78	0.81	1.04	0.77	0.21	0.42	0.99
BIRLA SUNLIFE	0.73	0.62	0.60	0.72	0.86	0.81	0.82	0.86	0.86	0.84	0.77	0.09	0.85	0.47
HDFC STANDARD	1.91	1.05	1.44	1.36	1.37	1.06	0.62	0.80	0.85	0.98	1.14	0.36	0.61	0.85
ICICI PRUDENTIAL	0.59	0.70	0.59	0.67	0.59	0.57	0.38	0.42	0.54	0.65	0.57	0.10	0.69	0.73
ING VYSYA	2.40	1.20	0.83	0.63	0.88	0.98	0.83	0.98	1.08	1.38	1.12	0.47	0.74	0.65
KOTAK MAHINDRA	1.16	1.36	1.09	1.04	0.92	0.90	0.70	0.81	0.67	0.75	0.94	0.21	0.45	0.99
PNB MET LIFE	1.37	1.11	0.96	0.50	0.65	0.72	0.54	0.65	0.77	0.88	0.81	0.26	0.50	0.96
LICI	1.20	1.18	1.52	1.69	1.94	2.49	2.26	3.72	3.09	5.86	2.49	1.36	0.64	0.81
SBI LIFE	1.60	0.91	0.96	0.76	0.61	0.40	0.55	0.78	2.42	2.40	1.14	0.70	0.94	0.34
TATA AIA	1.29	0.99	1.00	0.83	0.63	0.77	0.62	0.66	0.71	0.94	0.84	0.20	0.45	0.99
MAX N Y	0.62	0.58	0.70	0.72	0.64	0.83	0.75	0.62	0.62	0.66	0.67	0.07	0.60	0.87
RELIANCE	0.99	0.93	0.92	0.71	0.83	0.85	0.86	0.79	0.75	0.37	0.80	0.16	0.61	0.85
Average	1.26	0.97	0.93	0.87	0.88	0.90	0.80	0.96	1.06	1.33	1.00			

Note: 1) Computed by researcher from data obtained from Annual Report of IRDA (Various issues)

2) Kolmogorov- Smirnov test indicates that the data are normally distributed as the test fails to reject null hypothesis that distributions are normal since the significance level of group distributions exceeds 0.05.
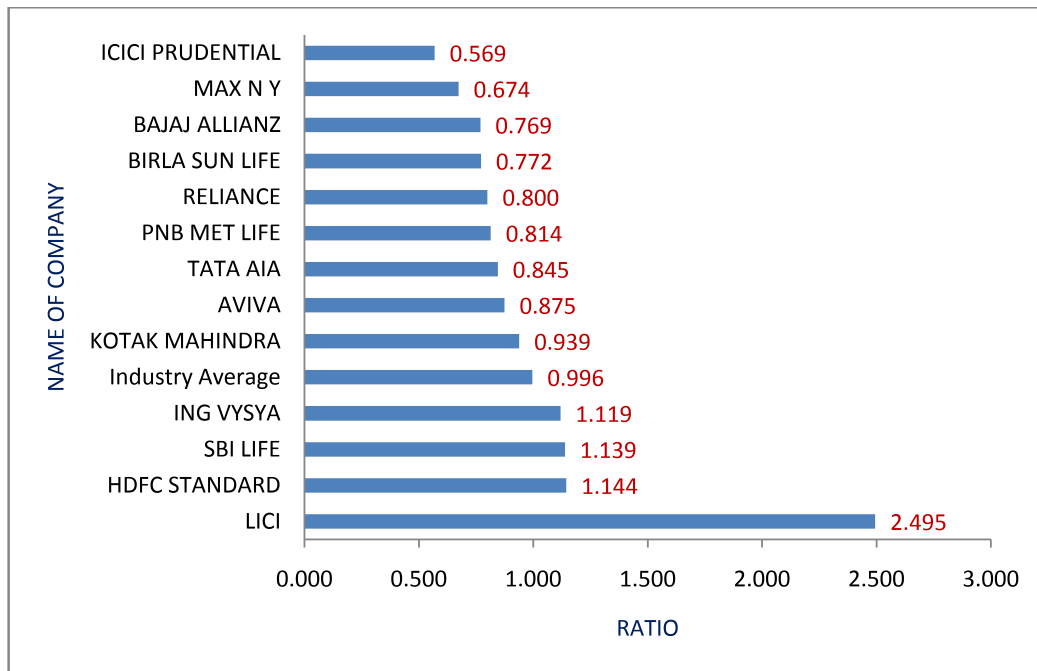
Table - 5.1 reveals that the average ratio of current assets to current liabilities for ten years' study period in case of LICI is 2.49 which indicates that the current assets is almost 2.5 times the current liabilities. It is the lowest for ICICI PRUDENTIAL where average current assets for the study period being 0.57 times the current liabilities. The descriptive analysis reveals that LICI's liquidity position is far better than any life insurance companies under the study and LICI management's approach in respect of liquidity is very much conservative. Other companies under the study are running through liquidity risks as a result of expending too much in new business procurement. So far as variation in ratio in between the year is concerned, it is very much fluctuating for LICI, SBI LIFE and ING VYSYA .

5.2.1.2 Average Position of Select Life Insurance Companies relating to the Ratio of CA/CL Compared to Industry Average

Table-5.2 and diagram-5.1 have been prepared on the basis of data computed from IRDA Annual Reports (Respective Issues) for the purpose of analysis which are as follows:

Table-5.2

Company-wise Average Ratio of Current assets to Current Liabilities (2003-04 to 2012-13)

Name of the Company	Average(2003-04 to 2013-14)	Ten Years' Average Rank
LICI	2.495	1
HDFC STANDARD	1.144	2
SBI LIFE	1.139	3
ING VYSYA	1.119	4
Industry Average	0.996	
KOTAK MAHINDRA	0.939	5
AVIVA	0.875	6
TATA AIA	0.845	7
PNB MET LIFE	0.814	8
RELIANCE	0.800	9
BIRLA SUN LIFE	0.772	10
BAJAJ ALLIANZ	0.769	11
MAX N Y	0.674	12
ICICI PRUDENTIAL	0.569	13

Diagram-5.1

Company-wise Average Ratio of Current Assets to Current Liabilities (2012-13)

A horizontal bar chart titled "NAME OF COMPANY" on the y-axis and "RATIO" on the x-axis (ranging 0.000 to 3.000):

| Company	Ratio
ICICI PRUDENTIAL	0.569
MAX N Y	0.674
BAJAJ ALLIANZ	0.769
BIRLA SUN LIFE	0.772
RELIANCE	0.800
PNB MET LIFE	0.814
TATA AIA	0.845
AVIVA	0.875
KOTAK MAHINDRA	0.939
Industry Average	0.996
ING VYSYA	1.119
SBI LIFE	1.139
HDFC STANDARD	1.144
LICI	2.495

After the study of table- 5.2 and diagram-5.1, it is found that the liquidity position of LICI is far better than any other life insurance companies under the study. For rest of the companies under the study, the liquidity ratios are poor. It is true that too high and too low liquidity ratio is not beneficial for any company which may be around 2.The liquidity position of only four companies under the study i.e. LICI, HDFC STANDARD, SBI LIFE and ING VYSYA are above industry average.

5.2.1.3 Year-wise Average Position of the Ratio of CA/CL of Life Insurance Industry

Year-wise industry average ratios have been calculated by adding all the ratios of CA/CL of thirteen companies in a particular year divided by thirteen as shown in the table-5.3 and diagram-5.2 (Based on IRDA Annual Reports, Various Issues).

Table-5.3

Year-wise Industry Average Ratio of Current Assets to Current Liabilities (2012-13)

Name of the Company	Industry Average
2003-04	1.2551
2004-05	0.9740
2005-06	0.9317
2006-07	0.8669
2007-08	0.8788
2008-09	0.8996
2009-10	0.7997
2010-11	0.9631
2011-12	1.0597
2012-13	1.3349

Diagram-5.2

Year-wise Industry Average Ratio of Current Assets to Current Liabilities (2012-13)
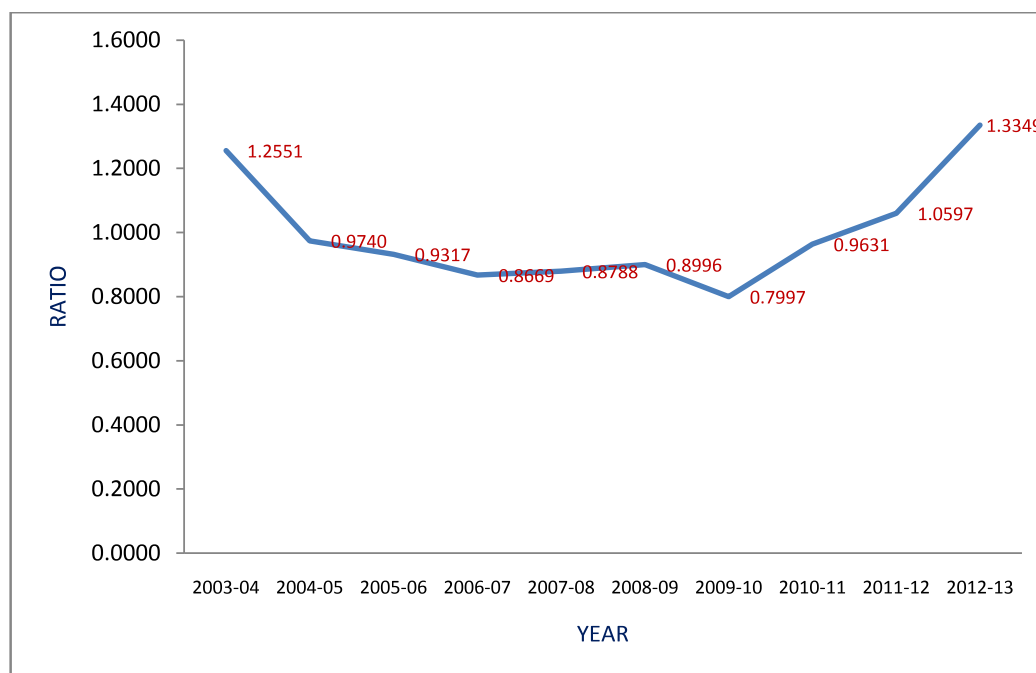
On reviewing the above the table-5.3 and diagram-5.2, it is ascertained that the liquidity position of the life insurance industry in India has decreased from 2003-04 to 2009-10 and thereafter starts increasing at an increasing rate from 0.7997 in the year 2009-10 to 1.3349 in 2012-13 and this has happened due to LICI, HDFC STANDARD and SBI LIFE.

5.2.1.4 Analysis of Variance for Testing Null Hypothesis H_0L_1

For testing null hypothesis $H_0 L_1$, the researcher has calculated ANOVA table-5.4 with the help of SPSS-17 from the data obtained from Annual Reports of IRDA, Various Issues.

Table-5.4

One Way ANOVA of the Ratio of Current Assets to Current Liabilities

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	28.034	12	2.336	9.051	.000
Within Groups	30.197	117	.258		
Total	58.231	129			

The table-5.4 indicates that the differences in the ratio of current assets to current liabilities are significant across the select companies as the p-value is 0.000. Since the value is less than 0.05, so researcher concludes that there are significant differences in the ratio of current assets to current liabilities across the select life insurance companies under the study at 5% significance level. Hence, null hypothesis has been rejected.

5.2.1.5 Post Hoc Test in Identifying the Life insurance Companies Responsible for Significant Differences in the Performance of the Ratio of CA/CL

To identify life insurance companies which are responsible for differences in performance of the ratio of CA/CL, the Post-hoc test has been conducted with the help of SPSS-17 on the basis of data from which ANOVA has been calculated as shown in the table-5.5.

Table-5.5

Post Hoc Tests-The Ratio of Current Assets to Current Liabilities
Tukey HSD

Name of Co (I)	Name of Co (J)	Mean Difference(I)-(J)	Sig.
LICI	AVIVA	1.61991[*]	.000
LICI	BAJAJ ALLIANZ	1.72589[*]	.000
LICI	BIRLA SUN LIFE	1.72305[*]	.000
LICI	HDFC STANDARD	1.35010[*]	.000
LICI	ICICI PRUDENTIAL	1.92521[*]	.000
LICI	ING VYSYA	1.37553[*]	.000

LICI	KOTAK MAHINDRA	1.55602[*]	.000
LICI	PNB MET LIFE	1.68024[*]	.000
LICI	SBI LIFE	1.35603[*]	.000
LICI	TATA AIA	1.64983[*]	.000
LICI	MAX N Y	1.82061[*]	.000
LICI	RELIANCE	1.69468[*]	.000

Examination of the Tukey HSD post hoc analysis reveals that there are twelve mean comparisons as in the table-5.5 which are significantly different. All these differences are statistically significant at 0.05 levels.

Thus, it may be interpreted that that the ratio of current assets to current liabilities of thirteen life insurance companies is significantly different. The difference has arisen due to better performer LICI compared to all other companies under the study.

5.2.2. RATIO OF CURRENT ASSETS TO TOTAL ASSETS (CA/TA)

The ratio of current assets to total assets indicates what proportions of current assets are kept in total assets **(Modi, 2011)[6]**. Total assets include shareholders' investment, policyholders' investment, assets held to cover link liabilities, loans, fixed assets, cash and bank balances, advances and other assets etc. Current assets include cash and bank balances, prepayments, advances to employees and agents, accrued income on investment, due from reinsurers, due from investing company etc.The higher is the ratio, better is the liquidity of the company and promptness of the payment to the claimants. The lower ratio of current assets to total assets indicates that there may not be sufficient funds to pay off liabilities or may mean that the business is trading beyond its capacity.

5.2.2.1 Descriptive Analysis of the Ratio of CA/TA

For the purpose of descriptive analysis of the ratio of CA/CL, 130 ratios for ten years of thirteen selected companies have been computed on the basis of IRDA Annual Reports (Various Issues) and shown in the following table:

Table-5.6

Descriptive Analysis of the Ratio of Current Assets to Total Assets

Name of the Company	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Avarage	SD	Kolmgorov-Smirnov Z	Sig.
AVIVA	0.14	0.17	0.09	0.11	0.10	0.04	0.04	0.03	0.03	0.03	0.08	0.05	0.79	0.56
BAJAJ ALLIANZ	0.19	0.11	0.10	0.07	0.04	0.03	0.02	0.02	0.02	0.04	0.06	0.05	0.82	0.52
BIRLA SUN LIFE	0.09	0.05	0.03	0.06	0.07	0.06	0.04	0.04	0.04	0.04	0.05	0.02	0.70	0.72
HDFC STANDARD	0.15	0.11	0.13	0.10	0.09	0.08	0.04	0.04	0.04	0.04	0.08	0.04	0.74	0.64
ICICI PRUDENTIAL	0.05	0.07	0.04	0.04	0.04	0.02	0.01	0.01	0.01	0.02	0.03	0.02	0.61	0.86
ING VYSYA	0.39	0.36	0.16	0.10	0.09	0.10	0.05	0.05	0.04	0.08	0.14	0.12	1.04	0.23
KOTAK MAHINDRA	0.19	0.11	0.07	0.09	0.07	0.05	0.03	0.04	0.03	0.03	0.07	0.05	0.65	0.79
PNB MET LIFE	0.16	0.18	0.18	0.09	0.11	0.08	0.04	0.03	0.05	0.04	0.09	0.06	0.61	0.85
LICI	0.06	0.06	0.05	0.05	0.05	0.06	0.04	0.05	0.07	0.09	0.06	0.01	0.84	0.48
SBI LIFE	0.17	0.09	0.09	0.06	0.03	0.03	0.03	0.03	0.07	0.06	0.07	0.04	0.61	0.84
TATA AIA	0.20	0.17	0.11	0.08	0.06	0.07	0.03	0.03	0.03	0.03	0.08	0.06	0.68	0.75
MAX N Y	0.13	0.10	0.10	0.09	0.07	0.07	0.06	0.05	0.05	0.05	0.08	0.03	0.51	0.96
RELIANCE	0.11	0.09	0.14	0.14	0.13	0.08	0.04	0.03	0.03	0.03	0.08	0.04	0.60	0.86
Average	0.16	0.13	0.10	0.08	0.07	0.06	0.04	0.03	0.04	0.05	0.08			

Note: 1) Computed by researcher from data obtained from Annual Report of IRDA (Various issues)

2) Kolmogorov- Smirnov test indicates that the data are normally distributed as the test fails to reject null hypothesis that distributions are normal since the significance level of group distributions exceeds 0.05.

The descriptive analysis of the life insurance companies under the study relating to the ratio of current assets to total assets as given in the table-5.6 indicates that the average ratio of ING VYSYA is highest as 0.14 and lowest of ICICI PRUDENTIAL as 0.03.

The analysis of the ratios of current assets to total assets highlights that ING VYSYA maintains a good percentage of current assets to total assets to avoid liquidity risks while ICICI PRUDENTIAL maintains a poor ratio of 0.03 of total assets which is more vulnerable to liquidity risks. The average ratio of all other companies under the study is more or less same. However, the ratios of ING VYSYA is fluctuating in between the years under the study.

5.2.2.2 Average Position of the Ratio of CA/TA of Select Companies Compared to Industry Average

Table-5.7 and diagram-5.3 have been prepared from the data collected from IRDA Annual Reports (Various Issues) which are as follows:-

Table-5.7

Company-wise Average Ratio of Current Assets to Total Assets
(2003-04 to 2012-2013)

Name of the Company	Average(2003-04 to 2013-14)	Ten Years' Average Rank
ING VYSYA	0.143	1
PNB MET LIFE	0.094	2
RELIANCE	0.082	3
TATA AIA	0.082	4
HDFC STANDARD	0.081	5
AVIVA	0.078	6
MAX N Y	0.076	7
Industry Average	0.075	
KOTAK MAHINDRA	0.070	8
SBI LIFE	0.066	9
BAJAJ ALLIANZ	0.064	10
LICI	0.059	11
BIRLA SUN LIFE	0.052	12
ICICI PRUDENTIAL	0.031	13

Diagram-5.3

**Company-wise Average Ratio of Current Assets to Total Assets (2012-2013)**
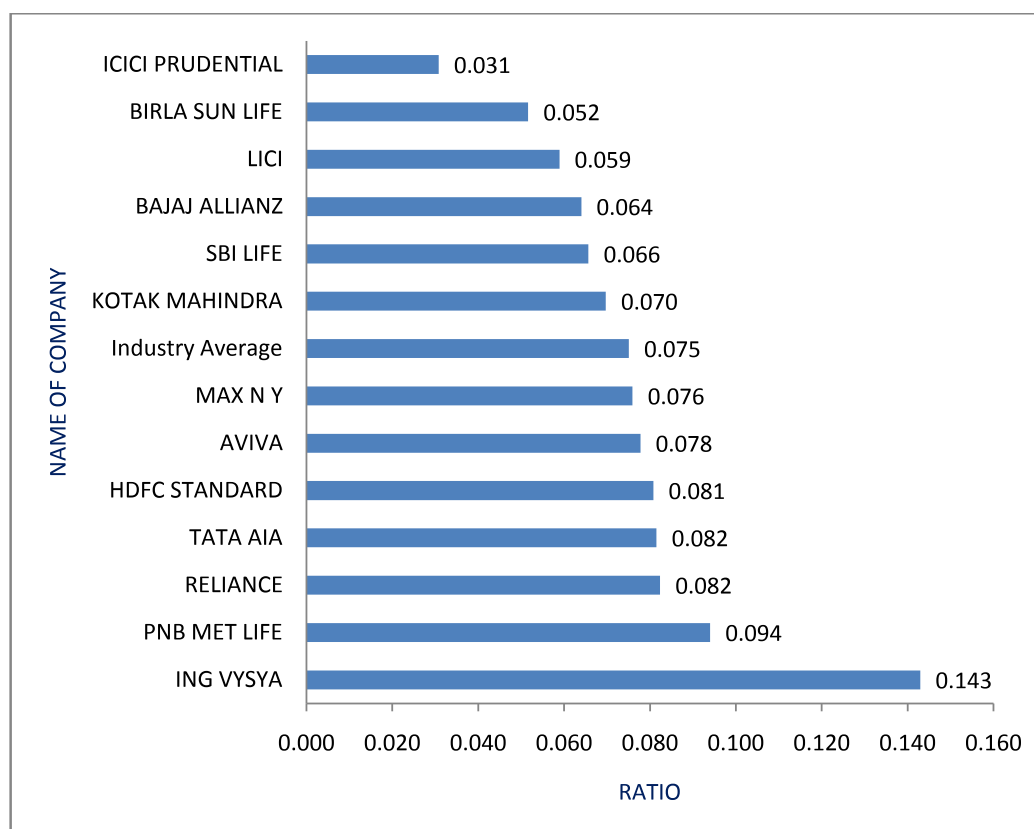
The average ratios of current assets to total assets of all the companies under the study as depicted in table-5.7 and diagram-5.3 show that Indian life insurance companies are not much interested in improving their current assets to total assets position. However, seven companies under the study namely, ING VYSYA, PNB MET LIFE, RELIANCE, TATA AIA, HDFC STANDARD, AVIVA, and MAX N Y have been able to maintain this ratio above industry average.

5.2.2.3 Year-wise Average Position of the Ratio of CA/TA of Life Insurance Industry

Year-wise industry average ratios have been calculated by adding all the ratios of CA/TA of thirteen companies in a particular year divided by 13 life insurance companies under the study as shown in the table-5.8 and diagram-5.4 (on the basis of IRDA Annual Reports, Various Issues).

Table-5.8

Year-wise Industry Average Ratio of Current Assets to Total Assets (2012-13)

Name of the Company	Industry Average
2003-04	0.1559
2004-05	0.1278
2005-06	0.1004
2006-07	0.0829
2007-08	0.0725
2008-09	0.0597
2009-10	0.0355
2010-11	0.0323
2011-12	0.0386
2012-13	0.0454

Diagram-5.4

Year-wise Industry Average Ratio of Current Assets to Total Assets (2012-13)
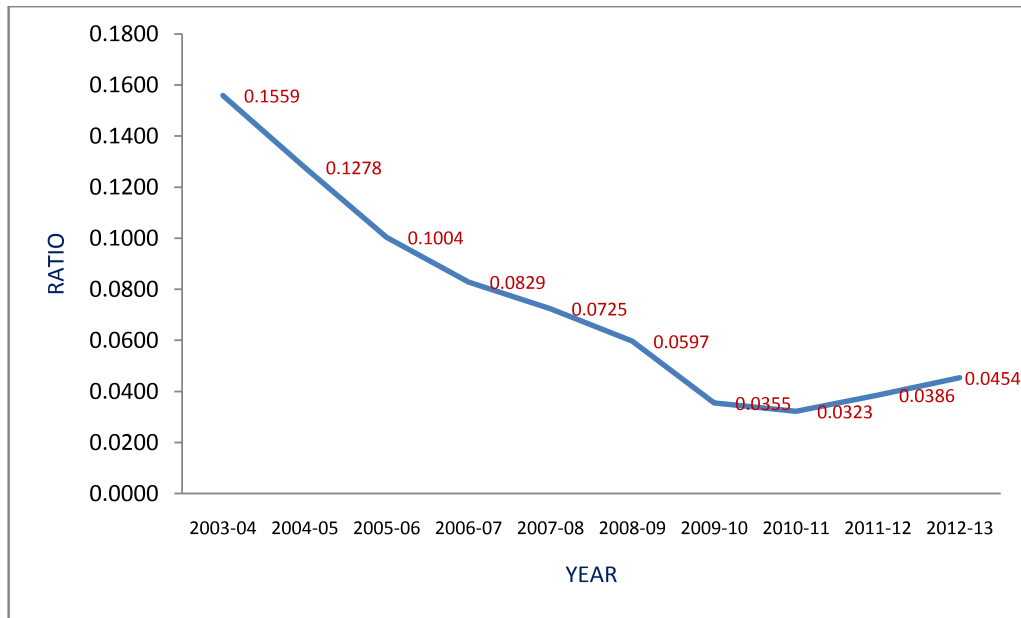
The study of table-5.8 and diagram-5.4 reveals the fact that the ratio of current assets to total assets of Indian life insurance industry has deteriorated from 2003-04 to 2010-11 and has slightly improved during 2011-12 to 2012-13.

5.2.2.4 Analysis of Variance for Testing Null Hypothesis H_0L_2

In order to test null hypothesis H_0L_2, the researcher has calculated ANOVA **(Cunningham and Aldrich, 2012)**[7] table-5.9 with the help of SPSS-17 from the data obtained from Annual Reports of IRDA (Various Issues).

Table-5.9

One Way ANOVA of the Ratio of Current Assets to Total Assets

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.081	12	.007	2.217	.015
Within Groups	.357	117	.003		
Total	.438	129			

The table-5.9 indicates that the differences across the select companies in the ratio of current assets to total assets are significant as the p-value is 0.015. Since the value is less than 0.05, so it is concluded that there are significant differences in the ratio of current assets to total assets of select life insurance companies under the study at 5% significance level. Hence, null hypothesis has been rejected.

5.2.2.5 Post Hoc Test in Identifying the Life Insurance Companies Responsible for Significant Differences in the Performance of the Ratio of CA/TA

In order to identify the selected life insurance companies for which differences in performance of the ratio of current assets to total assets has arisen, the Post-hoc test has been conducted with the help of SPSS-17.

Table-5.10

Post Hoc Tests-The Ratio of Current Assets to Total Assets
Tukey HSD

Name of Co (I)	Name of Co (J)	Mean Difference(I)-(J)	Sig.
ING VYSYA	BIRLA SUN LIFE	.09131[*]	.019
ING VYSYA	ICICI PRUDENTIAL	.11214[*]	.001
ING VYSYA	LICI	.08404[*]	.047

Examination of the Tukey HSD post hoc analysis reveals that there are three mean comparisons as depicted in the table-5.10 which are significantly different and these differences are statistically significant at 0.05 levels.

Thus, it may be interpreted that the ratio of current assets to total assets of thirteen life insurance companies are significantly different. The differences have arisen because of better performer ING VYSYA and poor performer BIRLA SUN LIFE, ICICI PRUDENTIAL and LICI.

5.2.3 RATIO OF CASH AND BANK BALANCES TO CURRENT LIABILITIES (C&BB/CL)

In the ratio of cash and bank balances to current liabilities, cash and bank balance is taken in the numerator and current liabilitiy is taken in the denominator. Although receivables, debtors, bills receivables etc. are regarded as quick assets, yet there may be doubts regarding their realization of immediately or in time without any loss and some authorities are of the opinion that absolute liquid ratios should also be calculated together with current ratio **(Gupta and Sharma, 2008)**[8]. Here, in our analysis cash and bank balances have been taken as absolute liquid assets. **Chandra (2008)**[9] calls it as cash ratio which he calls a very stringent measure of liquidity. However, Cash equivalents may represent temporary investments of cash but practically it is not fully ensured that they can be sold without loss **(Bernstein, 1993)**[10].

5.2.3.1 Descriptive Analysis of the Ratio of C&BB/CL

For the purpose of analysis of the ratio of C&BB/CL on the basis of descriptive statistics, 130 ratios for ten years of thirteen selected companies have been computed on the basis of IRDA Annual Reports (Various Issues) and shown in the following table:

Table-5.11

Descriptive Analysis of the Ratio of Cash and Bank Balances to Current Liabilities

Name of the Company	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Average	SD	Kolmgorov-Smirnov Z	Sig.
AVIVA	0.94	0.95	0.48	0.76	0.56	0.12	0.62	0.16	0.27	0.20	0.51	0.30	0.56	0.91
BAJAJ ALLIANZ	0.73	0.54	0.75	0.51	0.36	0.42	0.20	0.41	0.36	0.45	0.47	0.16	0.49	0.97
BIRLA SUNLIFE	0.55	0.45	0.35	0.54	0.70	0.68	0.68	0.69	0.63	0.53	0.58	0.11	0.60	0.86
HDFC STANDARD	1.36	0.67	1.07	0.86	0.72	0.46	0.23	0.29	0.36	0.56	0.66	0.34	0.42	0.99
ICICI PRUDENTIAL	0.31	0.52	0.40	0.45	0.34	0.28	0.19	0.21	0.16	0.16	0.30	0.12	0.56	0.92
ING VYSYA	1.93	0.90	0.48	0.34	0.54	0.37	0.35	0.33	0.33	0.31	0.59	0.48	1.08	0.20
KOTAK MAHINDRA	0.73	0.98	0.73	0.77	0.64	0.52	0.31	0.56	0.34	0.34	0.59	0.21	0.55	0.92
PNB MET LIFE	0.85	0.52	0.54	0.23	0.37	0.33	0.22	0.27	0.49	0.42	0.43	0.18	0.55	0.92
LICI	0.51	0.39	0.55	0.66	0.80	0.88	0.65	1.41	1.43	3.52	1.08	0.88	0.90	0.39
SBI LIFE	1.06	0.47	0.43	0.38	0.25	0.13	0.32	0.47	1.74	1.51	0.68	0.53	1.09	0.18
TATA AIA	0.56	0.44	0.47	0.35	0.19	0.38	0.25	0.24	0.16	0.32	0.34	0.12	0.49	0.97
MAX N Y	0.24	0.16	0.15	0.15	0.04	0.04	0.22	0.18	0.20	0.21	0.16	0.06	0.78	0.58
RELIANCE	0.50	0.50	0.68	0.51	0.59	0.60	0.68	0.45	0.30	0.15	0.50	0.16	0.63	0.82
Average	0.79	0.58	0.54	0.50	0.47	0.40	0.38	0.44	0.52	0.67	0.53			

Note: 1) Computed by researcher from data obtained from Annual Report of IRDA (Various issues)

2) Kolmogorov- Smirnov test indicates that the data are normally distributed as the test fails to reject null hypothesis that distributions are normal since the significance level of group distributions exceeds 0.05.

The table-5.11indicates that the average ratio of cash and bank balances to current liabilities of LICI for ten years is 1.08 which means that LICI can meet all its current liabilities from available cash and bank balances instantly, while the position of MAX N Y is very poor with the average ratio of 0.16. The position of TATA AIA, ICICI PRUDENTIAL, BAJAJ ALLIANZ, RELIANCE and PNB MET LIFE is not better. However, during 2010-11 to 2012-13, LICI has maintained higher ratios consistently.

The table-5.11 also reveals that the ratios in between the year of LICI,SBI LIFE, ING VYSYA, HDFC STANDARD are fluctuating.

5.2.3.2 Average Position of the Ratio of C&BB/CL of Select Companies Compared to Industry Average

Table-5.12 and diagram-5.5 have been prepared from the data available from IRDA Annual Reports (Various Issues) as shown below:
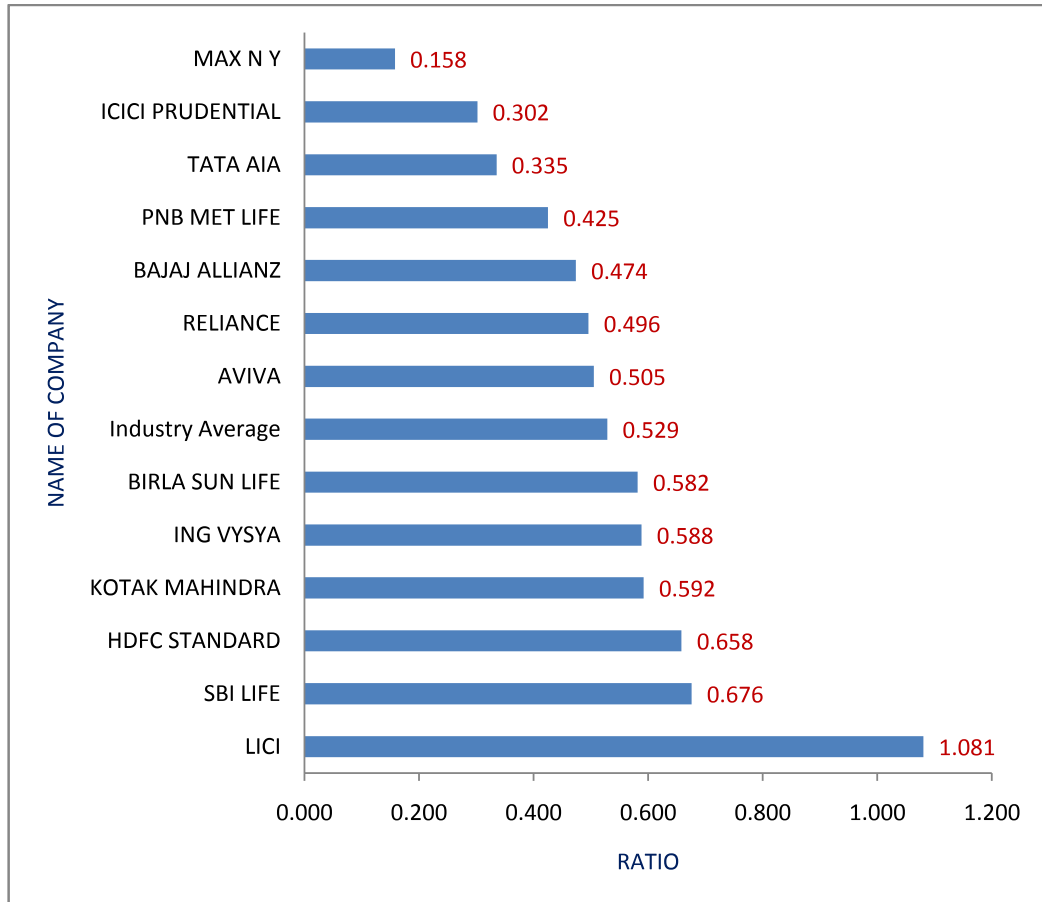
Table-5.12

Company-wise Average Ratio of Cash and Bank Balances to Current Liabilities (2003-04 to 2012-2013)

Name of the Company	Average(2003-04 to 2013-14)	Ten Years' Average Rank
LICI	1.081	1
SBI LIFE	0.676	2
HDFC STANDARD	0.658	3
KOTAK MAHINDRA	0.592	4
ING VYSYA	0.588	5
BIRLA SUN LIFE	0.582	6
Industry Average	0.529	
AVIVA	0.505	7
RELIANCE	0.496	8
BAJAJ ALLIANZ	0.474	9
PNB MET LIFE	0.425	10
TATA AIA	0.335	11
ICICI PRUDENTIAL	0.302	12
MAX N Y	0.158	13

Diagram-5.5

Company-wise Average Ratio of Cash and Bank Balances to Current Liabilities (2012-2013)

The average ratio of cash and bank balances to current liabilities of life insurance companies under the study in the table-5.12 and diagram-5.5 shows that among all the companies, only LICI is in a better position with ratio 1.08 . However, six companies i.e. LICI, SBI LIFE, HDFC STANDARD, KOTAK MAHINDRA, ING VYSYA and BIRLA SUN LIFE have maintained the ratio above industry average.

5.2.3.3 Year-wise Average Position of the Ratio of C&BB/CL of the Life Insurance Industry

Industry average ratios for ten years of thirteen life insurance companies have been calculated as shown in the table-5.13 and diagram-5.6 and presented on the basis of data obtained from IRDA Annual Reports.
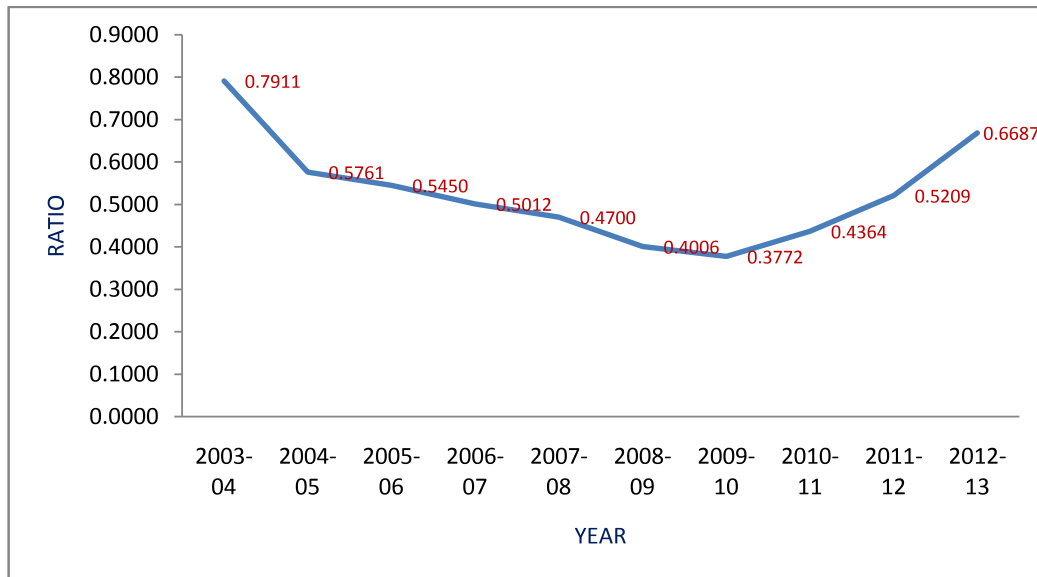
Table-5.13

Year- wise Industry Average Ratio of Cash and Bank Balance to Current Liabilities

Name of the Company	Industry Average
2003-04	0.7911
2004-05	0.5761
2005-06	0.5450
2006-07	0.5012
2007-08	0.4700
2008-09	0.4006
2009-10	0.3772
2010-11	0.4364
2011-12	0.5209
2012-13	0.6687

Diagram-5.6

Year- wise Industry Average Ratio of Cash and Bank Balance to Current Liabilities

The industry average ratio of cash and bank balances to current liabilities in table-5.13 and diagram-5.6   show that after deterioration in the ratio from 2003-04 to 2009-10 and started recovering from 2010-11 to 2012-13 and this recovery has been mainly due to the performance of LICI.

5.2.3.4 Analysis of Variance for Testing Null Hypothesis H_0L_3

To test null hypothesis H_0 L_3, the researcher has calculated ANOVA table-5.14 with the help of SPSS-17(Based on Data obtained from Annual Reports of IRDA, Various Issues).

Table-5.14

One Way ANOVA of the Ratio of Cash and Bank Balances to Current Liabilities

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.950	12	.496	3.483	.000
Within Groups	16.658	117	.142		
Total	22.608	129			

The table-5.14 indicates that the differences across the select companies in the ratio of cash and bank balances to current liabilities are significant as the p-value is 0.000. Since the value is less than 0.05, it may be understood that there are significant differences in the ratio of cash and bank balances to current liabilities across the select life insurance companies under the study at 5% significance level. Hence, null hypothesis has been rejected.

5.2.3.5 Post Hoc Test in Identifying the Life Insurance Companies Responsible for Significant Differences in the Performance of the Ratio of C&BB/CL

For identification of life insurance companies which are responsible for differences in the position of the ratio of C&BB/CL, the Post-hoc test has been conducted with the help of SPSS-17 as shown in table-5.15.

Table-5.15

Post Hoc Tests-The Ratio of Cash and Bank Balance to Current Liabilities Tukey HSD

Name of Co (I)	Name of Co (J)	Mean Difference(I)-(J)	Sig.
LICI	AVIVA	.57529[*]	.046
LICI	BAJAJ ALLIANZ	.60674[*]	.026
LICI	ICICI PRUDENTIAL	.77856[*]	.001
LICI	PNB MET LIFE	.65535[*]	.010

LICI	TATA AIA	.74518[*]	.002
LICI	MAX N Y	.92257[*]	.000
LICI	RELIANCE	.58460[*]	.039

Examination of the Tukey HSD post hoc analysis reveals that there are seven mean comparisons as given in table-5.15 that are significantly different. All these differences are statistically significant at 0.05 levels. The differences have arisen due to better performance of LICI and poor performance of AVIVA, BAJAJ ALLIANZ, ICICI PRUDENTIAL, PNB MET LIFE, TATA AIA, MAX N Y and RELIANCE.

5.2.4 RATIO OF TOTAL LIABILITIES TO LIQUID ASSETS (TL/LA)

The ratio of total liabilities to liquid assets is another way of measuring liquidity of an insurance company. The lower is the value of total liabilities to liquid assets; the more liquid is the company's assets {**Shiu (2001)**[11], **Brockett et. al (1994)**[12], **Ambrose and Seward (1988)**[13]}

5.2.4.1 Descriptive Analysis of the Ratio of TL/LA

For the purpose of analysis of the ratio of TL/LA on the basis of descriptive statistics, the ratios of thirteen selected companies for ten years have been computed on the basis of IRDA Annual Reports (Various Issues) and shown in the following table:

Table-5.16

Descriptive Analysis of the Ratio of Total Liabilities to Liquid Assets

Name of the Company	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Average	SD	Kolmgorov-Smirnov Z	Sig.
AVIVA	3.53	5.27	10.73	10.25	16.05	142.42	34.39	142.63	61.84	95.39	52.25	52.87	0.77	0.60
BAJAJ ALLIANZ	3.76	10.92	11.39	15.91	34.55	47.03	148.91	86.18	84.11	48.83	49.16	43.38	0.64	0.81
BIRLA SUN LIFE	12.37	24.34	46.01	22.31	17.14	18.04	28.43	32.91	32.14	41.13	27.48	10.21	0.36	1.00
HDFC STANDARD	6.80	13.03	9.14	14.84	20.09	25.95	72.73	70.27	59.31	40.57	33.27	24.32	0.67	0.76
ICICI PRUDENTIAL	32.01	19.32	36.02	33.26	46.76	90.92	182.98	199.85	239.00	217.86	109.80	84.68	0.82	0.51
ING VYSYA	1.38	2.76	9.00	16.54	15.93	24.83	49.24	61.67	70.58	53.34	30.53	24.43	0.65	0.79
KOTAK MAHINDRA	5.51	10.37	18.96	14.68	19.75	30.24	74.20	37.13	65.04	63.98	33.99	23.82	0.68	0.75
PNB MET LIFE	2.76	5.36	7.12	18.52	14.27	26.28	64.82	84.72	32.91	48.33	30.51	26.10	0.53	0.94
LICI	36.29	54.65	53.33	48.57	45.02	49.76	9.81	55.78	30.67	17.91	40.18	15.28	0.69	0.73
SBI LIFE	6.13	15.23	19.39	30.15	89.63	109.59	61.09	49.27	19.99	23.69	42.42	32.75	0.76	0.62
TATA AIA	8.01	10.19	15.88	25.54	51.00	25.83	69.91	90.01	152.98	84.93	53.43	44.05	0.71	0.70
MAX N Y	13.66	28.96	40.36	46.19	190.81	225.19	54.39	69.39	61.41	52.97	78.33	67.00	1.11	0.17
RELIANCE	5.15	11.38	7.38	9.16	10.22	15.98	27.93	65.70	91.08	69.72	31.37	30.11	0.90	0.39
Average	10.57	16.29	21.90	23.53	43.94	64.01	67.60	80.42	77.01	66.05	47.13			

Note: 1) Computed by researcher from data obtained from Annual Report of IRDA (Various issues)

2) Kolmogorov- Smirnov test indicates that the data are normally distributed as the test fails to reject null hypothesis that distributions are normal since the significance level of group distributions exceeds 0.05.

The table-5.16 indicates that the ratio of total liabilities to liquid assets of ICICI PURDENTIAL is poor as 109.80(highest) and of BIRLA SUN LIFE is better as 27.48(lowest). However, the ratios are more fluctuating which is evident from the SDs of AVIVA, ICICI PRUDENTIAL, TATA AIA and MAX N Y.

5.2.4.2 Average Position of the Ratio of TL/LA of Select Life Insurance Companies Compared to Industry Average

Table-5.17 and diagram-5.7 have been prepared from the data available from IRDA Annual Reports (Various Issues) as follows:-

Table-5.17

Company-wise Average Ratio of Total Liabilities to Liquid Assets
(2003-04 to 2012-2013)

Name of the Company	Average(2003-04 to 2013-14)	Ten Years' Average Rank
BIRLA SUN LIFE	27.48	1
PNB MET LIFE	30.51	2
ING VYSYA	30.53	3
RELIANCE	31.37	4
HDFC STANDARD	33.27	5
KOTAK MAHINDRA	33.99	6
LICI	40.18	7
SBI LIFE	42.42	8
Industry Average	47.13	
BAJAJ ALLIANZ	49.16	9
AVIVA	52.25	10
TATA AIA	53.43	11
MAX N Y	78.33	12
ICICI PRUDENTIAL	109.80	13

Diagram-5.7

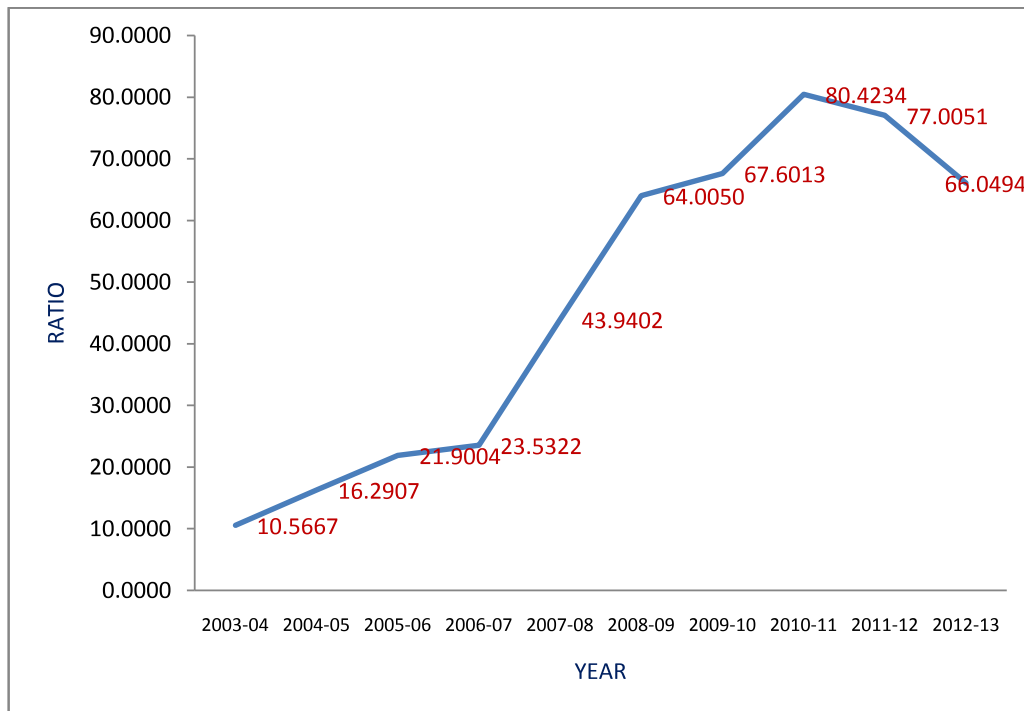**Company-wise Average Ratio of Total Liabilities to Liquid Assets (2012-2013)**
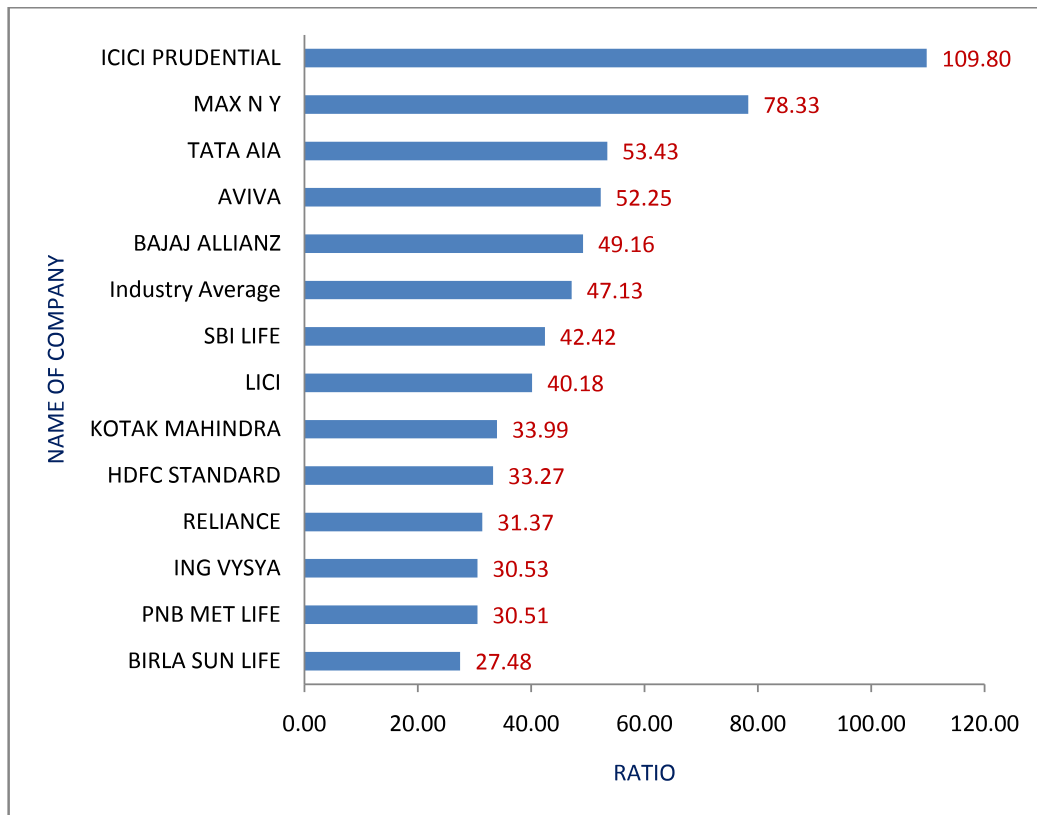
The table-5.17 and diagram-5.7 show that five companies namely, ICICI PRUDENTIAL, MAX N Y, TATA AIA, BAJAJ ALLIANZ and AVIVA have maintained the average ratio of total liabilities to liquid assets above industry average and as a result their performances are poor. However, rests of the companies under the study have performed better.

5.2.4.3 Year-wise Average Position of the Ratio of TL/LA of the Life Insurance Industry

Industry average ratios for ten years of selected life insurance companies have been calculated as shown in the table-5.18 and diagram-5.8 presented on the basis of data obtained from IRDA Annual Reports.

Table-5.18

Year-wise Industry Average Ratio of Total Liabilities to Liquid Assets

Name of the Company	Industry Average
2003-04	10.5667
2004-05	16.2907
2005-06	21.9004
2006-07	23.5322
2007-08	43.9402
2008-09	64.0050
2009-10	67.6013
2010-11	80.4234
2011-12	77.0051
2012-13	66.0494

Diagram-5.8

Year-wise Industry Average Ratio of Total Liabilities to Liquid Assets

The industry average of the ratio of total liabilities to liquid assets as presented in table-5.18 and diagram-5.8 reveal that the assets of Life insurance industry in India are becoming less liquid from 2003-04 to 2010-11 and running through greater liquidity risks. However, this ratio has slight improvement after 2010-11.

5.2.4.4 Analysis of Variance for Testing Null Hypothesis H_0L_4

With a view to test null hypothesis H_0L_4, the researcher has calculated ANOVA table-5.19 with the help of SPSS-17 (Based on the data obtained from Annual Reports of IRDA, Various Issues).

Table-5.19

One Way ANOVA of the Ratio of Total Liabilities to Liquid Assets

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	65926.484	12	5493.874	2.791	.002
Within Groups	230311.566	117	1968.475		
Total	296238.049	129			

The table-5.19 indicates that the differences in the ratio of total liabilities to liquid assets across the select companies are significant as the p-value is 0.002. Since the value is less than 0.05, so it may be concluded that there are significant differences in the ratio of total liabilities to liquid assets across the select life insurance companies under the study at 5% significance level. Hence, null hypothesis has been rejected.

5.2.4.5 Post Hoc Test in Identifying the Life Insurance Companies Responsible for Significant Differences in the Performance of the Ratio of TL/LA

To point out the selected life insurance companies which are responsible for significant differences across the select companies in the position of the ratio of TL/LA, the Post-hoc test has been conducted with the help of SPSS-17.

Table-5.20

**Post Hoc Tests-The Ratio of Total Liabilities to Liquid Assets
Tukey HSD**

Name of Co (I)	Name of Co (J)	Mean Difference(I)-(J)	Sig.
ICICI PRUDENTIAL	BIRLA SUN LIFE	82.31738*	.004
ICICI PRUDENTIAL	HDFC STANDARD	76.52540*	.011
ICICI PRUDENTIAL	ING VYSYA	79.26972*	.007
ICICI PRUDENTIAL	KOTAK MAHINDRA	75.81257*	.013
ICICI PRUDENTIAL	PNB MET LIFE	79.29023*	.007
ICICI PRUDENTIAL	LICI	69.61940*	.034
ICICI PRUDENTIAL	SBI LIFE	67.38287*	.048
ICICI PRUDENTIAL	MAX N Y	78.42980*	.008

Examination of the Tukey HSD post hoc analysis reveals that there are eight mean comparisons as shown in table-5.20 that are significantly different. All these differences are statistically significant at 0.05 levels.

The significant difference arises because ICICI PRUDENTIAL has performed much better than other companies under the study which is evident from the table 5.20.

5.3 Comprehensive Ranking Analysis

Overall liquidity position has been evaluated on the basis of ultimate rank of total rank scores of all the selected liquidity ratios taken together for each study period {**Panigrahi (2013)**[14] and **Rajdev (2013)**[15]}. Finally, Kruskal-Wallis statistical test has been conducted to find out significant differences in overall liquidity position across the selected life insurance companies in India. The null hypothesis H_0L_5 already formulated in chapter-1 is tested thus-:

Null hypothesis:

''There is no difference in Overall liquidity Performance across the life insurance companies in India''.

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Table-5.21

Rank Scores of Overall Liquidity Performance

Name of the Company	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Total Scores	Ranks
AVIVA	13	9	35	11	16	44	14	47	37	37	263	7
BAJAJ ALLIANZ	22	26	21	32	41	36	48	35	33	22	316	10
BIRLA SUN LIFE	33	46	48	32	21	18	16	12	16	30	272	8
HDFC STANDARD	16	25	11	11	16	15	34	25	23	25	201	2
ICICI PRUDENTIAL	42	39	45	42	44	45	52	50	52	37	448	13
ING VYSYA	9	8	21	31	19	15	16	17	25	20	181	1
KOTAK MAHINDRA	27	13	24	15	22	24	35	14	34	32	240	4
PNB MET LIFE	19	16	14	37	20	28	37	37	18	29	255	6
LICI	39	41	30	30	21	19	10	7	6	16	219	3
SBI LIFE	23	36	32	35	47	47	34	22	6	19	301	9
TATA AIA	34	26	25	32	42	25	35	38	43	27	327	11
MAX N Y	48	46	41	38	41	37	24	33	32	31	371	12
RELIANCE	39	33	17	18	14	11	9	27	39	39	246	5

Source: Computed from Annual Reports of IRDA, Various Issues

The table-5.21 reveals that overall liquidity performance ranks secured by most of the selected life insurance companies under the study period of ten years. So far as ultimate ranks of overall liquidity performance are concerned, ING VYSYS, HDFC STANDARD, LICI, KOTAK MAHINDRA and RELIANCE have secured 1st, 2nd, 3rd, 4th and 5th position respectively for overall liquidity performance during the study period of ten years taken together. The table also shows TATA AIA, MAX N Y and ICICI PRUDENTIAL have been ranked 11th, 12th and 13th position respectively for ten years' overall liquidity performance. The rest of the companies have gained ultimate rank of ranks in between the two groups discussed above for overall liquidity performance.

The result of Kruskal-Wallis test to find out whether there is significant difference in overall liquidity position across the selected life insurance companies in India has been given in the following table:

Table-5.22

Kruskal-Walis Test of Rank Scores of Overall Liquidity Position

Test Statistics	
Chi-Square	44.287
df	12
Asymp. Sig.	.000

Kruskal-Wallis test gives the significance value being .000 which is less than .05 which is evident from table-5.22. So it is concluded that there is difference in overall liquidity performance across the Life Insurance Companies in India. Hence, the null hypothesis is rejected.

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