Transition Matrix:

NCR has conducted transition matrix analysis of the rated clients from the year 2011 to year 2017. Transition matrix analysis is done to see the percentage of changes in credit rating of each rating category.

One Years Weighted Average Rating Transition Rates from the Year 2011 to Year 2017

	AAA	AA	A	BBB	BB	B	C
AAA	0%	0%	0%	0%	0%	0%	0%
AA	0%	94.63%	4.70%	0.67%	0.00%	0.00%	0.00%
A	0%	1.43%	91.44%	7.14%	0.00%	0.00%	0.00%
BBB	0%	0.00%	5.75%	92.59%	1.65%	0.00%	0.00%
BB	0%	0.00%	2.70%	32.43%	62.16%	2.70%	0.00%
B	0%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
C	0%	0%	0%	0%	0%	0%	0%

Rating transition study looks at how ratings have changed over a period of time. Based on NCR's weighted average one-year transition matrix, it can be inferred that out of all the A rated companies at the beginning of the year 91.44% have remain in the same category, 1.43% have been upgraded to AA and 7.14% have been downgraded to BBB category. Similar interpretation can be done for the other rating category as well.

Default Study:

NCR has also conducted default study for the clients rated during the period from the year 2011 to year 2017. Default study is carried out to see whether any issuer has default i.e. has gone down to the level of 'D' category. While conducting the default study NCR has used cohort method to calculate the performance of entities rated across various rating categories. Cumulative Default Rate (CDR) is calculated for each cohort within the period of study. The CDR is calculated over one-year, two-year and three-years time horizons to evaluate the performance of ratings over varying periods. Then, the issuer weighted average for one-year, two-year and three-year CDR is computed to arrive at long term CDR for each category. As ratings are a measure of probability of default, a higher rating given to an entity implies lower credit risk.

Rating Category	Year-1		Year-2		Year-3	
	Avg. No. of Issuer	CDR (%)	Avg. No. of Issuer	CDR (%)	Avg. No. of Issuer	CDR (%)
AAA	0	0.00%	0	0%	0.00	0%
AA	33	0.00%	32	0%	30.50	0%
A	290	0.00%	285	0%	274	0%
BBB	525	0.00%	488	0%	413	0%
BB	22	0.00%	21	0%	16	0%
B	0.66	0.00%	0.6	0%	0.50	0%
C	0.16	0.00%	0.2	0%	0.00	0%

The categories of AA, A, BBB, BB, B and C include ratings with the suffix '+' or '-' within the respective rating categories. From the above table it can be stated that NCR has experienced no CDR over one-year, two-year and three-year time horizons.