1. Checked if there is a patterned relationship amongst our variables

1)Determinant score(Haitovsky's test)

- test if this score is significantly different from zero which indicates an absence of multicollinearity.

- check if this score is above the rule of thumb of 0.00001 as this indicates an absence of multicollinearity. :0.002

2) Confirming an acceptable Kaiser-Meyer-Olkin measures of sample adequacy

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.897
Bartlett's Test of Sphericity	Approx. Chi-Square	3200.962
	df	136
	Sig.	.000

- KMO : 0.897 (it is acceptable) / values closer to 1 are better

- Bartlett's Test : p: 0.000 we reject the null hypothesis

(H0: the correlation matrix is an identity matrix)

=> Our data is suitable for EFA

2. Remove crossloading variables(Rotated Factor Matrix)

- A crossloading is when an item loads at .32 or higher on two or more factors (Costello & Osborne, 2005)

- First, we choose a significant loading cut-off to make interpretation easier

(The larger the sample size, smaller loadings are allowed for a factor to be considered significant(Stevens, 2002)

- Second, the crossloading variables are dropped.

First, I got the table as follows.

Pattern Matrix[a]

	Component				
	1	2	3	4	5
q1	-.442		.433		.358
q2		.584			
q3			.843		
q4			.673		
q5			.594		

q6	.429				
q7					.768
q8					.669
q9		.444			
q10	.627				
q11			.530		
q12	.640				
q13	.742				
q14	.779				
q15	.395	.471			
q16		.827			
q17		.616			
q18			.395		
q19		.772			
q20	.831				
q21				.464	
q22				.734	
q23				.692	
q24				.812	

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 8 iterations.

I removed Q1

Pattern Matrix[a]

	Component				
	1	2	3	4	5
q2		.550			
q3			.849		
q4			.676		
q5			.580		
q6					
q7					.812
q8					.773
q9		.441			
q10	.570				
q11	-.352		.496		
q12	.701				
q13	.798				

q14	.838				
q15	.534	.403			
q16		.786			
q17		.581			
q18			.417		
q19		.760			
q20	.812				
q21				.492	
q22				.746	
q23				.715	
q24				.778	

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Pattern Matrixa

I removed q11

	Component				
	1	2	3	4	5
q2		.543			
q3				.848	
q4				.679	
q5				.574	
q6				.371	.375
q7					.809
q8					.774
q9		.437			
q10	.557				
q12	.730				
q13	.816				
q14	.860				
q15	.574	.388			
q16		.775			
q17		.571			
q18				.400	
q19		.756			
q20	.810				
q21			.519		
q22			.734		
q23			.735		

q24			.751		

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

I removed q6

Pattern Matrix[a]

	Component			
	1	2	3	4
q2		.616		
q3				.813
q4				.619
q5				.631
q7		.543		
q8		.523		
q9		.537		
q10	.584			
q12	.743			
q13	.830			
q14	.871			
q15	.567			
q16		.773		
q17		.630		
q18				.307
q19		.885		
q20	.838			
q21			.550	.339
q22			.699	
q23			.756	
q24			.674	

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

I removed q18 ,and got the final pattern Matrix

Pattern Matrix[a]

	Component			
	1	2	3	4
q2		.621		
q3				.815
q4				.592
q5				.646
q7		.535		
q8		.516		
q9		.543		
q10	.583			
q12	.741			
q13	.826			
q14	.870			
q15	.567			
q16		.776		
q17		.633		
q19		.885		
q20	.840			
q21			.554	
q22			.703	
q23			.760	
q24			.681	

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

- To determine whether our rotation technique is suitable, I checked the Factor Transformation Matrix's off diagonal elements. A suitable rotation technique will result in a nearly symmetrical off-diagonal element.

Component Transformation Matrix

Component	1	2	3	4
1	1.000	.605	.137	.236
2	.605	1.000	.261	.346
3	.137	.261	1.000	.413
4	.236	.346	.413	1.000

This transformation matrix has symmetrical off-diagonal elements. So, the rotation we selected is acceptable.

3. Determine the number of significant factors

- 1) Rotated eigenvalues

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.779	33.893	33.893	6.779	33.893	33.893	5.479
2	2.301	11.506	45.400	2.301	11.506	45.400	5.506
3	1.176	5.881	51.280	1.176	5.881	51.280	2.838
4	1.106	5.528	56.808	1.106	5.528	56.808	2.883
5	.956	4.778	61.586				

- The factors are arranged in the descending order based on the most explained variance.

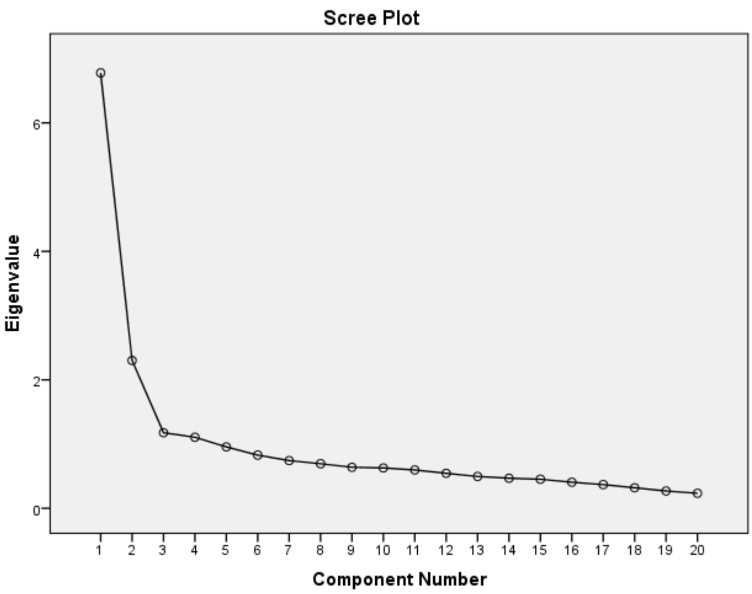
(The first factor will always account for the most variance(and hence have the highest eigenvalue), and the next factor will account for as much of the left over variance as it can and so on.)

- The Extraction Sums of Squared Loadings is identical to the Initial Eigenvalues except factors that have eigenvalues less than 1 are not shown.

(In this case, four factors are retained. so there are four rows.)

- The Rotation Sums of Squared Loadings show you the eigenvalues after Promax rotation.

2) Scree Plot



-The scree plot graphs the eigenvalue against the factor number. You can see these values in the first two columns of the table immedeiately above. From the fourth factor on, the line is almost flat, meaning the each successive factor is accounting for smaller and smaller amounts of the total variance.

4. Principal Axis Factor

- I tried to adjust Principal Axis Factor as the data violate the assumption of multivariate normality. (Left skewed)

(Principal Axis Factor is recommended when the data violate the assumption of multivariate normality (Costello & Osborne, 2005)

Total Variance Explained

Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
5.769	33.932	33.932	5.295	31.147	31.147	4.549
2.118	12.460	46.392	1.623	9.545	40.692	4.313
1.168	6.873	53.265	.688	4.048	44.740	2.151
1.089	6.409	59.674	.456	2.683	47.423	2.689

Pattern Matrix[a]

	Factor			
	1	2	3	4
q2		.514		
q3				.683
q4				.477
q5				.404
q9		.382		
q10	.527			
q12	.702			
q13	.831			
q14	.879			
q16		.829		
q17		.659		
q19		.719		
q20	.721			
q21			.551	
q22			.540	
q23			.793	
q24			.456	

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Factor Transformation Matrix

Factor	1	2	3	4
1	1.000	.693	.175	.388
2	.693	1.000	.258	.473
3	.175	.258	1.000	.564
4	.388	.473	.564	1.000

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.897
Bartlett's Test of Sphericity	Approx. Chi-Square	3200.962
	df	136
	Sig.	.000