Matrix Spectral Decomposition (matSpD) - RESULTS

Your Uploaded Correlation Matrix (absolute values to 4 decimal places):

	1	2	3	4	5	6	7	8
1	1.0000	-0.0977	0.0329	0.1146	0.1521	0.2398	0.1388	0.1359
2	-0.0977	1.0000	0.0544	0.4868	0.5085	0.0571	0.4129	0.4164
3	0.0329	0.0544	1.0000	0.0198	0.0289	0.0340	0.0339	0.0109
4	0.1146	0.4868	0.0198	1.0000	0.8939	0.5733	0.6609	0.6665
5	0.1521	0.5085	0.0289	0.8939	1.0000	0.6524	0.7247	0.7293
6	0.2398	0.0571	0.0340	0.5733	0.6524	1.0000	0.6416	0.6440
7	0.1388	0.4129	0.0339	0.6609	0.7247	0.6416	1.0000	0.9957
8	0.1359	0.4164	0.0109	0.6665	0.7293	0.6440	0.9957	1.0000

Original (total) number of variables (V) after removing redundant (collinear) variables:

8

For factor 1 to V, original eigenvalues associated with the correlation matrix:

1 4.1641
2 1.0299
3 1.0129
4 0.8985
5 0.5435
6 0.2528
7 0.0944
8 0.0040

Variance of the observed eigenvalues:

1.8002

Effective number of independent variables [Veff]:

6.4248

Significance threshold required to keep Type I error rate at 5% (0.05/Veff):

0.00778233889172269

USING THE REPORTEDLY MORE ACCURATE ESTIMATE OF THE Veff [VeffLi] PROPOSED BY LI AND JI (2005):

Effective Number of Independent Variables [VeffLi] (using Equation 5 of Li and Ji 2005):

5

Experiment-wide Significance Threshold Required to Keep Type I Error Rate at 5%:

0.0102062183130115

NB: I recommend using the Li and Ji (2005) approach only if VeffLi < Veff.

SELECT A SUBSET OF VARs WHILE OPTIMISING INFORMATION:

For factor 1 to V, Eigenvalues and Proportion of Variance, with no Rotation:

```
 1 4.1641 0.5205
 2 1.0299 0.1287
 3 1.0129 0.1266
 4 0.8985 0.1123
 5 0.5435 0.0679
 6 0.2528 0.0316
 7 0.0944 0.0118
 8 0.0040 0.0005


 Principal component coefficients for unrotated matrix:
  - Columns represent factors (principal components) 1 to V
  - Rows represent Variable 1 to V

  VAR 1       2       3       4       5       6       7       8
1 V1  -0.2284 0.7663  -0.0184 0.5944  -0.0412 -0.072  0       2e-04
2 V2  -0.5415 -0.4469 -0.3738 0.5453  -0.0836 0.2493  0.0274  -2e-04
3 V3  -0.0464 0.2671  -0.9015 -0.3368 0.0016  -0.0184 0       0.001
4 V4  -0.8688 -0.1394 -0.0284 0.0395  0.3838  -0.2052 0.1842  -3e-04
5 V5  -0.9169 -0.0859 -0.0183 0.0265  0.2986  -0.0648 -0.2398 0
6 V6  -0.7449 0.3797  0.2225  -0.3112 0.1619  0.3553  0.0461  -3e-04
7 V7  -0.9114 -0.0106 0.0583  -0.1369 -0.3723 -0.0811 0.005   -0.0442
8 V8  -0.914  -0.0205 0.0778  -0.1285 -0.3654 -0.0774 0.0066  0.0447


 Factor "loadings" with no rotation:
  - Columns represent factors 1 to V
  - Rows represent Variable 1 to V
  - Variables contributing the MOST to each unrotated factor are designated by a "1"

  VAR 1 2 3 4 5 6 7 8
1 V1  0 1 0 1 0 0 0 0
2 V2  0 0 0 0 0 0 0 0
3 V3  0 0 1 0 0 0 0 0
4 V4  0 0 0 0 1 0 0 0
5 V5  1 0 0 0 0 0 1 0
6 V6  0 0 0 0 0 1 0 0
7 V7  0 0 0 0 0 0 0 0
8 V8  0 0 0 0 0 0 0 1

  => Select one VAR to represent either:
     i.   each factor,
     ii.  the factors with the largest Veff eigenvalues, or
     iii. the factors explaining a selected proportion of variance.


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 SELECT A SUBSET OF VARs WHILE OPTIMISING INFORMATION:

 For factor 1 to V, Eigenvalues and Proportion of Variance, after Varimax Rotation:

 1 2.1721 0.2715
 2 1.0165 0.1271
 3 1.0009 0.1251
 4 1.0724 0.1340
 5 1.6923 0.2115
 6 0.9358 0.1170
 7 0.1061 0.0133
 8 0.0040 0.0005


 Principal component coefficients for varimax-rotated matrix:
  - Columns represent factors (principal components) 1 to V
  - Rows represent Variable 1 to V

  VAR 1       2      3       4       5      6       7       8
1 V1  -0.0549 0.993  -0.0154 0.0387  0.0411 0.0863  -0.0041 0
2 V2  -0.2097 0.0437 -0.0288 0.9446  0.242  -0.0486 -0.0122 0
3 V3  -0.007  0.0151 -0.9995 0.024   0.0058 0.012   -8e-04  -1e-04
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```
4 V4  -0.353  0.0346 -0.0041 0.2219  0.8779 0.1932  0.1298  0
5 V5  -0.4227 0.0617 -0.0107 0.2574  0.761  0.2892  -0.2973 0
6 V6  -0.4041 0.1353 -0.0189 -0.0752 0.321  0.8421  -0.0151 0
7 V7  -0.9122 0.0513 -0.0183 0.1667  0.2962 0.2171  -0.0154 -0.0441
8 V8  -0.909  0.0483 0.0047  0.1706  0.3023 0.2206  -0.0146 0.0448


 Factor "loadings" after varimax rotation:
  - Columns represent factors 1 to V
  - Rows represent Variable 1 to V
  - Variables contributing the MOST to each rotated factor are designated by a "1"

  VAR 1 2 3 4 5 6 7 8
1 V1  0 1 0 0 0 0 0 0
2 V2  0 0 0 1 0 0 0 0
3 V3  0 0 1 0 0 0 0 0
4 V4  0 0 0 0 1 0 0 0
5 V5  0 0 0 0 0 0 1 0
6 V6  0 0 0 0 0 1 0 0
7 V7  1 0 0 0 0 0 0 0
8 V8  0 0 0 0 0 0 0 1

  => Select one VAR to represent either:
     i.   each factor,
     ii.  the factors with the largest Veff eigenvalues, or
     iii. the factors explaining a selected proportion of variance.


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 SELECT A SUBSET OF VARs WHILE OPTIMISING INFORMATION:

 For factor 1 to V, Eigenvalues and Proportion of Variance, after Promax Rotation:

 1 1.9521 0.2620
 2 0.9999 0.1342
 3 1.0000 0.1342
 4 0.9922 0.1332
 5 1.3017 0.1747
 6 0.9335 0.1253
 7 0.2679 0.0359
 8 0.0043 0.0006


 Principal component coefficients for promax-rotated matrix:
  - Columns represent factors (principal components) 1 to V
  - Rows represent Variable 1 to V

  VAR 1       2     3  4      5      6      7       8
1 V1  0       1     0  0      0      1e-04  0       0
2 V2  -0.0028 0     0  0.9961 0.0057 0      0       0
3 V3  0       0     -1 0      0      0      0       0
4 V4  -0.0223 0     0  0.003  0.9933 0.0027 0.0188  0
5 V5  -0.0458 0     0  0.0055 0.5607 0.0134 -0.5172 0
6 V6  -0.0383 3e-04 0  0      0.0178 0.9661 0       0
7 V7  -0.9939 0     0  0.001  0.0129 0.0043 0       -0.0452
8 V8  -0.9799 0     0  0.0011 0.014  0.0046 0       0.0479


 Factor "loadings" after promax rotation:
  - Columns represent factors 1 to V
  - Rows represent Variable 1 to V
  - Variables contributing the MOST to each rotated factor are designated by a "1"

  VAR 1 2 3 4 5 6 7 8
1 V1  0 1 0 0 0 0 0 0
2 V2  0 0 0 1 0 0 0 0
3 V3  0 0 1 0 0 0 0 0
4 V4  0 0 0 0 1 0 0 0
5 V5  0 0 0 0 0 0 1 0
6 V6  0 0 0 0 0 1 0 0
```

```
7 V7  1 0 0 0 0 0 0 0
8 V8  0 0 0 0 0 0 0 1

  => Select one VAR to represent either:
     i.   each factor,
     ii.  the factors with the largest Veff eigenvalues, or
     iii. the factors explaining a selected proportion of variance.
```

If the results are incomplete between the above two lines there must be a problem with your input file => please re-check. However, if you are 100% confident that your input file is correct but cannot get any results, please email me your input files and detail your problem.

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