



FACTORS AFFECTING INVESTORS DECISIONS: AN EMPIRICAL ANALYSIS

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In the present paper thirty five variable have been taken which investors of Himachal Pradesh consider before making any investment decisions. These variables have been reduced to significant determinant of investment. . Kaiser-Meyer-Olkin Measure of sampling adequacy and Bartlett's Test of Sphericity has been applied to test the relationship between the variables. Factor analysis has been done using Principal Component Analysis to reduce the variables. Scree plot has also been used to verify the results of Principal Component Analysis.

Key words: variables, investors, Factors, Principal Component Analysis, Varimax, Scree Plot

Every individual is different because their aim, objective and tendency to take risk are different. Some investors are risk averse, while some are very speculative. For some investor safety of principal is their main objective, while for other investors return on investment or capital appreciation may be the principal objective. There are various parameters which investors consider while making investment decisions. In the present paper thirty five variables, which affect investment decision has been identified factor analysis has been done to reduce these variables to significant determinant of investment. These factors include safety, rate of return, liquidity and marketability, capital appreciation and tax benefits.

OBJECTIVES OF THE STUDY:

To study the factors which investors consider while making investment decisions.

Sampling Procedure:

At the first stage, three districts namely Kangra, Hamirpur and Una of Himachal Pradesh have been selected. At the second stage, from each selected district, three tehsils i.e. one most developed, one moderately developed and one less developed have been selected. Thus, the total number of tehsils are $3 \times 3 = 9$.

Tehsils located at district headquarter have been considered as most developed. Tehsils whose headquarter falls under Nagar Panchayat area have been defined as moderately developed. Tehsils located at Panchayat area has been classified as less developed.

At the third stage, two village panchayat have been selected randomly from each tehsil. This way the present study has been conducted in $9 \times 2 = 18$ village panchayats. At fourth stage, 30 households have been selected from each village panchayat using judgment sampling keeping in view various demographic characteristics of the population. Thus, the sample constitute 540 (18×30) respondents.

Methodology of Data Collection:

For accomplishing the objectives of the study, primary data have been utilized. A scale has been developed comprising of thirty five variables, which investors consider before investing. These variables are measured on 5-point likert scale i.e. (1) very good (2) good (3) average (4) below average (5) poor. All the respondents were asked to give their view on 5-point likert scale to what extent these variables affect their investment decisions. On the basis of their responses, factor analysis has been done to extract the factors from the observed variables, which affect their investment decisions.

As is evident from table 1.1.1(a) that the Keisar measure of sampling adequacy (MSA) is 0.924 and is far above the acceptance range of 0.3 for the population size of 540. As table 1.1.1(b) thirty five variables exceed the minimum acceptable level (MSA) and hence all the thirty five variables are statistically significant and collectively meet the necessary threshold of sampling adequacy with MSA value of 0.924. All the variables meet the fundamental requirement of the

factor analysis and indicate the high strength of inter relationship among the variables in the reduced set.

Table 1.1.1(a): KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy Bartlett's Test of Sphericity	0.924
Approx. Chi-Square	28641.683
Df	903
Sig.	0.000

Source: data collected through questionnaire.

In order to assess the factorability of correlation matrix, the overall significance of the correlation matrix with the Bartlett test, at 0.0001 level which is 28641.683 at 903 degree of freedom was done, which confirm the rejection of null hypothesis at one percent level of significance and hence, It classify the presence of non-zero correlations and shows high strength of inter relationship among the variables. All the measures tested above, indicate that the set of variables is appropriate for factor analysis.

Table 1.1.1(b): Measure of Sampling Adequacy(MSA) and Anti Image Correlation Between Variables Affecting Investment Decisions

		Variable1	Variable2	Variable3	Variable4	Variable5	Variable6	Variable7	Variable8	Variable9	Variable10	Variable11	Variable12	Variable13	Variable14	Variable15	Variable16	Variable17	Variable18	Variable19	Variable20	Variable21	Variable22	Variable23	Variable24	Variable25	Variable26	Variable27	Variable28	Variable29	Variable30	Variable31	Variable32	Variable33	Variable34	Variable35
Correlation	Variable1	1.000	.949	.876	.983	.973	.982	.976	.649	.648	.668	.668	.668	.668	.668	.453	.456	.462	.484	.493	.475	.506	.554	.619	.602	.594	.589	.618	.555	.765	.726	.730	.736	.736	.741	.751
	Variable2	.949	1.000	.860	.964	.953	.959	.959	.623	.619	.642	.642	.642	.642	.642	.446	.450	.455	.479	.477	.455	.492	.559	.626	.606	.599	.597	.628	.563	.750	.717	.719	.727	.727	.730	.742
	Variable3	.876	.860	1.000	.893	.878	.892	.885	.591	.581	.596	.596	.596	.596	.596	.393	.397	.401	.428	.434	.421	.426	.480	.525	.506	.498	.495	.524	.463	.640	.600	.597	.607	.607	.611	.621
	Variable4	.983	.964	.893	1.00	.985	.998	.993	.626	.620	.641	.641	.641	.641	.641	.415	.419	.422	.452	.459	.441	.475	.529	.592	.573	.566	.562	.593	.527	.751	.709	.707	.718	.718	.722	.733
	Variable5	.973	.953	.878	.985	1.000	.982	.981	.629	.631	.652	.652	.652	.652	.652	.436	.438	.442	.473	.477	.459	.492	.541	.604	.588	.580	.576	.604	.544	.767	.724	.723	.732	.732	.736	.747
	Variable6	.982	.959	.892	.998	.982	1.000	.991	.627	.621	.643	.643	.643	.643	.643	.414	.417	.421	.450	.458	.440	.474	.526	.588	.570	.563	.559	.589	.524	.749	.708	.706	.716	.716	.720	.731
	Variable7	.976	.959	.885	.993	.981	.991	1.000	.630	.625	.648	.648	.648	.648	.648	.426	.429	.432	.458	.464	.452	.482	.539	.602	.584	.577	.572	.600	.539	.753	.714	.712	.722	.722	.725	.736
	Variable8	.649	.623	.591	.626	.629	.627	.630	1.000	.921	.961	.961	.961	.961	.961	.742	.743	.743	.731	.720	.717	.699	.722	.781	.785	.786	.784	.769	.753	.698	.745	.759	.744	.744	.726	.737
	Variable9	.648	.619	.581	.620	.631	.621	.625	.921	1.000	.963	.963	.963	.963	.963	.732	.734	.731	.725	.709	.713	.688	.706	.763	.771	.774	.770	.768	.736	.700	.741	.754	.740	.740	.728	.733
	Variable10	.668	.642	.596	.641	.652	.643	.648	.961	.963	1.000	1.000	1.000	1.000	1.000	.773	.773	.771	.765	.749	.746	.724	.759	.816	.829	.827	.825	.817	.794	.732	.790	.806	.788	.788	.771	.781
	Variable11	.668	.642	.596	.641	.652	.643	.648	.961	.963	1.000	1.000	1.000	1.000	1.000	.773	.773	.771	.765	.749	.746	.724	.759	.816	.829	.827	.825	.817	.794	.732	.790	.806	.788	.788	.771	.781
	Variable12	.668	.642	.596	.641	.652	.643	.648	.961	.963	1.000	1.000	1.000	1.000	1.000	.773	.773	.771	.765	.749	.746	.724	.759	.816	.829	.827	.825	.817	.794	.732	.790	.806	.788	.788	.771	.781
	Variable13	.668	.642	.596	.641	.652	.643	.648	.961	.963	1.000	1.000	1.000	1.000	1.000	.773	.773	.771	.765	.749	.746	.724	.759	.816	.829	.827	.825	.817	.794	.732	.790	.806	.788	.788	.771	.781
	Variable14	.668	.642	.596	.641	.652	.643	.648	.961	.963	1.000	1.000	1.000	1.000	1.000	.773	.773	.771	.765	.749	.746	.724	.759	.816	.829	.827	.825	.817	.794	.732	.790	.806	.788	.788	.771	.781
	Variable15	.453	.446	.393	.415	.436	.414	.426	.742	.732	.773	.773	.773	.773	.773	1.000	.994	.988	.959	.971	.942	.892	.689	.703	.735	.736	.731	.715	.719	.512	.577	.598	.564	.564	.551	.560
	Variable16	.456	.450	.397	.419	.438	.417	.429	.743	.734	.773	.773	.773	.773	.773	.994	1.000	.982	.954	.966	.940	.890	.689	.709	.737	.740	.735	.719	.723	.515	.579	.600	.567	.567	.554	.563
	Variable17	.462	.455	.401	.422	.442	.421	.432	.743	.731	.771	.771	.771	.771	.771	.988	.982	1.000	.947	.960	.927	.887	.687	.705	.735	.733	.728	.717	.714	.511	.582	.598	.568	.568	.552	.563
	Variable18	.484	.479	.428	.452	.473	.450	.458	.731	.725	.765	.765	.765	.765	.765	.959	.954	.947	1.000	.945	.903	.833	.664	.679	.710	.711	.706	.693	.695	.543	.604	.623	.592	.592	.580	.590
	Variable19	.493	.477	.434	.459	.477	.458	.464	.720	.709	.749	.749	.749	.749	.749	.971	.966	.960	.945	1.00	.916	.882	.653	.668	.697	.698	.693	.677	.678	.515	.572	.591	.560	.560	.548	.558
	Variable20	.475	.455	.421	.441	.459	.440	.452	.717	.713	.746	.746	.746	.746	.746	.942	.940	.927	.903	.916	1.000	.854	.660	.684	.706	.706	.702	.678	.704	.509	.564	.580	.552	.552	.540	.547
	Variable21	.506	.492	.426	.475	.492	.474	.482	.699	.688	.724	.724	.724	.724	.724	.892	.890	.887	.833	.882	.854	1.000	.661	.675	.698	.700	.695	.695	.673	.499	.532	.557	.530	.530	.519	.527
	Variable22	.554	.559	.480	.529	.541	.526	.539	.722	.706	.759	.759	.759	.759	.759	.689	.689	.687	.664	.653	.660	.661	1.000	.924	.907	.934	.925	.906	.907	.599	.644	.684	.657	.657	.631	.644
	Variable23	.619	.626	.525	.592	.604	.588	.602	.781	.763	.816	.816	.816	.816	.816	.703	.709	.705	.679	.668	.684	.675	.924	1.000	.951	.977	.970	.951	.948	.684	.744	.769	.754	.754	.723	.740
	Variable24	.602	.606	.506	.573	.588	.570	.584	.785	.771	.829	.829	.829	.829	.829	.735	.737	.735	.710	.697	.706	.698	.907	.951	1.000	.966	.960	.935	.936	.688	.747	.778	.758	.758	.731	.744
	Variable25	.594	.599	.498	.566	.580	.563	.577	.786	.774	.827	.827	.827	.827	.827	.736	.740	.733	.711	.698	.706	.700	.934	.977	.966	1.000	.985	.965	.967	.667	.727	.762	.737	.737	.705	.721
	Variable26	.589	.597	.495	.562	.576	.559	.572	.784	.770	.825	.825	.825	.825	.825	.731	.735	.728	.706	.693	.702	.695	.925	.970	.960	.985	1.00	.956	.959	.685	.736	.771	.747	.747	.716	.734
	Variable27	.618	.628	.524	.593	.604	.589	.600	.769	.768	.817	.817	.817	.817	.817	.715	.719	.717	.693	.677	.678	.695	.906	.951	.935	.965	.956	1.00	.932	.671	.729	.763	.740	.740	.710	.726
	Variable28	.555	.563	.463	.527	.544	.524	.539	.753	.736	.794	.794	.794	.794	.794	.719	.723	.714	.695	.678	.704	.673	.907	.948	.936	.967	.959	.932	1.000	.659	.707	.743	.717	.717	.685	.700
	Variable29	.765	.750	.640	.751	.767	.749	.753	.698	.700	.732	.732	.732	.732	.732	.512	.515	.511	.543	.515	.509	.499	.599	.684	.688	.667	.685	.671	.659	1.00	.913	.918	.930	.930	.932	.929
	Variable30	.726	.717	.600	.709	.724	.708	.714	.745	.741	.790	.790	.790	.790	.790	.577	.579	.582	.604	.572	.564	.532	.644	.744	.747	.727	.736	.729	.707	.913	1.00	.974	.989	.989	.976	.979
	Variable31	.730	.719	.597	.707	.723	.706	.712	.759	.754	.806	.806	.806	.806	.806	.598	.600	.598	.623	.591	.580	.557	.684	.769	.778	.762	.771	.763	.743	.918	.974	1.00	.987	.987	.970	.975
	Variable32	.736	.727	.607	.718	.732	.716	.722	.744	.740	.788	.788	.788	.788	.788	.564	.567	.568	.592	.560	.552	.530	.657	.754	.758	.737	.747	.740	.717	.930	.989	.987	1.000	1.000	.986	.989
	Variable33	.736	.727	.607	.718	.732	.716	.722	.744	.740	.788	.788	.788	.788	.788	.564	.567	.568	.592	.560	.552	.530	.657	.754	.758	.737	.747	.740	.717	.930	.989	.987	1.000	1.000	.986	.989
	Variable34	.741	.730	.611	.722	.736	.720	.725	.726	.728	.771	.771	.771	.771	.771	.551	.554	.552	.580	.548	.540	.519	.631	.723	.731	.705	.716	.710	.685	.932	.976	.970	.986	.986	1.000	.978
	Variable35	.751	.742	.621	.733	.747	.731	.736	.737	.733	.781	.781	.781	.781	.781	.560	.563	.563	.590	.558	.547	.527	.644	.740	.744	.721	.734	.726	.700	.929	.979	.975	.989	.989	.978	1.000

Diagonal values are Measure of Sampling Adequacy (MSA)

Off diagonal values are anti image correlation.

Total Variance

Table 1.1.2 shows the total variance explained. Further, table shows all the factors extractable from the analysis along with their eigen values, the percent of variance attributable to each factor, the cumulative variance of the factor and the previous factors. Eigen value equal to one or more constitutes the factors. In the present sample, five variables have eigen values greater than one and hence five factors are constituted.

Table 1.1.2: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared.		Extraction
	Total	% of Variance	Cumulative %	Total	% of Variance	
1	25.465	72.757	72.757	25.465	72.757	.971
2	4.080	11.657	84.414	4.080	11.657	.946
3	1.850	5.285	89.699	1.850	5.285	.859
4	1.303	3.723	93.422	1.303	3.723	.993
5	1.013	2.895	96.318	1.013	2.895	.974
6	.201	.573	96.891			.989
7	.150	.430	97.321			.983
8	.120	.343	97.663			.930
9	.107	.306	97.970			.926
10	.099	.282	98.251			.984
11	.083	.236	98.487			.984
12	.063	.179	98.666			.984
13	.056	.176	98.842			.984
14	.053	.152	98.993			.984
15	.050	.142	99.135			.982
16	.045	.130	99.265			.975
17	.038	.108	99.373			.965
18	.035	.100	99.473			.921
19	.028	.081	99.554			.941
20	.028	.079	99.633			.901
21	.023	.067	99.700			.839
22	.021	.059	99.759			.914
23	.020	.058	99.816			.967
24	.019	.046	99.862			.949
25	.015	.035	99.897			.986
26	.010	.027	99.924			.975
27	.009	.022	99.946			.946
28	.007	.019	99.965			.948
29	.004	.010	99.975			.910
30	.001	.005	99.980			.978
31	.001	.005	99.985			.978
32	.001	.004	99.989			.995
33	.001	.004	99.993			.995
34	.001	.003	99.996			.980
35	.001	.003	100.0			.983

Extraction Method: Principal Component Analysis.

Extraction Method: Principal Component Analysis

Principal component analysis method has been used to extract the factors in rotated and unrotated matrix.

Table 1.1.3: Unrotated Component Analysis Factor Matrix

	Component					Extraction
	1	2	3	4	5	
Variable1	.799	.503	.266	-.096	.011	0.971
Variable2	.786	.497	.246	-.132	.054	0.946
Variable3	.700	.475	.345	-.129	-.079	0.859
Variable4	.776	.545	.284	-.112	.006	0.993
Variable5	.788	.523	.267	-.096	.024	0.974
Variable6	.775	.545	.284	-.107	.002	0.989
Variable7	.782	.532	.275	-.115	.008	0.983
Variable8	.901	-.113	-.004	.087	-.332	0.930
Variable9	.895	-.107	-.005	.106	-.353	0.926
Variable10	.939	-.121	-.035	.092	-.303	0.984
Variable11	.938	-.120	-.034	.091	-.302	0.984
Variable12	.939	-.121	-.035	.092	-.303	0.984
Variable13	.938	-.120	-.034	.091	-.302	0.984
Variable14	.939	-.122	-.051	.102	-.303	0.984
Variable15	.807	-.495	.253	-.110	.145	0.982
Variable16	.809	-.490	.249	-.104	.144	0.975
Variable17	.805	-.481	.252	-.103	.141	0.965
Variable18	.806	-.420	.251	-.149	.154	0.921
Variable19	.795	-.432	.317	-.126	.164	0.941
Variable20	.786	-.437	.275	-.092	.140	0.901
Variable21	.773	-.383	.302	-.017	.128	0.839
Variable22	.831	-.199	-.177	.389	.052	0.914
Variable23	.893	-.137	-.217	.321	.051	0.967
Variable24	.897	-.172	-.207	.264	.057	0.949
Variable25	.895	-.195	-.208	.322	.045	0.986
Variable26	.894	-.187	-.225	.300	.055	0.975
Variable27	.889	-.147	-.185	.313	.044	0.946
Variable28	.865	-.210	-.229	.312	.077	0.948
Variable29	.841	.324	-.188	.206	.138	0.910
Variable30	.882	.230	-.262	.246	.137	0.978
Variable31	.898	.200	-.269	.204	.136	0.978
Variable32	.885	.248	-.281	.225	.142	0.995
Variable33	.884	.247	-.279	.224	.141	0.995
Variable34	.870	.270	-.256	.250	.147	0.980
Variable35	.881	.267	-.250	.228	.144	0.983
Total	1	2	3	4	5	Total
Eigen values	25.465	4.080	1.850	1.303	1.013	33.711
% or Trace	72.757	11.657	5.285	3.723	2.895	96.318

Extraction Method: Principal Component Analysis.

Table 1.1.3 shows that in unrotated component analysis factor matrix the first factor explains 72.757 percent of variance and the fifth factor explains 2.7895 percent of the variance. While the

second, third and forth factor explained 11.657 percent, 5.285 and 3.723 percent of variance. All the remaining factors are not significant as their eigen values are less than one.

Unrotated Component Analysis Factor Matrix

As is evident from the table that the information regarding thirty five variables and their relative explanatory power as expressed by their eigen value. Eigen values helps in selecting the number of components on the basis of their importance and the value of the variance explained. On applying latent root criterion, five components have been retained.

Table 1.1.3. shows the unrotated component analysis factor matrix. Six columns are shown in table. The first five are the results that are extracted by factor loading of each variable on each of the factor. The last column provides summary statistics detailing how well each variables is explained by five components. The first of numbers at the bottom of each column in the sum of the square factor loading (eigen value) and indicates the relative importance of each of factor in accounting for the variance associated with the set of variables being analysed. The eigen values for the first five factors are 25.465, 4.080, 1.850, 1.303 and 1.013. The factor solution has extracted the factors in order of their importance. The factor one has accounted for the most variance while the fifth factor has explained the least variance. At the extreme right hand side of eigen values row, is the number 33.711 which represent the total variance explained by five factors. In term of percentage the total variance explained is 96.318 percent. The total variance explained by the factor solution is compared to the total variation in the set of variables as represented by traces of matrices. The trace is the total variance to be explained and is equal to the sum of eigen values of the variable set and in component analysis, the trace is equal to the number of variable, as each variable has possible eigen value of 1 or more. The five factors explained 72.757 percent, 11.657 percent, 5.285 percent, 3.723 percent 2.895 percent of variance respectively are shown in the last row of the value of table. As the table of unrotated matrix shows that all the five factors accounts for the large amount of variance and are the general factors, with every variable having a high loading.

VARIMAX-Rotated Component Analysis

Factor matrix based on unrotated factor loading pattern makes interpretation difficult and theoretically less meaningful. Therefore, the only way is to rotate the factor matrix to redistribute

variance from the earlier factors to the latter factors. Rotation results in a simpler and theoretically more meaningful pattern. The VARIMAX rotated component analysis factor matrix is shown in Table 1.1.4. The total variance explained by this method is same as that of unrotated matrix i.e. 96.318. In the present method, the variance has been redistributed so that the factor loading pattern and the percentage of variance for each of the factor is different. In the VARIMAX rotated factor solution, the first factor accounts for 23.918 percent of variance as compared to 72.757 percent in unrotated solution. The second, third, fourth and fifth accounts for 22.758 percent, 18.873 percent, 18.519 percent and 12.249 percent versus 11.657 percent, 5.285 percent, 3.723 percent and 2.895 percent respectively in unrotated solution.

Thus the explanatory power has shifted slightly to more even distribution because of rotation. Secondly, the interpretation has been simplified. Figures in table shows the load significance on all the five factors with a VARIMAX rotation of thirty five variables of investment factors of households.

Table 1.1.4: VARIMAX -Rotated Component Factor Matrix

	Component					Extraction
	1	2	3	4	5	
Variable1	.197	.874	.309	.204	.178	0.971
Variable 2	.188	.862	.306	.239	.239	0.946
Variable 3	.171	.857	.166	.148	.148	0.859
Variable 4	.162	.905	.290	.188	.188	0.993
Variable 5	.183	.883	.313	.195	.195	0.974
Variable 6	.161	.904	.289	.183	.183	0.989
Variable 7	.169	.895	.293	.200	.200	0.983
Variable 8	.438	.320	.789	.343	.343	0.930
Variable 9	.429	.316	.771	.324	.324	0.926
Variable 10	.455	.315	.735	.374	.374	0.984
Variable 11	.454	.314	.781	.373	.373	0.984
Variable 12	.455	.315	.770	.374	.374	0.984
Variable 13	.454	.314	.751	.373	.373	0.984
Variable 14	.455	.315	.775	.374	.374	0.984
Variable 15	.894	.135	.195	.293	.293	0.982
Variable 16	.888	.139	.196	.299	.299	0.975
Variable 17	.883	.145	.197	.294	.294	0.965
Variable 18	.858	.177	.242	.249	.249	0.921
Variable 19	.891	.202	.189	.236	.236	0.941
Variable 20	.854	.182	.179	.275	.275	0.901
Variable 21	.807	.243	.128	.300	.300	0.839
Variable 22	.373	.246	.219	.789	.182	0.914
Variable 23	.361	.282	.323	.771	.243	0.967
Variable 24	.404	.252	.343	.735	.246	0.949

Variable 25	.400	.247	.301	.781	.247	0.986
Variable 26	.395	.239	.327	.770	.239	0.975
Variable 27	.381	.288	.304	.751	.288	0.946
Variable 28	.396	.210	.311	.775	.210	0.948
Variable 29	.209	.471	.735	.250	.735	0.910
Variable 30	.259	.378	.789	.292	.789	0.978
Variable 31	.272	.371	.768	.340	.768	0.978
Variable 32	.238	.387	.796	.314	.796	0.995
Variable 33	.237	.386	.795	.313	.795	0.995
Variable 34	.235	.403	.797	.273	.797	0.980
Variable 35	.240	.413	.785	.292	.785	0.983

Total	1	2	3	4	5	Total
Eigen values	8.371	7.965	6.606	6.482	4.287	33.711
% or Trace	23.918	22.758	18.873	18.519	12.249	96.318

Extraction Method: Principal Component Analysis.

Scree Plot

Figures 1.1.6 shows the scree plot of the sample. This exhibits plots the thirty five variables extracted in the study. Starting with the first factor, the plot slopes steeply down ward initially and then slowly become horizontal line. The curve become straight line after fifth. Variable. Hence scree plot also suggests to consider five factors.

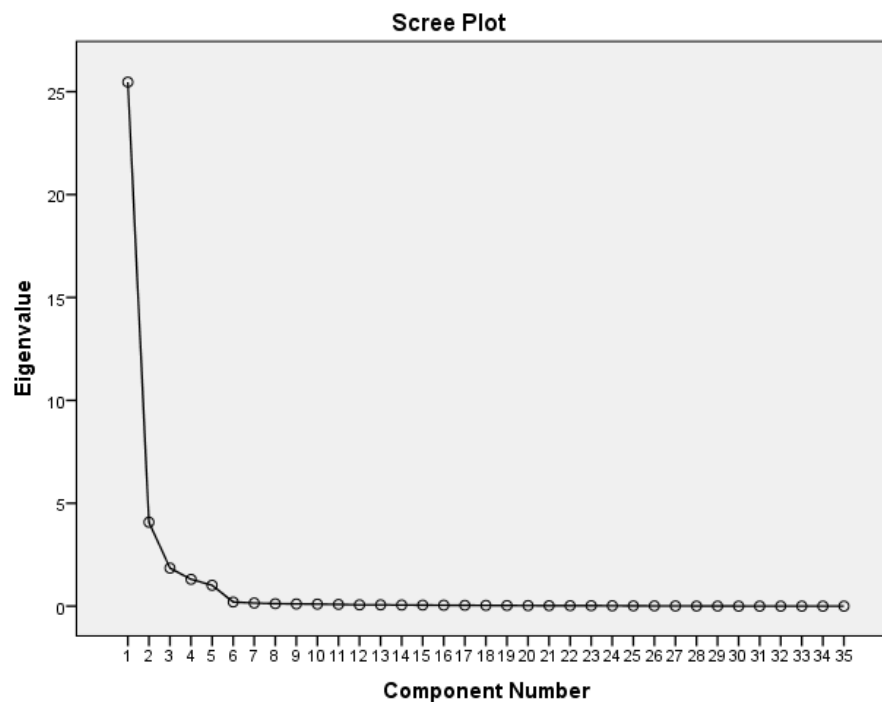


Fig. 1.6: Scree Plot

Grouping and Naming the Factor

The factor 1 to 5 are named as safety factor, rate of return ,liquidity and marketability, capital appreciation factor and tax saving factor. All the five factors together named as. 'Factors affecting Investment decision of Investors in Shivalik Hills of Himachal Pradesh'.

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