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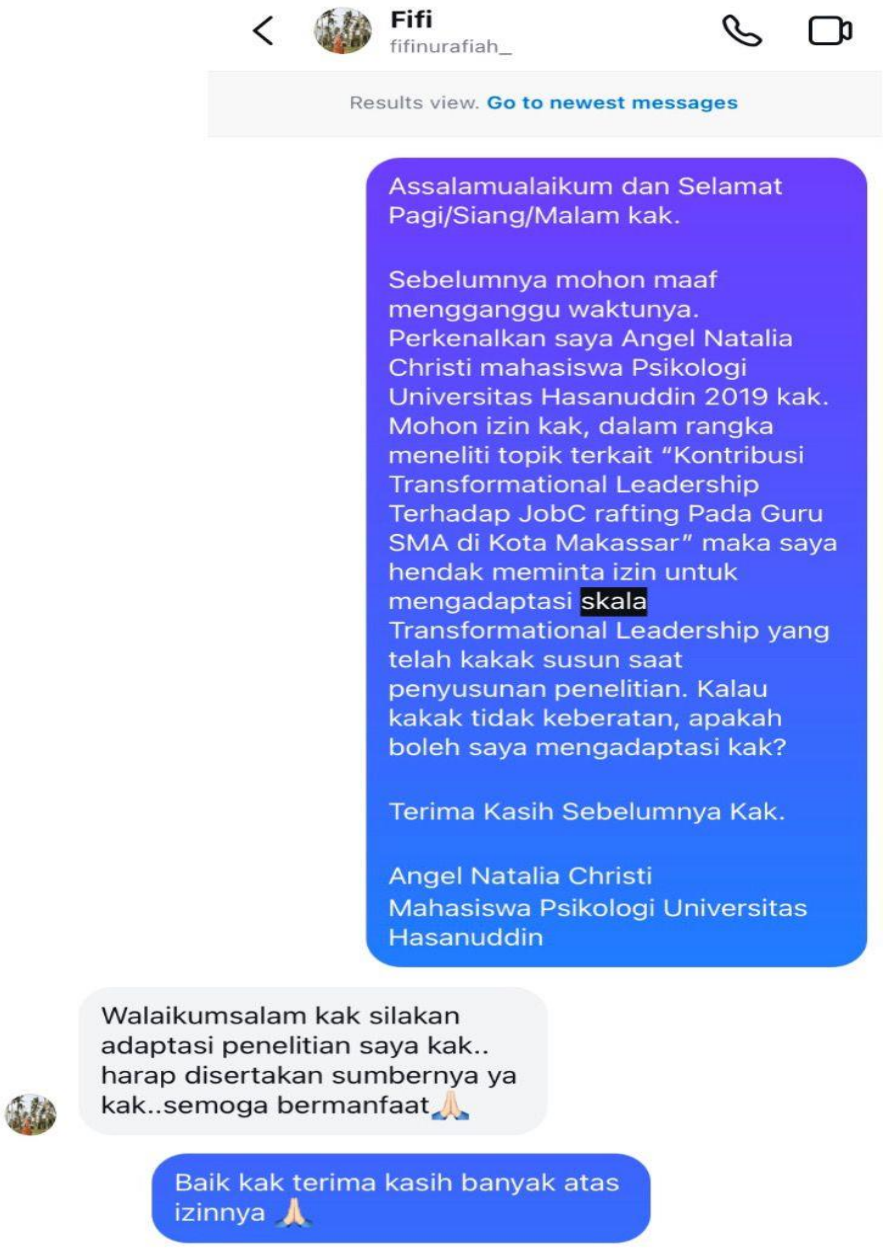
LAMPIRAN

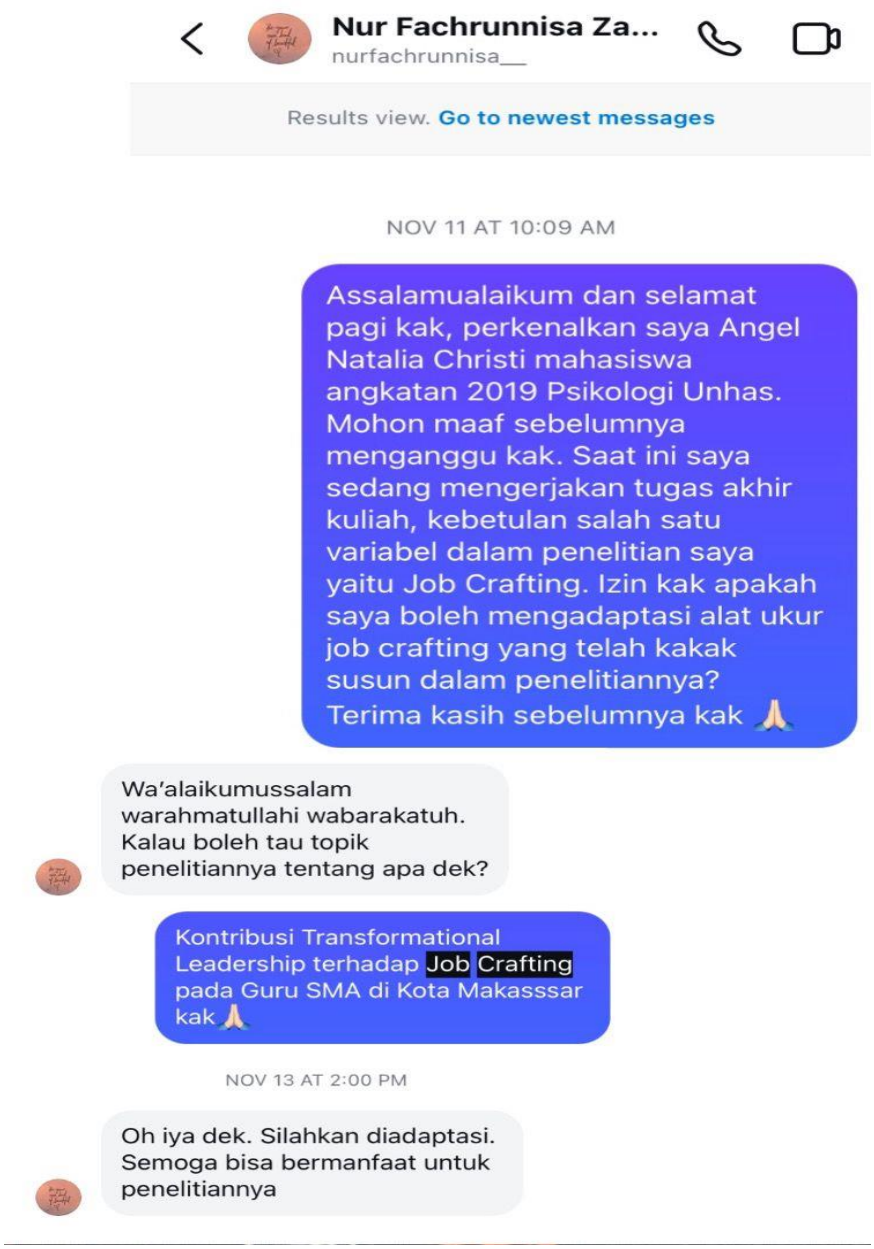
Lampiran 1

Izin Adaptasi Alat Ukur

Tranformational Leadership Scale



Job Crafting Scale



Lampiran 2

Isi *Google Form*

Kuesioner Penelitian

Assalamualaikum Warahmatullahi Wabarakatuh

Selamat Pagi/Siang/Sore/Malam

Perkenalkan saya Angel Natalia Christi, mahasiswi Program Studi Psikologi Fakultas Kedokteran Universitas Hasanuddin. Saat ini saya sedang melakukan pengambilan data dalam rangka penyelesaian tugas akhir (Skripsi). Keikutsertaan Bapak/Ibu dalam survie ini bersifat sukarela tanpa ada paksaan dari pihak manapun. Diharapkan pengisian kuesioner sesuai dengan diri Anda karena tidak ada jawaban yang benar ataupun salah. Saya akan menjaga kerahasiaan dari segala informasi yang Anda berikan. Informasi yang Anda berikan hanya akan dipergunakan untuk kepentingan penelitian.

Terima Kasih.

Surat Izin Penelitian

PEMERINTAH PROVINSI SULAWESI SELATAN
DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU
Jl.Bougenville No.5 Telp. (0411) 441077 Fax. (0411) 448936
Website : http://simap-new.sulselprov.go.id Email : ptsp@sulselprov.go.id
Makassar 90231

Nomor : **1004/S.01/PTSP/2024**
Lampiran : -
Perihal : **Izin penelitian**

Kepada Yth.
Kepala Dinas Pendidikan Prov. Sulawesi Selatan

di-
Tempat

Berdasarkan surat Dekan Fak. Kedokteran Univ. Hasanuddin Makassar Nomor : 704/UN4.6.8/PT.01.04/2024 tanggal 16 Janauri 2024 perihal tersebut diatas, mahasiswa/peneliti dibawah ini:

N a m a	:	**ANGEL NATALIA CHRISTI**
Nomor Pokok	:	C021191023
Program Studi	:	Psikologi
Pekerjaan/Lembaga	:	Mahasiswa (S1)
Alamat	:	Jl. P. Kemerdekaan Km,. 10 Makassar

Bermaksud untuk melakukan penelitian di daerah/kantor saudara dalam rangka menyusun SKRIPSI, dengan judul :

" KONTRIBUSI TRANSFORMATIONAL LEADERSHIP TERHADAP JOB CRAFTING PADA GURU SMA DI KOTA MAKASSAR "

Yang akan dilaksanakan dari : Tgl. ***16 Januari s/d 16 Maret 2024***

Sehubungan dengan hal tersebut diatas, pada prinsipnya kami ***menyetujui*** kegiatan dimaksud dengan ketentuan yang tertera di belakang surat izin penelitian.

Demikian Surat Keterangan ini diberikan agar dipergunakan sebagaimana mestinya.

Diterbitkan di Makassar
Pada Tanggal 16 Januari 2024

KEPALA DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU PROVINSI SULAWESI SELATAN

ASRUL SANI, S.H., M.Si.
Pangkat : PEMBINA TINGKAT I
Nip : 19750321 200312 1 008

Tembusan Yth
1. Dekan Fak. Kedokteran Univ. Hasanuddin Makassar di Makassar;
2. *Pertinggal.*

Apakah Anda bersedia?

□ Ya

□ Tidak

Data Diri Partisipan

Silahkan isi biodata Anda dengan benar, data yang Anda isi hanya akan digunakan untuk keperluan penelitian.

Email:

Nama/Inisial:

Jenis Kelamin:

□ Wanita

□ Pria

Usia:

Asal Suku:

Instansi (Contoh: SMA Negeri 1 Kota Makassar) :

Lama Berprofesi Sebagai Guru :

Informasi Kontak yang Dapat Dihubungi :

Transformational Leadership Scale

Berikut terdapat 19 pertanyaan mengenai kepemimpinan pada tempat Anda bekerja. Pada setiap pertanyaan, terdapat pilohan jawaban sebagai berikut:

STS (Sangat Tidak Setuju)

TS (Tidak Setuju)

N (Netral)

S (Setuju)

SS (Sangat Setuju)

Nomor	Pertanyaan	Pilihan Jawaban				
1.	Pemimpin merupakan *role model* (panutan) saya dalam pekerjaan	1	2	3	4	5
2.	Pemimpin memberikan petunjuk kepada saya bagaimana menyelesaikan suatu pekerjaan	1	2	3	4	5
3.	Pemimpin menanamkan rasa bangga selama saya bergabung dalam pekerjaan	1	2	3	4	5
4.	Pemimpin mendapatkan rasa hormat dari para pegawai	1	2	3	4	5
5.	Pemimpin memberikan motivasi kepada saya untuk bekerja lebih baik	1	2	3	4	5

6.	Pemimpin menumbuhkan rasa percaya diri saya untuk melakukan pekerjaan	1	2	3	4	5
7.	Pemimpin memberikan keyakinan kepada saya bahwa tujuan organisasi akan tercapai	1	2	3	4	5
8.	Pemimpin membangkitkan antusiasme saya untuk melakukan pekerjaan	1	2	3	4	5
9.	Pemimpin melakukan komunikasi tentang pekerjaan dengan jelas	1	2	3	4	5
10.	Pemimpin mendorong saya untuk menggunakan kreativitas dalam mengerjakan pekerjaan	1	2	3	4	5
11.	Pemimpin mendorong saya untuk selalu inovatif dalam menyelesaikan pekerjaan	1	2	3	4	5
12.	Pemimpin saya bersemangat untuk mendengarkan ide/gagasan baru	1	2	3	4	5
13.	Pemimpin mendorong saya untuk menyelesaikan masalah pekerjaan secara rasional/logis	1	2	3	4	5

14.	Pemimpin menyelasikan masalah dari berbagai sudut pandang	1	2	3	4	5
15.	Pemimpin berupaya untuk meningkatkan pengembangan diri saya	1	2	3	4	5
16.	Pemimpin memperlakukan saya sebagai individu pribadi, bukan hanya sebagai anggota dari suatu kelompok kerja	1	2	3	4	5
17.	Pemimpin bersedia mendengarkan kesulitan dan keluhan yang saya alami	1	2	3	4	5
18.	Pemimpin memberikan nasihat yang sangat penting bagi pengembangan diri saya	1	2	3	4	5
19.	Pemimpin memperlakukan pegawai sebagai individu yang masing-masing memiliki kebutuhan, kemampuan, dan aspirasi yang berbeda	1	2	3	4	5

Job Crafting Scale

Berikut terdapat 21 pertanyaan mengenai *job crafting* pada tempat Anda bekerja.

Pada setiap pertanyaan, terdapat pilohan jawaban sebagai berikut:

STS (Sangat Tidak Setuju)

TS (Tidak Setuju)

N (Netral)

S (Setuju)

SS (Sangat Setuju)

Nomor	Pertanyaan	Pilihan Jawaban				
1.	Saya berusaha mengembangkan kemampuan saya dalam bekerja	1	2	3	4	5
2.	Saya berusaha megembangkan diri saya secara profesional	1	2	3	4	5
3.	Saya berusaha belajar hal baru di tempat kerja	1	2	3	4	5
4.	Saya memastikan untuk menggunakan kemampuan saya secara maksimal	1	2	3	4	5
5.	Saya memutuskan sendiri bagaimana saya mengerjakan sesuatu	1	2	3	4	5

6.	Saya memastikan bahwa saya tidak terlalu intens secara mental	1	2	3	4	5
7.	Saya berusaha memastikan bahwa pekerjaan saya tidak terlalu intens secara emosional	1	2	3	4	5
8.	Dalam bekerja, saya berusaha menghindari terjadinya masalah dengan orang lain	1	2	3	4	5
9.	Saya mengatur pekerjaan saya sehingga meminimalisir kontak dengan orang yang memiliki ekspetasi yang tidak realistis	1	2	3	4	5
10.	Saya berusaha memastikan bahwa saya tidak membuat banyak keputusan sulit dalam pekerjaan	1	2	3	4	5
11.	Saya mengatur pekerjaan saya sehingga tidak terlalu lama berkonsentrasi pada suatu hal dalam satu waktu	1	2	3	4	5
12.	Saya meminta pemimpin saya untuk melatih saya	1	2	3	4	5

13.	Saya bertanya kepada pemimpin, apakah beliau puas dengan hasil pekerjaan saya atau tidak	1	2	3	4	5
14.	Saya mencari inspirasi pada atasan saya	1	2	3	4	5
15.	Saya meminta umpan balik dari orang lain terkait performa kerja saya	1	2	3	4	5
16.	Saya meminta nasihat dari rekan kerja saya	1	2	3	4	5
17.	Ketika ada kegiatan yang menarik, saya menawarkan diri untuk berpartisipasi secara aktif	1	2	3	4	5
18.	Jika ada perkembangan baru, saya adalah orang pertama yang akan mempelajari dan mencobanya	1	2	3	4	5
19.	Ketika tidak banyak pekerjaan yang harus saya lakukan di kantor, ini adalah kesempatan saya untuk memulai kegiatan baru	1	2	3	4	5
20.	Saya rutin mengerjakan pekerjaan tambahan, walaupun tidak digaji untuk itu	1	2	3	4	5

21.	Saya mencoba membuat pekerjaan saya lebih menantang dengan menganalisa aspek-aspek dalam pekerjaan saya	1	2	3	4	5

Lampiran 3

***Output* Pengolahan Data**

1. Uji Validitas dan Realibilitas Skala *Transformational Leadership*

- **Rscript – Validitas**

```
MODEL 1
> ##renaming data
> data<-data_1
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
          Test       HZ p value MVN
1 Henze-Zirkler 2.031942       0  NO

> ##CFA MODELLING
> ##Model 1
> Model.1<-'
+ A=~A1+A2+A3+A4
+ B=~B5+B6+B7+B8+B9
+ C=~C10+C11+C12+C13+C14
+ D=~D15+D16+D17+D18+D19
+ TL=~A+B+C+D'
##CFA Analysis Model 1
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.1<-cfa(Model.1, data = data, estimator="MLR")
> summary(Model.Analysis.1, fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 66 iterations

  Estimator                                         ML
  Optimization method                           NLMINB
  Number of model parameters                        42

  Number of observations                           100

Model Test User Model:
```

	Standard	Scaled
Test Statistic	262.038	253.010
Degrees of freedom	148	148
P-value (Chi-square)	0.000	0.000
Scaling correction factor		1.036
Yuan-Bentler correction (Mplus variant)		

Model Test Baseline Model:

Test statistic	1527.136	1538.116
Degrees of freedom	171	171
P-value	0.000	0.000
Scaling correction factor		0.993

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.916	0.923
Tucker-Lewis Index (TLI)	0.903	0.911
Robust Comparative Fit Index (CFI)		0.920
Robust Tucker-Lewis Index (TLI)		0.907

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-1620.491	-1620.491
Scaling correction factor for the MLR correction		2.611
Loglikelihood unrestricted model (H1)	-1489.472	-1489.472
Scaling correction factor for the MLR correction		1.384
Akaike (AIC)	3324.982	3324.982
Bayesian (BIC)	3434.399	3434.399
Sample-size adjusted Bayesian (SABIC)	3301.753	3301.753

Root Mean Square Error of Approximation:

RMSEA	0.088	0.084
90 Percent confidence interval - lower	0.070	0.067

90 Percent confidence interval - upper	0.105	0.101
P-value H_0: RMSEA <= 0.050	0.000	0.001
P-value H_0: RMSEA >= 0.080	0.776	0.666

Robust RMSEA	0.086
90 Percent confidence interval - lower	0.067
90 Percent confidence interval - upper	0.103
P-value H_0: Robust RMSEA <= 0.050	0.001
P-value H_0: Robust RMSEA >= 0.080	0.709

Standardized Root Mean Square Residual:

SRMR	0.055	0.055

Parameter Estimates:

Standard errors	Sandwich
Information bread	Observed
Observed information based on	Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000			0.535	0.725	
A2	1.060	0.087	12.231	0.000	0.567	0.858
A3	1.058	0.133	7.972	0.000	0.567	0.801
A4	1.042	0.204	5.107	0.000	0.558	0.768
B =~						
B5	1.000			0.570	0.834	
B6	1.100	0.087	12.689	0.000	0.627	0.855
B7	0.964	0.092	10.499	0.000	0.550	0.827
B8	0.994	0.090	11.070	0.000	0.567	0.800
B9	1.044	0.093	11.244	0.000	0.595	0.804
C =~						
C10	1.000			0.542	0.790	
C11	0.806	0.374	2.159	0.031	0.437	0.109
C12	1.148	0.100	11.470	0.000	0.623	0.831
C13	1.034	0.093	11.161	0.000	0.560	0.829
C14	1.051	0.113	9.310	0.000	0.570	0.753
D =~						

D15	1.000			0.439	0.639	
D16	1.292	0.259	4.990	0.000	0.568	0.644
D17	1.467	0.312	4.709	0.000	0.645	0.856
D18	1.372	0.259	5.293	0.000	0.603	0.816
D19	1.231	0.178	6.895	0.000	0.541	0.710
TL =~						
A	1.000			0.916	0.916	
B	1.113	0.150	7.424	0.000	0.957	0.957
C	1.079	0.158	6.809	0.000	0.976	0.976
D	0.800	0.147	5.439	0.000	0.893	0.893

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.259	0.047	5.505	0.000	0.259	0.475
.A2	0.115	0.029	4.020	0.000	0.115	0.263
.A3	0.179	0.047	3.852	0.000	0.179	0.358
.A4	0.216	0.049	4.368	0.000	0.216	0.409
.B5	0.143	0.027	5.276	0.000	0.143	0.305
.B6	0.144	0.028	5.084	0.000	0.144	0.268
.B7	0.139	0.029	4.806	0.000	0.139	0.315
.B8	0.181	0.037	4.868	0.000	0.181	0.360
.B9	0.193	0.035	5.558	0.000	0.193	0.353
.C10	0.178	0.037	4.774	0.000	0.178	0.377
.C11	15.979	15.571	1.026	0.305	15.979	0.988
.C12	0.174	0.037	4.643	0.000	0.174	0.310
.C13	0.143	0.031	4.600	0.000	0.143	0.314
.C14	0.248	0.054	4.609	0.000	0.248	0.433
.D15	0.279	0.069	4.035	0.000	0.279	0.591
.D16	0.454	0.113	4.016	0.000	0.454	0.585
.D17	0.152	0.049	3.110	0.002	0.152	0.267
.D18	0.182	0.055	3.322	0.001	0.182	0.334
.D19	0.288	0.091	3.150	0.002	0.288	0.496
.A	0.046	0.022	2.105	0.035	0.161	0.161
.B	0.027	0.015	1.795	0.073	0.083	0.083
.C	0.014	0.013	1.038	0.299	0.047	0.047
.D	0.039	0.018	2.115	0.034	0.202	0.202
TL	0.241	0.116	2.066	0.039	1.000	1.000

> ##Modification Indices

```
> data_mi=modificationindices(Model.Analysis.1,standardized = TRUE,sort. = T
RUE)
> subset(data_mi, mi > 3.84)
    lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
75    B =~ D18 22.524  1.192   0.680    0.920    0.920
290 D16 ~~ D18 21.147 -0.159  -0.159   -0.554   -0.554
289 D16 ~~ D17 20.838  0.154   0.154    0.589    0.589
67    B =~ C10 19.251  1.817   1.036    1.509    1.509
122  TL =~ D18 17.824  1.564   0.767    1.039    1.039
291 D16 ~~ D19 13.942  0.150   0.150    0.415    0.415
89    C =~ D18 13.846  1.117   0.605    0.819    0.819
73    B =~ D16 12.123 -1.133  -0.646   -0.733   -0.733
286 D15 ~~ D17 10.739 -0.087  -0.087   -0.422   -0.422
114  TL =~ C10  9.832  4.074   1.998    2.910    2.910
176  A4 ~~  B6  9.079 -0.062  -0.062   -0.353   -0.353
90    C =~ D19  8.486 -0.928  -0.503   -0.660   -0.660
123  TL =~ D19  7.566 -1.073  -0.526   -0.691   -0.691
211  B6 ~~ C14  7.526 -0.060  -0.060   -0.317   -0.317
120  TL =~ D16  7.378 -1.268  -0.622   -0.706   -0.706
275 C13 ~~ D15  7.101  0.060   0.060    0.299    0.299
86    C =~ D15  6.696  0.773   0.419    0.610    0.610
256 C10 ~~ D17  6.534 -0.052  -0.052   -0.316   -0.316
194  B5 ~~ C10  5.808  0.044   0.044    0.278    0.278
124  A1 ~~  A2  5.299  0.054   0.054    0.310    0.310
61    A =~ D18  5.283  0.527   0.282    0.382    0.382
93    D =~  A3  5.113  0.596   0.262    0.371    0.371
119  TL =~ D15  4.947  0.812   0.398    0.580    0.580
87    C =~ D16  4.858 -0.842  -0.457   -0.518   -0.518
62    A =~ D19  4.791 -0.555  -0.297   -0.390   -0.390
273 C12 ~~ D19  4.776 -0.056  -0.056   -0.250   -0.250
71    B =~ C14  4.757 -1.019  -0.581   -0.768   -0.768
242  B9 ~~ C12  4.620  0.046   0.046    0.250    0.250
232  B8 ~~ C12  4.531 -0.044  -0.044   -0.247   -0.247
76    B =~ D19  4.230 -0.556  -0.317   -0.416   -0.416
> fitmeasures(Model.Analysis.1,c("pvalue","chisq","df","gfi","cfi","rmsea","srmr
","tli"))
 pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
  0.000 262.038 148.000   0.804   0.916   0.088   0.055   0.903
```

MODEL 2

```
#renaming data
> data<-data_1
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
          Test       HZ p value MVN
1 Henze-Zirkler 2.021634       0  NO
>
> #CFA MODELLING
> ##Model 2
> Model.2<-'
+ A=~A1+A2+A3+A4
+ B=~B5+B6+B7+B8+B9
+ C=~C10+C11+C12+C13+C14
+ D=~D15+D17+D18+D19
+ TL=~A+B+C+D'
>
> ##CFA Analysis Model 2
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.2<-cfa(Model.2, data = data, estimator="MLR")
> summary(Model.Analysis.2, fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 68 iterations

  Estimator                                         ML
  Optimization method                           NLMINB
  Number of model parameters                        40

  Number of observations                           100

Model Test User Model:
                                              Standard      Scaled
  Test Statistic                               190.539     189.897
  Degrees of freedom                               131         131
  P-value (Chi-square)                           0.001       0.001
  Scaling correction factor                                  1.003
    Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

  Test statistic                              1413.172    1461.228
```

Degrees of freedom	153	153
P-value	0.000	0.000
Scaling correction factor		0.967

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.953	0.955
Tucker-Lewis Index (TLI)	0.945	0.947
Robust Comparative Fit Index (CFI)		0.953
Robust Tucker-Lewis Index (TLI)		0.945

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-1512.484	-1512.484
Scaling correction factor for the MLR correction		2.700
Loglikelihood unrestricted model (H1)	-1417.214	-1417.214
Scaling correction factor for the MLR correction		1.400
Akaike (AIC)	3104.968	3104.968
Bayesian (BIC)	3209.175	3209.175
Sample-size adjusted Bayesian (SABIC)	3082.845	3082.845

Root Mean Square Error of Approximation:

RMSEA	0.067	0.067
90 Percent confidence interval - lower	0.045	0.045
90 Percent confidence interval - upper	0.088	0.087
P-value H_0: RMSEA <= 0.050	0.093	0.097
P-value H_0: RMSEA >= 0.080	0.160	0.153
Robust RMSEA		0.067
90 Percent confidence interval - lower		0.045
90 Percent confidence interval - upper		0.087
P-value H_0: Robust RMSEA <= 0.050		0.097
P-value H_0: Robust RMSEA >= 0.080		0.156

Standardized Root Mean Square Residual:

SRMR	0.044	0.044

Parameter Estimates:

Standard errors	Sandwich

Information bread Observed
Observed information based on Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000			0.536	0.726	
A2	1.061	0.087	12.246	0.000	0.569	0.861
A3	1.055	0.133	7.963	0.000	0.566	0.800
A4	1.037	0.202	5.141	0.000	0.556	0.766
B =~						
B5	1.000			0.571	0.835	
B6	1.098	0.085	12.895	0.000	0.627	0.856
B7	0.963	0.090	10.661	0.000	0.550	0.828
B8	0.990	0.089	11.080	0.000	0.566	0.798
B9	1.041	0.092	11.363	0.000	0.595	0.803
C =~						
C10	1.000			0.542	0.789	
C11	0.806	0.378	2.134	0.033	0.437	0.109
C12	1.150	0.100	11.504	0.000	0.623	0.832
C13	1.036	0.094	11.077	0.000	0.561	0.830
C14	1.048	0.113	9.237	0.000	0.568	0.751
D =~						
D15	1.000			0.446	0.649	
D17	1.365	0.267	5.103	0.000	0.609	0.808
D18	1.418	0.289	4.906	0.000	0.633	0.856
D19	1.129	0.147	7.678	0.000	0.504	0.661
TL =~						
A	1.000			0.911	0.911	
B	1.129	0.153	7.386	0.000	0.966	0.966
C	1.077	0.157	6.876	0.000	0.971	0.971
D	0.848	0.130	6.500	0.000	0.929	0.929

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.258	0.047	5.505	0.000	0.258	0.473
.A2	0.113	0.028	3.981	0.000	0.113	0.259
.A3	0.180	0.047	3.856	0.000	0.180	0.360
.A4	0.218	0.050	4.387	0.000	0.218	0.414
.B5	0.141	0.027	5.288	0.000	0.141	0.302
.B6	0.144	0.028	5.109	0.000	0.144	0.268
.B7	0.139	0.029	4.857	0.000	0.139	0.315
.B8	0.183	0.037	4.877	0.000	0.183	0.363
.B9	0.194	0.035	5.587	0.000	0.194	0.354
.C10	0.178	0.038	4.732	0.000	0.178	0.377
.C11	15.980	15.572	1.026	0.305	15.980	0.988

```
   .C12              0.173    0.038    4.602    0.000    0.173    0.308
   .C13              0.143    0.031    4.570    0.000    0.143    0.311
   .C14              0.250    0.054    4.588    0.000    0.250    0.436
   .D15              0.273    0.076    3.576    0.000    0.273    0.579
   .D17              0.197    0.066    2.994    0.003    0.197    0.347
   .D18              0.146    0.041    3.517    0.000    0.146    0.267
   .D19              0.327    0.114    2.860    0.004    0.327    0.563
   .A                0.049    0.022    2.272    0.023    0.170    0.170
   .B                0.022    0.015    1.516    0.130    0.068    0.068
   .C                0.017    0.013    1.279    0.201    0.057    0.057
   .D                0.027    0.014    1.978    0.048    0.137    0.137
    TL               0.239    0.116    2.051    0.040    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.2,standardized = TRUE, sort. = T
RUE)
> subset(data_mi, mi>3.84)
    lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
64    B =~ C10 19.314  1.929   1.102    1.605    1.605
109  TL =~ C10  9.856  3.330   1.627    2.369    2.369
167  A4 ~~  B6  8.993 -0.062  -0.062   -0.350   -0.350
200  B6 ~~ C14  7.854 -0.061  -0.061   -0.323   -0.323
257 C13 ~~ D15  7.095  0.059   0.059    0.300    0.300
269 D17 ~~ D19  6.202  0.076   0.076    0.300    0.300
85    C =~ D19  6.070 -1.069  -0.579   -0.761   -0.761
184  B5 ~~ C10  5.983  0.045   0.045    0.282    0.282
117  TL =~ D19  5.558 -1.403  -0.686   -0.900   -0.900
71    B =~ D18  5.422  0.894   0.511    0.691    0.691
163  A3 ~~ D17  5.216  0.051   0.051    0.273    0.273
118  A1 ~~  A2  4.993  0.052   0.052    0.305    0.305
240 C10 ~~ D17  4.839 -0.048  -0.048   -0.258   -0.258
82    C =~ D15  4.673  0.850   0.460    0.670    0.670
267 D15 ~~ D19  4.660  0.071   0.071    0.236    0.236
219  B8 ~~ C12  4.547 -0.044  -0.044   -0.247   -0.247
228  B9 ~~ C12  4.427  0.045   0.045    0.244    0.244
68    B =~ C14  4.410 -1.036  -0.592   -0.782   -0.782
265 D15 ~~ D17  4.360 -0.058  -0.058   -0.250   -0.250
> fitmeasures(Model.Analysis.2,c("pvalue","chisq","df","gfi","cfi","rmsea","srmr
","tli"))
 pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
  0.001 190.539 131.000   0.843   0.953   0.067   0.044   0.945
```

MODEL 3

```
> ##renaming data
> data<-data_1
```

```
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
         Test      HZ p value MVN
1 Henze-Zirkler 2.02208       0  NO
>
> ###CFA MODELLING
> ##Model 3
> Model.3<-'
+ A=~A1+A2+A3+A4
+ B=~B5+B6+B7+B8+B9
+ C=~C10+C11+C12+C13+C14
+ D=~D17+D18+D19
+ TL=~A+B+C+D'
>
> ###CFA Analysis Model 3
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.3<-cfa(Model.3, data = data, estimator="MLR")
> summary(Model.Analysis.3, fit.measures=TRUE, standardized=TRUE)
lavaan 0.6.17 ended normally after 59 iterations

  Estimator                                         ML
  Optimization method                           NLMINB
  Number of model parameters                        38

  Number of observations                           100

Model Test User Model:
                                              Standard      Scaled
  Test Statistic                               155.500     159.202
  Degrees of freedom                               115         115
  P-value (Chi-square)                           0.007       0.004
  Scaling correction factor                                  0.977
    Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

  Test statistic                              1330.855    1419.659
  Degrees of freedom                               136         136
  P-value                                        0.000       0.000
  Scaling correction factor                                  0.937
```

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.966	0.966
Tucker-Lewis Index (TLI)	0.960	0.959
Robust Comparative Fit Index (CFI)		0.964
Robust Tucker-Lewis Index (TLI)		0.958

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-1431.725	-1431.725
Scaling correction factor for the MLR correction		2.724
Loglikelihood unrestricted model (H1)	-1353.975	-1353.975
Scaling correction factor for the MLR correction		1.411
Akaike (AIC)	2939.450	2939.450
Bayesian (BIC)	3038.447	3038.447
Sample-size adjusted Bayesian (SABIC)	2918.433	2918.433

Root Mean Square Error of Approximation:

RMSEA	0.059	0.062
90 Percent confidence interval - lower	0.032	0.036
90 Percent confidence interval - upper	0.082	0.084
P-value H_0: RMSEA <= 0.050	0.255	0.201
P-value H_0: RMSEA >= 0.080	0.068	0.097
Robust RMSEA		0.061
90 Percent confidence interval - lower		0.036
90 Percent confidence interval - upper		0.083
P-value H_0: Robust RMSEA <= 0.050		0.209
P-value H_0: Robust RMSEA >= 0.080		0.083

Standardized Root Mean Square Residual:

SRMR	0.040	0.040

Parameter Estimates:

Standard errors	Sandwich
Information bread	Observed
Observed information based on	Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000			0.536	0.725	
A2	1.063	0.087	12.266	0.000	0.570	0.862
A3	1.054	0.133	7.924	0.000	0.565	0.799
A4	1.040	0.203	5.134	0.000	0.557	0.767
B =~						
B5	1.000			0.571	0.835	
B6	1.100	0.086	12.850	0.000	0.628	0.857
B7	0.962	0.091	10.600	0.000	0.549	0.827
B8	0.989	0.090	11.045	0.000	0.565	0.797
B9	1.043	0.092	11.364	0.000	0.596	0.805
C =~						
C10	1.000			0.542	0.790	
C11	0.809	0.376	2.150	0.032	0.439	0.109
C12	1.153	0.101	11.393	0.000	0.626	0.835
C13	1.032	0.094	10.988	0.000	0.560	0.828
C14	1.044	0.115	9.042	0.000	0.566	0.749
D =~						
D17	1.000			0.621	0.825	
D18	1.029	0.103	10.026	0.000	0.640	0.866
D19	0.798	0.138	5.788	0.000	0.496	0.651
TL =~						
A	1.000			0.913	0.913	
B	1.130	0.156	7.241	0.000	0.968	0.968
C	1.073	0.160	6.709	0.000	0.967	0.967
D	1.160	0.195	5.961	0.000	0.913	0.913

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.259	0.047	5.495	0.000	0.259	0.474
.A2	0.113	0.029	3.910	0.000	0.113	0.258
.A3	0.181	0.047	3.875	0.000	0.181	0.362
.A4	0.217	0.050	4.366	0.000	0.217	0.411
.B5	0.142	0.027	5.299	0.000	0.142	0.303
.B6	0.143	0.028	5.092	0.000	0.143	0.266
.B7	0.140	0.029	4.827	0.000	0.140	0.317
.B8	0.183	0.038	4.855	0.000	0.183	0.365
.B9	0.193	0.035	5.561	0.000	0.193	0.352
.C10	0.177	0.038	4.690	0.000	0.177	0.376
.C11	15.978	15.573	1.026	0.305	15.978	0.988
.C12	0.170	0.037	4.588	0.000	0.170	0.303
.C13	0.144	0.031	4.576	0.000	0.144	0.315
.C14	0.252	0.055	4.572	0.000	0.252	0.440
.D17	0.181	0.062	2.907	0.004	0.181	0.319
.D18	0.137	0.042	3.296	0.001	0.137	0.251

```
   .D19            0.334    0.117    2.853    0.004    0.334    0.576
   .A              0.048    0.022    2.224    0.026    0.167    0.167
   .B              0.021    0.014    1.431    0.152    0.064    0.064
   .C              0.019    0.013    1.422    0.155    0.065    0.065
   .D              0.064    0.024    2.677    0.007    0.167    0.167
    TL             0.239    0.117    2.049    0.040    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.3,standardized = TRUE,sort. = T
RUE)
> subset(data_mi, mi>3.84)
    lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
61    B =~ C10 19.362  1.914   1.093    1.591    1.591
104  TL =~ C10 10.376  3.049   1.491    2.171    2.171
67    B =~ D18 10.067  1.348   0.769    1.041    1.041
158  A4 ~~  B6  9.735 -0.064  -0.064   -0.365   -0.365
189  B6 ~~ C14  7.759 -0.061  -0.061   -0.321   -0.321
246 D17 ~~ D19  6.808  0.081   0.081    0.330    0.330
110  TL =~ D18  6.808  1.889   0.924    1.250    1.250
174  B5 ~~ C10  6.103  0.045   0.045    0.285    0.285
154  A3 ~~ D17  5.955  0.054   0.054    0.299    0.299
224 C10 ~~ D17  5.171 -0.049  -0.049   -0.274   -0.274
112  A1 ~~  A2  5.045  0.052   0.052    0.306    0.306
206  B8 ~~ C12  4.699 -0.045  -0.045   -0.252   -0.252
214  B9 ~~ C12  4.132  0.043   0.043    0.237    0.237
45    A =~  B6  4.071 -0.506  -0.271   -0.370   -0.370
66    B =~ D17  3.936 -0.813  -0.464   -0.616   -0.616
217  B9 ~~ D17  3.919 -0.044  -0.044   -0.237   -0.237
65    B =~ C14  3.864 -0.959  -0.548   -0.724   -0.724
> fitmeasures(Model.Analysis.3,c("pvalue","chisq","df","gfi","cfi","rmsea","srmr
","tli"))
 pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
  0.007 155.500 115.000   0.861   0.966   0.059   0.040   0.960
```

- **Hasil Uji SPSS – Reliabilitas *Transformational Leadership***

Reliability Statistics

Cronbach's Alpha	N of Items
.957	16

2. Uji Validitas dan Reliabilitas Skala *Job Crafting*

- **Rscript – Validitas**

Model 1

```
##renaming data
> data<-data_2
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.295481       0  NO
>
> ###CFA MODELLING
> ##Model 1
> Model.1<-'
+ A=~A1+A2+A3+A4+A5
+ B=~B6+B7+B8+B9+B10+B11
+ C=~C12+C13+C14+C15+C16
+ D=~D17+D18+D19+D20+D21
+ JB=~A+B+C+D'
>
> ##CFA Analysis Model 1
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.1<-cfa(Model.1,fit.measures=TRUE,standardized=TRUE)
Error in lavaan::lavaan(model = Model.1, fit.measures = TRUE, standardized = T
RUE,  :
lavaan ERROR: unknown argument `fit.measures'
> Model.Analysis.1<-cfa(Model.1, data = data, estimator="MLR")
> summary(Model.Analysis.1,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 63 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        46

Number of observations                           100

Model Test User Model:
Standard      Scaled
Test Statistic                               481.735     434.610
```

Degrees of freedom	185	185
P-value (Chi-square)	0.000	0.000
Scaling correction factor		1.108
Yuan-Bentler correction (Mplus variant)		

Model Test Baseline Model:

Test statistic	1506.510	1224.754
Degrees of freedom	210	210
P-value	0.000	0.000
Scaling correction factor		1.230

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.771	0.754
Tucker-Lewis Index (TLI)	0.740	0.721
Robust Comparative Fit Index (CFI)		0.778
Robust Tucker-Lewis Index (TLI)		0.748

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-1860.260	-1860.260
Scaling correction factor for the MLR correction		1.571
Loglikelihood unrestricted model (H1)	-1619.392	-1619.392
Scaling correction factor for the MLR correction		1.200
Akaike (AIC)	3812.519	3812.519
Bayesian (BIC)	3932.357	3932.357
Sample-size adjusted Bayesian (SABIC)	3787.078	3787.078

Root Mean Square Error of Approximation:

RMSEA	0.127	0.116
90 Percent confidence interval - lower	0.113	0.103
90 Percent confidence interval - upper	0.141	0.130
P-value H_0: RMSEA <= 0.050	0.000	0.000
P-value H_0: RMSEA >= 0.080	1.000	1.000

Robust RMSEA	0.122
90 Percent confidence interval - lower	0.107
90 Percent confidence interval - upper	0.137
P-value H_0: Robust RMSEA <= 0.050	0.000
P-value H_0: Robust RMSEA >= 0.080	1.000

Standardized Root Mean Square Residual:

SRMR	0.140	0.140

Parameter Estimates:

Standard errors	Sandwich
Information bread	Observed
Observed information based on	Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.468	0.870
A2	0.992	0.071	14.002	0.000	0.464	0.864
A3	1.027	0.121	8.453	0.000	0.480	0.836
A4	0.845	0.104	8.160	0.000	0.395	0.764
A5	0.537	0.230	2.334	0.020	0.251	0.254
B =~						
B6	1.000				0.996	0.909
B7	0.945	0.051	18.419	0.000	0.941	0.897
B8	0.258	0.099	2.614	0.009	0.257	0.385
B9	0.383	0.128	3.000	0.003	0.382	0.466
B10	0.381	0.127	3.009	0.003	0.380	0.483
B11	0.311	0.123	2.520	0.012	0.310	0.414
C =~						
C12	1.000				0.601	0.785
C13	1.108	0.080	13.825	0.000	0.665	0.836
C14	0.836	0.149	5.605	0.000	0.502	0.673
C15	0.816	0.094	8.668	0.000	0.490	0.722
C16	0.789	0.132	5.987	0.000	0.474	0.650
D =~						
D17	1.000				0.501	0.657

D18	1.319	0.170	7.760	0.000	0.660	0.851
D19	1.155	0.171	6.747	0.000	0.578	0.766
D20	1.146	0.225	5.100	0.000	0.574	0.697
D21	1.424	0.197	7.243	0.000	0.713	0.797
JB =~						
A	1.000			0.706	0.706	
B	1.651	0.405	4.071	0.000	0.547	0.547
C	1.760	0.265	6.647	0.000	0.967	0.967
D	1.324	0.217	6.101	0.000	0.872	0.872

Variances:

Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.071	0.026	2.728	0.006	0.071	0.244
.A2	0.073	0.026	2.815	0.005	0.073	0.254
.A3	0.099	0.029	3.460	0.001	0.099	0.301
.A4	0.112	0.028	3.988	0.000	0.112	0.417
.A5	0.911	0.143	6.354	0.000	0.911	0.935
.B6	0.208	0.119	1.749	0.080	0.208	0.173
.B7	0.215	0.091	2.365	0.018	0.215	0.196
.B8	0.380	0.062	6.133	0.000	0.380	0.852
.B9	0.524	0.091	5.743	0.000	0.524	0.783
.B10	0.474	0.081	5.839	0.000	0.474	0.767
.B11	0.462	0.094	4.932	0.000	0.462	0.828
.C12	0.225	0.046	4.900	0.000	0.225	0.384
.C13	0.191	0.037	5.128	0.000	0.191	0.301
.C14	0.304	0.147	2.072	0.038	0.304	0.547
.C15	0.221	0.034	6.406	0.000	0.221	0.479
.C16	0.307	0.068	4.516	0.000	0.307	0.578
.D17	0.329	0.063	5.257	0.000	0.329	0.568
.D18	0.166	0.041	4.039	0.000	0.166	0.276
.D19	0.236	0.073	3.210	0.001	0.236	0.413
.D20	0.349	0.086	4.079	0.000	0.349	0.515
.D21	0.292	0.079	3.713	0.000	0.292	0.365
.A	0.110	0.028	3.909	0.000	0.502	0.502
.B	0.696	0.233	2.983	0.003	0.701	0.701
.C	0.024	0.038	0.633	0.527	0.066	0.066
.D	0.060	0.027	2.238	0.025	0.239	0.239
JB	0.109	0.027	3.998	0.000	1.000	1.000

> #Modidication Indices

```
> data_mi=modificationindices(Model.Analysis.1,standardized = TRUE,sort. = T
RUE)
> subset(data_mi, mi > 3.84)
lhs op rhs      mi    epc sepc.lv sepc.all sepc.nox
226  B6 ~~  B7 120.937  1.405   1.405    6.643    6.643
93    C =~ B11  35.452  0.880   0.529    0.708    0.708
125  JB =~ B11  33.810  1.614   0.533    0.713    0.713
72    B =~  A5  33.564  0.643   0.641    0.650    0.650
57    A =~ B11  21.553  0.787   0.368    0.493    0.493
136  A1 ~~  A2  21.024  0.064   0.064    0.895    0.895
119  JB =~  A5  19.956  2.165   0.714    0.724    0.724
109   D =~ B11  19.447  0.748   0.374    0.501    0.501
268  B9 ~~ B10  17.932  0.218   0.218    0.437    0.437
243  B7 ~~ B10  17.360 -0.196  -0.196   -0.613   -0.613
292 B11 ~~ C13  17.021  0.141   0.141    0.475    0.475
87    C =~  A5  17.018  1.033   0.621    0.629    0.629
103   D =~  A5  16.753  1.115   0.558    0.565    0.565
255  B8 ~~  B9  16.567  0.186   0.186    0.417    0.417
208  A4 ~~ D20  13.778  0.082   0.082    0.415    0.415
227  B6 ~~  B8  12.759 -0.148  -0.148   -0.527   -0.527
345 D20 ~~ D21  12.332  0.138   0.138    0.432    0.432
280 B10 ~~ B11  12.030  0.167   0.167    0.356    0.356
246  B7 ~~ C13  11.910 -0.101  -0.101   -0.498   -0.498
244  B7 ~~ B11  10.478 -0.144  -0.144   -0.455   -0.455
157  A2 ~~  A4  10.377 -0.042  -0.042   -0.462   -0.462
228  B6 ~~  B9  10.226 -0.163  -0.163   -0.496   -0.496
205  A4 ~~ D17   9.865 -0.067  -0.067   -0.348   -0.348
175  A3 ~~  A4   9.578  0.043   0.043    0.413    0.413
139  A1 ~~  A5   9.436 -0.093  -0.093   -0.368   -0.368
282 B10 ~~ C13   9.190  0.105   0.105    0.350    0.350
92    C =~ B10   8.908  0.449   0.270    0.343    0.343
69    B =~  A2   8.528 -0.108  -0.108   -0.200   -0.200
301 C12 ~~ C13   8.527  0.090   0.090    0.434    0.434
104   D =~  B6   8.500 -0.502  -0.251   -0.230   -0.230
340 D18 ~~ D19   8.484  0.085   0.085    0.427    0.427
317 C13 ~~ D21   8.258 -0.086  -0.086   -0.366   -0.366
124  JB =~ B10   8.085  0.804   0.265    0.337    0.337
71    B =~  A4   7.843  0.117   0.116    0.224    0.224
256  B8 ~~ B10   7.682  0.121   0.121    0.284    0.284
75    B =~ C14   7.232  0.203   0.202    0.271    0.271
```

```
325 C15 ~~ C16   6.936  0.078   0.078    0.300    0.300
173  A2 ~~ D20   6.762 -0.051  -0.051   -0.316   -0.316
288 B10 ~~ D19   6.621 -0.094  -0.094   -0.281   -0.281
236  B6 ~~ D17   6.362 -0.091  -0.091   -0.346   -0.346
269  B9 ~~ B11   6.336  0.127   0.127    0.258    0.258
122  JB =~  B8   6.047  0.618   0.204    0.305    0.305
90    C =~  B8   5.752  0.321   0.193    0.289    0.289
120  JB =~  B6   5.645 -0.692  -0.228   -0.208   -0.208
171  A2 ~~ D18   5.630  0.035   0.035    0.319    0.319
89    C =~  B7   5.435 -0.344  -0.206   -0.197   -0.197
151  A1 ~~ D17   5.316  0.043   0.043    0.280    0.280
56    A =~ B10   5.184  0.393   0.184    0.234    0.234
237  B6 ~~ D18   5.169 -0.065  -0.065   -0.349   -0.349
113   D =~ C15   5.130  0.610   0.305    0.450    0.450
330 C15 ~~ D21   5.096  0.067   0.067    0.264    0.264
111   D =~ C13   5.006 -0.672  -0.336   -0.422   -0.422
106   D =~  B8   4.972  0.343   0.171    0.257    0.257
68    B =~  A1   4.907 -0.081  -0.081   -0.151   -0.151
54    A =~  B8   4.834  0.338   0.158    0.236    0.236
193  A4 ~~  A5   4.828  0.076   0.076    0.237    0.237
238  B6 ~~ D19   4.795  0.069   0.069    0.312    0.312
88    C =~  B6   4.509 -0.328  -0.197   -0.180   -0.180
121  JB =~  B7   4.501 -0.589  -0.194   -0.185   -0.185
344 D19 ~~ D21   4.430 -0.072  -0.072   -0.276   -0.276
234  B6 ~~ C15   4.398 -0.063  -0.063   -0.294   -0.294
137  A1 ~~  A3   4.382 -0.031  -0.031   -0.366   -0.366
278  B9 ~~ D20   4.362  0.095   0.095    0.222    0.222
261  B8 ~~ C15   4.143  0.063   0.063    0.217    0.217
107   D =~  B9   4.052  0.365   0.183    0.223    0.223
341 D18 ~~ D20   3.882 -0.064  -0.064   -0.267   -0.267
> fitmeasures(Model.Analysis.1,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 481.735 185.000   0.682   0.771   0.127   0.140   0.740
```

MODEL 2

##renaming data

```
> data<-data_2
> View(data)
```

##Multivariate Normality Assesment

```
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq",)$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.299944       0  NO
>
> ###CFA MODELING
> ##Model 2
> Model.2<-'
+ A=~A1+A2+A3+A4+A5
+ B=~B6+B7+B8+B9+B10
+ C=~C12+C13+C14+C15+C16
+ D=~D17+D18+D19+D20+D21
+ JC=~A+B+C+D'
>
> ###CFA Analysis Model 2
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.2<-cfa(Model.2, data = data, estimator="MLR")
> summary(Model.Analysis.2,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 61 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        44

Number of observations                           100

Model Test User Model:
Standard      Scaled
Test Statistic                           401.638     359.648
Degrees of freedom                           166         166
P-value (Chi-square)                       0.000       0.000
Scaling correction factor                                1.117
Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

Test statistic                          1410.122    1137.111
Degrees of freedom                           190         190
P-value                                    0.000       0.000
Scaling correction factor                                1.240

User Model versus Baseline Model:

Comparative Fit Index (CFI)                    0.807       0.796
```

Tucker-Lewis Index (TLI) 0.779 0.766

Robust Comparative Fit Index (CFI) 0.816
Robust Tucker-Lewis Index (TLI) 0.789

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) -1755.690 -1755.690
Scaling correction factor 1.548
for the MLR correction
Loglikelihood unrestricted model (H1) -1554.871 -1554.871
Scaling correction factor 1.207
for the MLR correction

Akaike (AIC) 3599.380 3599.380
Bayesian (BIC) 3714.007 3714.007
Sample-size adjusted Bayesian (SABIC) 3575.044 3575.044

Root Mean Square Error of Approximation:

RMSEA 0.119 0.108
90 Percent confidence interval - lower 0.104 0.094
90 Percent confidence interval - upper 0.134 0.122
P-value H_0: RMSEA <= 0.050 0.000 0.000
P-value H_0: RMSEA >= 0.080 1.000 0.999

Robust RMSEA 0.114
90 Percent confidence interval - lower 0.098
90 Percent confidence interval - upper 0.130
P-value H_0: Robust RMSEA <= 0.050 0.000
P-value H_0: Robust RMSEA >= 0.080 1.000

Standardized Root Mean Square Residual:

SRMR 0.122 0.122

Parameter Estimates:

Standard errors Sandwich
Information bread Observed
Observed information based on Hessian

Latent Variables:
Estimate Std.Err z-value P(>|z|) Std.lv Std.all
A =~
A1 1.000 0.468 0.870

A2	0.993	0.071	13.997	0.000	0.464	0.864
A3	1.026	0.121	8.456	0.000	0.480	0.836
A4	0.844	0.103	8.174	0.000	0.395	0.763
A5	0.536	0.229	2.336	0.019	0.251	0.254
B =~						
B6	1.000			1.003	0.916	
B7	0.953	0.056	17.129	0.000	0.956	0.911
B8	0.245	0.090	2.725	0.006	0.246	0.368
B9	0.363	0.112	3.247	0.001	0.364	0.445
B10	0.357	0.104	3.422	0.001	0.358	0.455
C =~						
C12	1.000			0.601	0.785	
C13	1.107	0.080	13.854	0.000	0.665	0.836
C14	0.835	0.150	5.571	0.000	0.501	0.672
C15	0.816	0.094	8.652	0.000	0.490	0.722
C16	0.790	0.133	5.957	0.000	0.474	0.651
D =~						
D17	1.000			0.501	0.658	
D18	1.318	0.170	7.760	0.000	0.660	0.851
D19	1.154	0.171	6.743	0.000	0.578	0.766
D20	1.145	0.225	5.099	0.000	0.573	0.696
D21	1.424	0.197	7.245	0.000	0.713	0.797
JC =~						
A	1.000			0.707	0.707	
B	1.551	0.371	4.185	0.000	0.511	0.511
C	1.746	0.262	6.664	0.000	0.961	0.961
D	1.328	0.218	6.090	0.000	0.877	0.877

Variances:

Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.070	0.026	2.735	0.006	0.070	0.244
.A2	0.073	0.026	2.820	0.005	0.073	0.253
.A3	0.099	0.029	3.467	0.001	0.099	0.301
.A4	0.112	0.028	3.999	0.000	0.112	0.417
.A5	0.911	0.143	6.357	0.000	0.911	0.935
.B6	0.194	0.094	2.052	0.040	0.194	0.161
.B7	0.187	0.065	2.880	0.004	0.187	0.170
.B8	0.386	0.061	6.341	0.000	0.386	0.865
.B9	0.537	0.085	6.317	0.000	0.537	0.802
.B10	0.490	0.075	6.544	0.000	0.490	0.793
.C12	0.225	0.046	4.871	0.000	0.225	0.383
.C13	0.191	0.038	5.082	0.000	0.191	0.302
.C14	0.305	0.147	2.068	0.039	0.305	0.548
.C15	0.221	0.034	6.393	0.000	0.221	0.478
.C16	0.307	0.068	4.518	0.000	0.307	0.577
.D17	0.329	0.063	5.254	0.000	0.329	0.567

```
.D18            0.166    0.041    4.036    0.000    0.166    0.276
.D19            0.236    0.073    3.212    0.001    0.236    0.414
.D20            0.350    0.086    4.080    0.000    0.350    0.515
.D21            0.292    0.079    3.704    0.000    0.292    0.365
.A             0.109    0.028    3.947    0.000    0.500    0.500
.B             0.743    0.187    3.968    0.000    0.738    0.738
.C             0.027    0.037    0.733    0.464    0.076    0.076
.D             0.058    0.026    2.197    0.028    0.230    0.230
JC             0.109    0.027    4.026    0.000    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.2,standardized = TRUE,sort. = T
RUE)
> subset(data_mi,mi>3.84)
lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
215  B6 ~~  B7 66.524  1.438   1.438    7.563    7.563
69    B =~  A5 32.357  0.617   0.619    0.627    0.627
130  A1 ~~  A2 20.883  0.064   0.064    0.893    0.893
114  JC =~  A5 19.864  2.170   0.718    0.727    0.727
254  B9 ~~ B10 19.154  0.230   0.230    0.449    0.449
242  B8 ~~  B9 17.347  0.193   0.193    0.425    0.425
99    D =~  A5 16.841  1.124   0.563    0.571    0.571
84    C =~  A5 16.669  1.020   0.613    0.621    0.621
231  B7 ~~ B10 15.370 -0.186  -0.186   -0.615   -0.615
198  A4 ~~ D20 13.773  0.082   0.082    0.415    0.415
319 D20 ~~ D21 12.346  0.138   0.138    0.432    0.432
89    C =~ B10 10.446  0.477   0.286    0.364    0.364
150  A2 ~~  A4 10.390 -0.042  -0.042   -0.463   -0.463
216  B6 ~~  B8 10.349 -0.132  -0.132   -0.483   -0.483
195  A4 ~~ D17  9.857 -0.067  -0.067   -0.348   -0.348
233  B7 ~~ C13  9.780 -0.088  -0.088   -0.466   -0.466
167  A3 ~~  A4  9.632  0.044   0.044    0.413    0.413
266 B10 ~~ C13  9.600  0.109   0.109    0.357    0.357
133  A1 ~~  A5  9.426 -0.093  -0.093   -0.368   -0.368
119  JC =~ B10  9.408  0.848   0.281    0.357    0.357
66    B =~  A2  8.699 -0.106  -0.107   -0.198   -0.198
275 C12 ~~ C13  8.620  0.091   0.091    0.438    0.438
243  B8 ~~ B10  8.511  0.129   0.129    0.298    0.298
314 D18 ~~ D19  8.504  0.085   0.085    0.427    0.427
291 C13 ~~ D21  8.191 -0.086  -0.086   -0.365   -0.365
72    B =~ C14  7.793  0.201   0.202    0.271    0.271
68    B =~  A4  7.616  0.112   0.112    0.217    0.217
217  B6 ~~  B9  7.046 -0.137  -0.137   -0.424   -0.424
117  JC =~  B8  6.939  0.643   0.213    0.318    0.318
299 C15 ~~ C16  6.898  0.078   0.078    0.299    0.299
165  A2 ~~ D20  6.799 -0.051  -0.051   -0.317   -0.317
```

```
87    C =~  B8  6.628  0.335   0.201    0.301    0.301
272 B10 ~~ D19  6.585 -0.095  -0.095   -0.279   -0.279
224  B6 ~~ D17  6.465 -0.088  -0.088   -0.351   -0.351
54    A =~ B10  6.164  0.428   0.200    0.255    0.255
102   D =~  B8  5.661  0.359   0.180    0.269    0.269
163  A2 ~~ D18  5.554  0.035   0.035    0.317    0.317
52    A =~  B8  5.494  0.357   0.167    0.250    0.250
144  A1 ~~ D17  5.282  0.043   0.043    0.279    0.279
304 C15 ~~ D21  5.147  0.067   0.067    0.266    0.266
108   D =~ C15  5.110  0.611   0.306    0.451    0.451
106   D =~ C13  4.998 -0.676  -0.339   -0.425   -0.425
225  B6 ~~ D18  4.898 -0.061  -0.061   -0.341   -0.341
103   D =~  B9  4.894  0.396   0.198    0.242    0.242
65    B =~  A1  4.870 -0.079  -0.079   -0.147   -0.147
118  JC =~  B9  4.858  0.637   0.211    0.258    0.258
184  A4 ~~  A5  4.839  0.076   0.076    0.237    0.237
237  B7 ~~ D17  4.756  0.073   0.073    0.294    0.294
88    C =~  B9  4.645  0.333   0.200    0.244    0.244
104   D =~ B10  4.481  0.362   0.181    0.231    0.231
100   D =~  B6  4.469 -0.354  -0.177   -0.162   -0.162
318 D19 ~~ D21  4.403 -0.072  -0.072   -0.274   -0.274
131  A1 ~~  A3  4.354 -0.030  -0.030   -0.364   -0.364
263  B9 ~~ D20  4.298  0.095   0.095    0.220    0.220
247  B8 ~~ C15  4.225  0.064   0.064    0.219    0.219
315 D18 ~~ D20  3.846 -0.064  -0.064   -0.265   -0.265
258  B9 ~~ C15  3.846  0.072   0.072    0.210    0.210
> fitmeasures(Model.Analysis.2,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 401.638 166.000   0.714   0.807   0.119   0.122   0.779
```

Model 3

```
#renaming data
> data<-data_2
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data,mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.361442       0  NO
>
> ###CFA MODELING
> ##Model 3
> Model.3<-'
+ A=~A1+A2+A3+A4+A5
```

```
+ B=~B6+B7+B9+B10
+ C=~C12+C13+C14+C15+C16
+ D=~D17+D18+D19+D20+D21
+ JC=~A+B+C+D'
>
> ##CFA Analysis Model 3
> library(lavaan)
> Model.Analysis.3<-cfa(Model.3,data = data, estimator="MLR")
> summary(Model.Analysis.3,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 59 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        42

Number of observations                           100

Model Test User Model:
                                              Standard      Scaled
Test Statistic                               357.967     318.743
Degrees of freedom                               148         148
P-value (Chi-square)                           0.000       0.000
Scaling correction factor                                  1.123
Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

Test statistic                              1353.686    1077.520
Degrees of freedom                               171         171
P-value                                        0.000       0.000
Scaling correction factor                                  1.256

User Model versus Baseline Model:

Comparative Fit Index (CFI)                    0.822       0.812
Tucker-Lewis Index (TLI)                       0.795       0.782

Robust Comparative Fit Index (CFI)                         0.832
Robust Tucker-Lewis Index (TLI)                            0.805

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)              -1660.505   -1660.505
Scaling correction factor                                  1.552
for the MLR correction
Loglikelihood unrestricted model (H1)      -1481.522   -1481.522
```

Scaling correction factor 1.218
for the MLR correction

Akaike (AIC)	3405.011	3405.011
Bayesian (BIC)	3514.428	3514.428
Sample-size adjusted Bayesian (SABIC)	3381.781	3381.781

Root Mean Square Error of Approximation:

RMSEA	0.119	0.107
90 Percent confidence interval - lower	0.103	0.092
90 Percent confidence interval - upper	0.135	0.123
P-value H_0: RMSEA <= 0.050	0.000	0.000
P-value H_0: RMSEA >= 0.080	1.000	0.998

Robust RMSEA	0.114
90 Percent confidence interval - lower	0.097
90 Percent confidence interval - upper	0.131
P-value H_0: Robust RMSEA <= 0.050	0.000
P-value H_0: Robust RMSEA >= 0.080	0.999

Standardized Root Mean Square Residual:

SRMR	0.117	0.117

Parameter Estimates:

Standard errors	Sandwich
Information bread	Observed
Observed information based on	Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.468	0.870
A2	0.993	0.071	14.003	0.000	0.464	0.864
A3	1.026	0.121	8.452	0.000	0.480	0.836
A4	0.844	0.103	8.173	0.000	0.395	0.763
A5	0.536	0.229	2.334	0.020	0.250	0.254
B =~						
B6	1.000				1.024	0.935
B7	0.924	0.066	13.985	0.000	0.946	0.901
B9	0.337	0.107	3.136	0.002	0.345	0.421
B10	0.344	0.097	3.540	0.000	0.353	0.448
C =~						
C12	1.000				0.601	0.786

C13	1.107	0.080	13.889	0.000	0.666	0.837
C14	0.834	0.150	5.572	0.000	0.501	0.672
C15	0.815	0.094	8.637	0.000	0.490	0.721
C16	0.788	0.132	5.952	0.000	0.474	0.650
D =~						
D17	1.000			0.501	0.658	
D18	1.319	0.170	7.755	0.000	0.660	0.851
D19	1.155	0.171	6.744	0.000	0.578	0.766
D20	1.144	0.224	5.098	0.000	0.573	0.696
D21	1.423	0.196	7.247	0.000	0.713	0.797
JC =~						
A	1.000			0.707	0.707	
B	1.538	0.374	4.118	0.000	0.497	0.497
C	1.752	0.266	6.589	0.000	0.963	0.963
D	1.326	0.217	6.101	0.000	0.875	0.875

Variances:

Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.070	0.026	2.734	0.006	0.070	0.243
.A2	0.073	0.026	2.819	0.005	0.073	0.253
.A3	0.099	0.029	3.464	0.001	0.099	0.302
.A4	0.112	0.028	3.999	0.000	0.112	0.417
.A5	0.911	0.143	6.359	0.000	0.911	0.936
.B6	0.152	0.083	1.819	0.069	0.152	0.126
.B7	0.207	0.070	2.934	0.003	0.207	0.188
.B9	0.551	0.084	6.530	0.000	0.551	0.822
.B10	0.494	0.074	6.657	0.000	0.494	0.799
.C12	0.224	0.046	4.869	0.000	0.224	0.383
.C13	0.190	0.037	5.126	0.000	0.190	0.300
.C14	0.305	0.148	2.068	0.039	0.305	0.548
.C15	0.221	0.035	6.400	0.000	0.221	0.480
.C16	0.307	0.068	4.525	0.000	0.307	0.578
.D17	0.329	0.063	5.252	0.000	0.329	0.567
.D18	0.166	0.041	4.042	0.000	0.166	0.276
.D19	0.235	0.073	3.209	0.001	0.235	0.413
.D20	0.350	0.086	4.077	0.000	0.350	0.516
.D21	0.292	0.079	3.699	0.000	0.292	0.365
.A	0.109	0.028	3.939	0.000	0.500	0.500
.B	0.790	0.192	4.124	0.000	0.753	0.753
.C	0.026	0.038	0.698	0.485	0.073	0.073
.D	0.059	0.026	2.219	0.026	0.234	0.234
JC	0.109	0.027	4.013	0.000	1.000	1.000

```
> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.3,standardized = TRUE,sort. = T
RUE)
```

```
> subset(data_mi,mi>3.84)
lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
204  B6 ~~  B7 34.404  1.392   1.392    7.857    7.857
66    B =~  A5 32.671  0.602   0.616    0.625    0.625
124  A1 ~~  A2 20.809  0.064   0.064    0.893    0.893
229  B9 ~~ B10 19.930  0.238   0.238    0.456    0.456
109  JC =~  A5 19.728  2.161   0.714    0.724    0.724
95    D =~  A5 16.773  1.119   0.561    0.568    0.568
81    C =~  A5 16.689  1.021   0.614    0.622    0.622
188  A4 ~~ D20 13.806  0.082   0.082    0.416    0.416
294 D20 ~~ D21 12.418  0.139   0.139    0.433    0.433
85    C =~ B10 10.926  0.483   0.290    0.369    0.369
143  A2 ~~  A4 10.388 -0.042  -0.042   -0.463   -0.463
218  B7 ~~ B10 10.080 -0.155  -0.155   -0.484   -0.484
113  JC =~ B10  9.970  0.864   0.286    0.363    0.363
185  A4 ~~ D17  9.842 -0.067  -0.067   -0.348   -0.348
159  A3 ~~  A4  9.665  0.044   0.044    0.414    0.414
220  B7 ~~ C13  9.598 -0.086  -0.086   -0.436   -0.436
127  A1 ~~  A5  9.409 -0.093  -0.093   -0.368   -0.368
241 B10 ~~ C13  9.112  0.107   0.107    0.348    0.348
63    B =~  A2  8.681 -0.103  -0.105   -0.196   -0.196
289 D18 ~~ D19  8.420  0.084   0.084    0.426    0.426
250 C12 ~~ C13  8.417  0.090   0.090    0.435    0.435
266 C13 ~~ D21  8.234 -0.086  -0.086   -0.366   -0.366
69    B =~ C14  7.877  0.195   0.200    0.268    0.268
212  B6 ~~ D17  7.815 -0.095  -0.095   -0.425   -0.425
65    B =~  A4  7.766  0.110   0.112    0.217    0.217
274 C15 ~~ C16  6.994  0.078   0.078    0.301    0.301
205  B6 ~~  B9  6.888 -0.140  -0.140   -0.484   -0.484
247 B10 ~~ D19  6.864 -0.097  -0.097   -0.285   -0.285
157  A2 ~~ D20  6.788 -0.051  -0.051   -0.317   -0.317
51    A =~ B10  6.506  0.439   0.205    0.261    0.261
98    D =~  B9  5.649  0.426   0.213    0.260    0.260
112  JC =~  B9  5.603  0.683   0.226    0.276    0.276
155  A2 ~~ D18  5.544  0.035   0.035    0.317    0.317
84    C =~  B9  5.365  0.357   0.215    0.262    0.262
96    D =~  B6  5.354 -0.396  -0.198   -0.181   -0.181
137  A1 ~~ D17  5.274  0.042   0.042    0.279    0.279
103   D =~ C15  5.184  0.614   0.307    0.453    0.453
279 C15 ~~ D21  5.182  0.068   0.068    0.267    0.267
213  B6 ~~ D18  5.181 -0.061  -0.061   -0.387   -0.387
101   D =~ C13  5.088 -0.680  -0.340   -0.428   -0.428
99    D =~ B10  4.936  0.377   0.189    0.240    0.240
62    B =~  A1  4.905 -0.077  -0.079   -0.146   -0.146
175  A4 ~~  A5  4.852  0.076   0.076    0.238    0.238
224  B7 ~~ D17  4.624  0.071   0.071    0.274    0.274
```

```
238  B9 ~~ D20  4.440  0.098   0.098    0.223    0.223
293 D19 ~~ D21  4.419 -0.072  -0.072   -0.275   -0.275
125  A1 ~~  A3  4.353 -0.030  -0.030   -0.364   -0.364
233  B9 ~~ C15  4.031  0.075   0.075    0.214    0.214
> fitmeasures(Model.Analysis.3,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 357.967 148.000   0.735   0.822   0.119   0.117   0.795
```

MODEL 4

```
##renaming data
> data<-data_2
> View(data)
>
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.378447       0  NO
>
> ###CFA MODELING
> ##Model 4
> Model.4<-'
+ A=~A1+A2+A3+A4+A5
+ B=~B6+B7+B9
+ C=~C12+C13+C14+C15+C16
+ D=~D17+D18+D19+D20+D21
+ JC=~A+B+C+D'
>
> ##CFA Analysis Model 4
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.4<-cfa(Model.4,data = data, estimator="MLR")
> summary(Model.Analysis.4,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 60 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        40

Number of observations                           100

Model Test User Model:
Standard      Scaled
```

Test Statistic	300.861	267.195
Degrees of freedom	131	131
P-value (Chi-square)	0.000	0.000
Scaling correction factor		1.126
Yuan-Bentler correction (Mplus variant)		

Model Test Baseline Model:

Test statistic	1276.910	1001.732
Degrees of freedom	153	153
P-value	0.000	0.000
Scaling correction factor		1.275

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.849	0.840
Tucker-Lewis Index (TLI)	0.823	0.813
Robust Comparative Fit Index (CFI)		0.858
Robust Tucker-Lewis Index (TLI)		0.834

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-1552.478	-1552.478
Scaling correction factor		1.578
for the MLR correction		
Loglikelihood unrestricted model (H1)	-1402.047	-1402.047
Scaling correction factor		1.232
for the MLR correction		
Akaike (AIC)	3184.955	3184.955
Bayesian (BIC)	3289.162	3289.162
Sample-size adjusted Bayesian (SABIC)	3162.832	3162.832

Root Mean Square Error of Approximation:

RMSEA	0.114	0.102
90 Percent confidence interval - lower	0.097	0.085
90 Percent confidence interval - upper	0.131	0.118
P-value H_0: RMSEA <= 0.050	0.000	0.000
P-value H_0: RMSEA >= 0.080	0.999	0.984
Robust RMSEA		0.108
90 Percent confidence interval - lower		0.090
90 Percent confidence interval - upper		0.127
P-value H_0: Robust RMSEA <= 0.050		0.000

P-value H_0: Robust RMSEA >= 0.080 0.993

Standardized Root Mean Square Residual:

SRMR 0.107 0.107

Parameter Estimates:

Standard errors Sandwich
Information bread Observed
Observed information based on Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.468	0.870
A2	0.993	0.071	13.986	0.000	0.464	0.865
A3	1.026	0.121	8.448	0.000	0.480	0.836
A4	0.844	0.103	8.183	0.000	0.395	0.763
A5	0.536	0.229	2.338	0.019	0.251	0.254
B =~						
B6	1.000				0.992	0.906
B7	0.989	0.083	11.859	0.000	0.982	0.936
B9	0.339	0.105	3.234	0.001	0.336	0.411
C =~						
C12	1.000				0.601	0.785
C13	1.106	0.080	13.848	0.000	0.665	0.835
C14	0.834	0.151	5.534	0.000	0.501	0.672
C15	0.817	0.095	8.620	0.000	0.491	0.723
C16	0.790	0.133	5.923	0.000	0.475	0.651
D =~						
D17	1.000				0.501	0.659
D18	1.318	0.170	7.765	0.000	0.661	0.851
D19	1.153	0.171	6.721	0.000	0.578	0.765
D20	1.143	0.224	5.099	0.000	0.573	0.696
D21	1.421	0.196	7.262	0.000	0.713	0.797
JC =~						
A	1.000				0.709	0.709
B	1.437	0.367	3.914	0.000	0.480	0.480
C	1.729	0.257	6.733	0.000	0.955	0.955
D	1.336	0.222	6.021	0.000	0.884	0.884

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.070	0.026	2.743	0.006	0.070	0.243
.A2	0.073	0.026	2.824	0.005	0.073	0.252

```
.A3              0.099    0.029    3.471    0.001    0.099    0.302
.A4              0.112    0.028    4.011    0.000    0.112    0.418
.A5              0.911    0.143    6.359    0.000    0.911    0.936
.B6              0.215    0.137    1.570    0.116    0.215    0.179
.B7              0.137    0.082    1.675    0.094    0.137    0.125
.B9              0.557    0.081    6.848    0.000    0.557    0.831
.C12             0.225    0.046    4.844    0.000    0.225    0.383
.C13             0.192    0.039    4.977    0.000    0.192    0.303
.C14             0.305    0.148    2.064    0.039    0.305    0.549
.C15             0.220    0.034    6.390    0.000    0.220    0.477
.C16             0.306    0.068    4.523    0.000    0.306    0.576
.D17             0.328    0.062    5.257    0.000    0.328    0.566
.D18             0.166    0.041    4.028    0.000    0.166    0.275
.D19             0.236    0.074    3.211    0.001    0.236    0.414
.D20             0.350    0.086    4.079    0.000    0.350    0.516
.D21             0.292    0.079    3.698    0.000    0.292    0.365
.A               0.109    0.027    3.998    0.000    0.497    0.497
.B               0.758    0.175    4.318    0.000    0.769    0.769
.C               0.032    0.038    0.855    0.393    0.089    0.089
.D               0.055    0.026    2.115    0.034    0.219    0.219
JC               0.110    0.027    4.077    0.000    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.4,standardized = TRUE,sort. = T
RUE)
> subset(data_mi,mi>3.84)
lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
63    B =~  A5 31.278  0.604   0.600    0.608    0.608
118  A1 ~~  A2 20.717  0.064   0.064    0.892    0.892
104  JC =~  A5 19.846  2.179   0.723    0.732    0.732
91    D =~  A5 16.970  1.136   0.570    0.577    0.577
78    C =~  A5 16.327  1.005   0.604    0.612    0.612
178  A4 ~~ D20 13.776  0.082   0.082    0.415    0.415
270 D20 ~~ D21 12.414  0.138   0.138    0.433    0.433
136  A2 ~~  A4 10.402 -0.042  -0.042   -0.463   -0.463
175  A4 ~~ D17  9.858 -0.067  -0.067   -0.348   -0.348
151  A3 ~~  A4  9.701  0.044   0.044    0.414    0.414
121  A1 ~~  A5  9.422 -0.093  -0.093   -0.368   -0.368
226 C12 ~~ C13  8.753  0.092   0.092    0.443    0.443
207  B7 ~~ C13  8.686 -0.081  -0.081   -0.500   -0.500
265 D18 ~~ D19  8.479  0.084   0.084    0.426    0.426
60    B =~  A2  8.450 -0.104  -0.103   -0.192   -0.192
66    B =~ C14  8.402  0.205   0.203    0.273    0.273
242 C13 ~~ D21  7.996 -0.085  -0.085   -0.361   -0.361
200  B6 ~~ D17  7.856 -0.096  -0.096   -0.362   -0.362
250 C15 ~~ C16  6.849  0.078   0.078    0.299    0.299
```

```
149  A2 ~~ D20  6.845 -0.051  -0.051   -0.318   -0.318
62    B =~  A4  6.822  0.106   0.105    0.203    0.203
196  B6 ~~ C13  6.285  0.073   0.073    0.358    0.358
107  JC =~  B9  6.112  0.706   0.234    0.286    0.286
193  B6 ~~  B7  6.112  1.087   1.087    6.328    6.328
81    C =~  B9  5.921  0.372   0.223    0.273    0.273
94    D =~  B9  5.820  0.430   0.216    0.264    0.264
147  A2 ~~ D18  5.452  0.035   0.035    0.315    0.315
255 C15 ~~ D21  5.241  0.068   0.068    0.268    0.268
130  A1 ~~ D17  5.233  0.042   0.042    0.278    0.278
98    D =~ C15  5.047  0.610   0.306    0.450    0.450
201  B6 ~~ D18  4.998 -0.061  -0.061   -0.322   -0.322
96    D =~ C13  4.960 -0.679  -0.340   -0.427   -0.427
166  A4 ~~  A5  4.848  0.076   0.076    0.237    0.237
59    B =~  A1  4.843 -0.078  -0.078   -0.144   -0.144
211  B7 ~~ D17  4.784  0.071   0.071    0.335    0.335
119  A1 ~~  A3  4.319 -0.030  -0.030   -0.363   -0.363
269 D19 ~~ D21  4.309 -0.071  -0.071   -0.271   -0.271
224  B9 ~~ D20  4.296  0.097   0.097    0.219    0.219
167  A4 ~~  B6  3.882  0.040   0.040    0.261    0.261
> fitmeasures(Model.Analysis.4,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 300.861 131.000   0.758   0.849   0.114   0.107   0.823
```

MODEL 5

```
##renaming data
> data<-data_2
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.433127       0  NO
>
> ###CFA MODELING
> ##Model 5
> Model.5<-'
+ A=~A1+A2+A3+A4
+ B=~B6+B7+B9
+ C=~C12+C13+C14+C15+C16
+ D=~D17+D18+D19+D20+D21
+ JC=~A+B+C+D'
>
```

```
> ##CFA Analysis Model 5
> library(lavaan)
This is lavaan 0.6-17
lavaan is FREE software! Please report any bugs.
> Model.Analysis.5<-cfa(Model.5,data = data,estimator="MLR")
> summary(Model.Analysis.5,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 58 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        38

Number of observations                           100

Model Test User Model:
                                              Standard      Scaled
Test Statistic                               237.350     215.314
Degrees of freedom                               115         115
P-value (Chi-square)                           0.000       0.000
Scaling correction factor                                  1.102
Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

Test statistic                              1207.515     946.649
Degrees of freedom                               136         136
P-value                                        0.000       0.000
Scaling correction factor                                  1.276

User Model versus Baseline Model:

Comparative Fit Index (CFI)                    0.886       0.876
Tucker-Lewis Index (TLI)                       0.865       0.854

Robust Comparative Fit Index (CFI)                         0.893
Robust Tucker-Lewis Index (TLI)                            0.874

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)              -1414.864   -1414.864
Scaling correction factor                                  1.617
for the MLR correction
Loglikelihood unrestricted model (H1)      -1296.189   -1296.189
Scaling correction factor                                  1.230
for the MLR correction
```

Akaike (AIC)	2905.727	2905.727
Bayesian (BIC)	3004.724	3004.724
Sample-size adjusted Bayesian (SABIC)	2884.710	2884.710

Root Mean Square Error of Approximation:

RMSEA	0.103	0.093
90 Percent confidence interval - lower	0.084	0.075
90 Percent confidence interval - upper	0.122	0.112
P-value H_0: RMSEA <= 0.050	0.000	0.000
P-value H_0: RMSEA >= 0.080	0.978	0.887

Robust RMSEA	0.098
90 Percent confidence interval - lower	0.078
90 Percent confidence interval - upper	0.118
P-value H_0: Robust RMSEA <= 0.050	0.000
P-value H_0: Robust RMSEA >= 0.080	0.928

Standardized Root Mean Square Residual:

SRMR	0.077	0.077

Parameter Estimates:

Standard errors	Sandwich
Information bread	Observed
Observed information based on	Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.473	0.879
A2	0.990	0.072	13.717	0.000	0.468	0.871
A3	1.008	0.119	8.467	0.000	0.476	0.830
A4	0.824	0.099	8.309	0.000	0.390	0.753
B =~						
B6	1.000				0.992	0.906
B7	0.989	0.084	11.775	0.000	0.982	0.936
B9	0.339	0.105	3.231	0.001	0.336	0.411
C =~						
C12	1.000				0.600	0.785
C13	1.106	0.080	13.848	0.000	0.664	0.834
C14	0.835	0.151	5.535	0.000	0.501	0.672
C15	0.818	0.095	8.638	0.000	0.491	0.724
C16	0.792	0.134	5.921	0.000	0.475	0.652
D =~						

```
D17               1.000                           0.502    0.659
D18               1.317    0.170    7.759    0.000    0.661    0.852
D19               1.152    0.172    6.712    0.000    0.578    0.766
D20               1.141    0.224    5.092    0.000    0.573    0.695
D21               1.420    0.196    7.253    0.000    0.712    0.796
JC =~
A                 1.000                           0.695    0.695
B                 1.443    0.377    3.823    0.000    0.478    0.478
C                 1.749    0.267    6.542    0.000    0.957    0.957
D                 1.346    0.225    5.982    0.000    0.882    0.882

Variances:
Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
.A1               0.066    0.024    2.743    0.006    0.066    0.227
.A2               0.069    0.025    2.819    0.005    0.069    0.241
.A3               0.103    0.030    3.413    0.001    0.103    0.311
.A4               0.116    0.028    4.121    0.000    0.116    0.432
.B6               0.215    0.137    1.564    0.118    0.215    0.179
.B7               0.137    0.082    1.665    0.096    0.137    0.125
.B9               0.557    0.081    6.848    0.000    0.557    0.831
.C12              0.225    0.047    4.839    0.000    0.225    0.384
.C13              0.192    0.039    4.974    0.000    0.192    0.304
.C14              0.305    0.148    2.064    0.039    0.305    0.549
.C15              0.220    0.034    6.393    0.000    0.220    0.476
.C16              0.306    0.068    4.522    0.000    0.306    0.575
.D17              0.328    0.062    5.258    0.000    0.328    0.566
.D18              0.165    0.041    4.039    0.000    0.165    0.275
.D19              0.236    0.073    3.212    0.001    0.236    0.414
.D20              0.351    0.086    4.069    0.000    0.351    0.517
.D21              0.293    0.080    3.681    0.000    0.293    0.366
.A                0.115    0.026    4.412    0.000    0.516    0.516
.B                0.760    0.175    4.332    0.000    0.772    0.772
.C                0.030    0.039    0.771    0.441    0.083    0.083
.D                0.056    0.027    2.091    0.037    0.222    0.222
JC                0.108    0.027    3.984    0.000    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.5,standardized = TRUE,sort. = T
RUE)
> subset(data_mi, mi>3.84)
lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
112  A1 ~~  A2 15.983  0.058   0.058    0.857    0.857
168  A4 ~~ D20 13.877  0.083   0.083    0.415    0.415
247 D20 ~~ D21 12.488  0.139   0.139    0.434    0.434
143  A3 ~~  A4 11.379  0.048   0.048    0.437    0.437
165  A4 ~~ D17  9.824 -0.067  -0.067   -0.346   -0.346
```

```
129  A2 ~~  A4  9.686 -0.040  -0.040   -0.450   -0.450
203 C12 ~~ C13  8.901  0.093   0.093    0.446    0.446
184  B7 ~~ C13  8.710 -0.081  -0.081   -0.500   -0.500
63    B =~ C14  8.447  0.205   0.204    0.273    0.273
242 D18 ~~ D19  8.440  0.084   0.084    0.426    0.426
60    B =~  A4  8.120  0.116   0.115    0.223    0.223
219 C13 ~~ D21  7.922 -0.085  -0.085   -0.359   -0.359
177  B6 ~~ D17  7.844 -0.096  -0.096   -0.362   -0.362
58    B =~  A2  6.807 -0.092  -0.091   -0.169   -0.169
227 C15 ~~ C16  6.784  0.077   0.077    0.298    0.298
141  A2 ~~ D20  6.445 -0.049  -0.049   -0.311   -0.311
173  B6 ~~ C13  6.365  0.073   0.073    0.360    0.360
101  JC =~  B9  6.099  0.710   0.234    0.285    0.285
170  B6 ~~  B7  6.099  1.092   1.092    6.357    6.357
77    C =~  B9  5.918  0.372   0.223    0.273    0.273
89    D =~  B9  5.805  0.429   0.215    0.263    0.263
113  A1 ~~  A3  5.622 -0.035  -0.035   -0.426   -0.426
139  A2 ~~ D18  5.365  0.034   0.034    0.315    0.315
232 C15 ~~ D21  5.230  0.068   0.068    0.268    0.268
123  A1 ~~ D17  5.072  0.041   0.041    0.278    0.278
91    D =~ C13  4.982 -0.683  -0.343   -0.430   -0.430
93    D =~ C15  4.971  0.607   0.305    0.449    0.449
59    B =~  A3  4.958  0.090   0.089    0.155    0.155
178  B6 ~~ D18  4.953 -0.061  -0.061   -0.321   -0.321
188  B7 ~~ D17  4.786  0.071   0.071    0.335    0.335
201  B9 ~~ D20  4.299  0.097   0.097    0.219    0.219
246 D19 ~~ D21  4.279 -0.071  -0.071   -0.270   -0.270
157  A4 ~~  B6  4.059  0.042   0.042    0.265    0.265
> fitmeasures(Model.Analysis.5,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 237.350 115.000   0.788   0.886   0.103   0.077   0.865
```

MODEL 6

```
> ##renaming data
> data<-data_2
> View(data)
>
> ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.442451       0  NO
>
> ###CFA MODELING
> ##Model 6
```

```
> Model.6<-'
+ A=~A1+A2+A3
+ B=~B6+B7+B9
+ C=~C12+C13+C14+C15+C16
+ D=~D17+D18+D19+D20+D21
+ JC=~A+B+C+D'
>
> ##CFA Analysis Model 6
library(lavaan)
> Model.Analysis.6<-cfa(Model.6,data = data,estimator="MLR")
> summary(Model.Analysis.6,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 58 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        36

Number of observations                           100

Model Test User Model:
Standard      Scaled
Test Statistic                           186.015     167.210
Degrees of freedom                           100         100
P-value (Chi-square)                       0.000       0.000
Scaling correction factor                                  1.112
Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

Test statistic                          1086.747     835.301
Degrees of freedom                           120         120
P-value                                    0.000       0.000
Scaling correction factor                                  1.301

User Model versus Baseline Model:

Comparative Fit Index (CFI)                0.911       0.906
Tucker-Lewis Index (TLI)                   0.893       0.887

Robust Comparative Fit Index (CFI)                     0.920
Robust Tucker-Lewis Index (TLI)                        0.904

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)          -1373.618   -1373.618
Scaling correction factor                                  1.647
```

for the MLR correction
Loglikelihood unrestricted model (H1) -1280.611 -1280.611
Scaling correction factor 1.254
for the MLR correction

Akaike (AIC) 2819.237 2819.237
Bayesian (BIC) 2913.023 2913.023
Sample-size adjusted Bayesian (SABIC) 2799.326 2799.326

Root Mean Square Error of Approximation:

RMSEA 0.093 0.082
90 Percent confidence interval - lower 0.072 0.061
90 Percent confidence interval - upper 0.113 0.102
P-value H_0: RMSEA <= 0.050 0.001 0.009
P-value H_0: RMSEA >= 0.080 0.849 0.577

Robust RMSEA 0.086
90 Percent confidence interval - lower 0.063
90 Percent confidence interval - upper 0.109
P-value H_0: Robust RMSEA <= 0.050 0.008
P-value H_0: Robust RMSEA >= 0.080 0.691

Standardized Root Mean Square Residual:

SRMR 0.076 0.076

Parameter Estimates:

Standard errors Sandwich
Information bread Observed
Observed information based on Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.478	0.889
A2	1.017	0.081	12.611	0.000	0.486	0.905
A3	0.950	0.109	8.714	0.000	0.454	0.791
B =~						
B6	1.000				0.992	0.905
B7	0.991	0.085	11.608	0.000	0.982	0.936
B9	0.339	0.105	3.232	0.001	0.336	0.411
C =~						
C12	1.000				0.599	0.782
C13	1.109	0.080	13.866	0.000	0.664	0.834

C14	0.839	0.152	5.512	0.000	0.502	0.674
C15	0.822	0.095	8.649	0.000	0.492	0.725
C16	0.795	0.135	5.865	0.000	0.476	0.652
D =~						
D17	1.000				0.504	0.662
D18	1.314	0.170	7.751	0.000	0.662	0.853
D19	1.149	0.172	6.673	0.000	0.579	0.766
D20	1.132	0.225	5.040	0.000	0.570	0.692
D21	1.410	0.195	7.245	0.000	0.710	0.794
JC =~						
A	1.000				0.669	0.669
B	1.462	0.407	3.595	0.000	0.472	0.472
C	1.799	0.304	5.923	0.000	0.961	0.961
D	1.387	0.239	5.801	0.000	0.881	0.881

Variances:

Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.061	0.021	2.945	0.003	0.061	0.210
.A2	0.052	0.019	2.772	0.006	0.052	0.182
.A3	0.124	0.030	4.076	0.000	0.124	0.375
.B6	0.216	0.139	1.560	0.119	0.216	0.180
.B7	0.136	0.084	1.624	0.104	0.136	0.123
.B9	0.557	0.081	6.849	0.000	0.557	0.831
.C12	0.227	0.047	4.789	0.000	0.227	0.388
.C13	0.192	0.039	4.960	0.000	0.192	0.304
.C14	0.304	0.148	2.052	0.040	0.304	0.546
.C15	0.219	0.034	6.404	0.000	0.219	0.475
.C16	0.305	0.067	4.555	0.000	0.305	0.574
.D17	0.326	0.062	5.258	0.000	0.326	0.562
.D18	0.164	0.040	4.075	0.000	0.164	0.272
.D19	0.235	0.073	3.216	0.001	0.235	0.413
.D20	0.354	0.087	4.059	0.000	0.354	0.521
.D21	0.296	0.081	3.654	0.000	0.296	0.369
.A	0.126	0.026	4.842	0.000	0.552	0.552
.B	0.765	0.175	4.370	0.000	0.778	0.778
.C	0.027	0.044	0.623	0.533	0.076	0.076
.D	0.057	0.029	1.969	0.049	0.224	0.224
JC	0.102	0.028	3.630	0.000	1.000	1.000

```
> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.6,standardized = TRUE,sort. = T
RUE)
> subset(data_mi, mi>3.84)
```

lhs	op	rhs	mi	epc	sepc.lv	sepc.all	sepc.nox
225	D20	~~ D21	12.948	0.142	0.142	0.440	0.440
181	C12	~~ C13	9.297	0.095	0.095	0.454	0.454

```
162  B7 ~~ C13  8.843 -0.082  -0.082   -0.507   -0.507
60    B =~ C14  8.587  0.206   0.205    0.274    0.274
57    B =~  A3  8.509  0.125   0.124    0.215    0.215
220 D18 ~~ D19  8.148  0.083   0.083    0.421    0.421
155  B6 ~~ D17  7.825 -0.096  -0.096   -0.360   -0.360
197 C13 ~~ D21  7.644 -0.084  -0.084   -0.352   -0.352
205 C15 ~~ C16  6.717  0.077   0.077    0.297    0.297
151  B6 ~~ C13  6.676  0.075   0.075    0.368    0.368
95   JC =~  B9  6.139  0.729   0.233    0.285    0.285
148  B6 ~~  B7  6.138  1.114   1.114    6.494    6.494
73    C =~  B9  5.943  0.372   0.223    0.272    0.272
84    D =~  B9  5.767  0.424   0.214    0.261    0.261
210 C15 ~~ D21  5.341  0.069   0.069    0.271    0.271
86    D =~ C13  5.185 -0.701  -0.353   -0.443   -0.443
143  A3 ~~ D17  4.970 -0.050  -0.050   -0.251   -0.251
156  B6 ~~ D18  4.864 -0.060  -0.060   -0.318   -0.318
88    D =~ C15  4.782  0.598   0.301    0.444    0.444
166  B7 ~~ D17  4.765  0.071   0.071    0.336    0.336
56    B =~  A2  4.748 -0.073  -0.073   -0.135   -0.135
179  B9 ~~ D20  4.304  0.097   0.097    0.219    0.219
224 D19 ~~ D21  4.088 -0.069  -0.069   -0.263   -0.263
131  A2 ~~ D18  4.028  0.028   0.028    0.300    0.300
> fitmeasures(Model.Analysis.6,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 186.015 100.000   0.825   0.911   0.093   0.076   0.893

MODEL 7
> ##renaming data
> data<-data_2
> View(data)
> > ##Multivariate Normality Assesment
> library(MVN)
> mvn(data, mvnTest = "hz",multivariatePlot = "qq")$multivariateNormality
Test      HZ p value MVN
1 Henze-Zirkler 1.45386       0  NO
###CFA MODELING
> ##Model 7
> Model.7<-'
+ A=~A1+A2+A3
+ B=~B6+B7+B9
+ C=~C12+C14+C15+C16
+ D=~D18+D19+D20+D21
+ JC=~A+B+C+D'
>
> ##CFA Analysis Model 7
```

```
> library(lavaan)
> Model.Analysis.7<-cfa(Model.7, data = data, estimator="MLR")
> summary(Model.Analysis.7,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 53 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        32

Number of observations                           100

Model Test User Model:
                                              Standard      Scaled
Test Statistic                               119.604     104.964
Degrees of freedom                                73          73
P-value (Chi-square)                           0.000       0.008
Scaling correction factor                                  1.139
Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

Test statistic                               882.569     655.596
Degrees of freedom                                91          91
P-value                                        0.000       0.000
Scaling correction factor                                  1.346

User Model versus Baseline Model:

Comparative Fit Index (CFI)                    0.941       0.943
Tucker-Lewis Index (TLI)                       0.927       0.929

Robust Comparative Fit Index (CFI)                         0.952
Robust Tucker-Lewis Index (TLI)                            0.940

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)              -1208.801   -1208.801
Scaling correction factor                                  1.632
    for the MLR correction
Loglikelihood unrestricted model (H1)      -1148.999   -1148.999
Scaling correction factor                                  1.290
    for the MLR correction

Akaike (AIC)                               2481.603    2481.603
Bayesian (BIC)                             2564.968    2564.968
Sample-size adjusted Bayesian (SABIC)      2463.904    2463.904
```

Root Mean Square Error of Approximation:

RMSEA	0.080	0.066
90 Percent confidence interval - lower	0.053	0.037
90 Percent confidence interval - upper	0.105	0.091
P-value H_0: RMSEA <= 0.050	0.036	0.160
P-value H_0: RMSEA >= 0.080	0.516	0.197

Robust RMSEA	0.071
90 Percent confidence interval - lower	0.037
90 Percent confidence interval - upper	0.099
P-value H_0: Robust RMSEA <= 0.050	0.137
P-value H_0: Robust RMSEA >= 0.080	0.316

Standardized Root Mean Square Residual:

SRMR	0.076	0.076

Parameter Estimates:

Standard errors	Sandwich
Information bread	Observed
Observed information based on	Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.479	0.890
A2	1.013	0.082	12.337	0.000	0.485	0.903
A3	0.949	0.110	8.648	0.000	0.454	0.791
B =~						
B6	1.000				0.982	0.897
B7	1.010	0.087	11.637	0.000	0.992	0.945
B9	0.343	0.104	3.291	0.001	0.337	0.411
C =~						
C12	1.000				0.554	0.724
C14	0.877	0.142	6.173	0.000	0.486	0.651
C15	0.930	0.111	8.388	0.000	0.515	0.759
C16	0.876	0.158	5.534	0.000	0.485	0.666
D =~						
D18	1.000				0.639	0.823
D19	0.892	0.080	11.104	0.000	0.569	0.754
D20	0.927	0.156	5.935	0.000	0.592	0.719
D21	1.161	0.121	9.566	0.000	0.742	0.829
JC =~						

```
A                 1.000                           0.635    0.635
B                 1.570    0.413    3.804    0.000    0.486    0.486
C                 1.801    0.345    5.218    0.000    0.988    0.988
D                 1.891    0.284    6.654    0.000    0.900    0.900

Variances:
Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
.A1               0.060    0.021    2.894    0.004    0.060    0.208
.A2               0.053    0.019    2.768    0.006    0.053    0.185
.A3               0.123    0.030    4.059    0.000    0.123    0.374
.B6               0.235    0.145    1.626    0.104    0.235    0.196
.B7               0.117    0.085    1.374    0.169    0.117    0.106
.B9               0.557    0.081    6.860    0.000    0.557    0.831
.C12              0.279    0.052    5.375    0.000    0.279    0.476
.C14              0.320    0.141    2.269    0.023    0.320    0.576
.C15              0.196    0.036    5.500    0.000    0.196    0.424
.C16              0.296    0.069    4.311    0.000    0.296    0.557
.D18              0.194    0.049    3.948    0.000    0.194    0.323
.D19              0.246    0.080    3.070    0.002    0.246    0.431
.D20              0.328    0.080    4.095    0.000    0.328    0.484
.D21              0.250    0.064    3.934    0.000    0.250    0.312
.A                0.137    0.026    5.160    0.000    0.597    0.597
.B                0.737    0.166    4.453    0.000    0.764    0.764
.C                0.007    0.039    0.187    0.851    0.024    0.024
.D                0.078    0.055    1.425    0.154    0.190    0.190
JC                0.092    0.028    3.326    0.001    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.7,standardized = TRUE,sort. = T
RUE)
> subset(data_mi,mi>3,84)
Error in `[.data.frame`(x, r, vars, drop = drop) :
undefined columns selected
> subset(data_mi, mi > 3.84)
lhs op rhs     mi    epc sepc.lv sepc.all sepc.nox
179 D18 ~~ D19 13.677  0.114   0.114    0.521    0.521
183 D19 ~~ D21  9.096 -0.107  -0.107   -0.431   -0.431
51    B =~  A3  8.521  0.125   0.123    0.214    0.214
184 D20 ~~ D21  8.467  0.114   0.114    0.397    0.397
53    B =~ C14  8.373  0.220   0.216    0.289    0.289
130  B6 ~~  B7  7.021  1.152   1.152    6.938    6.938
85   JC =~  B9  7.020  0.833   0.253    0.309    0.309
65    C =~  B9  6.964  0.453   0.251    0.306    0.306
75    D =~  B9  6.840  0.371   0.237    0.290    0.290
115  A2 ~~ D18  5.269  0.034   0.034    0.333    0.333
170 C15 ~~ C16  5.226  0.071   0.071    0.295    0.295
```

```
136  B6 ~~ D18  5.182 -0.066  -0.066   -0.307   -0.307
50    B =~  A2  4.443 -0.072  -0.070   -0.131   -0.131
164 C14 ~~ C15  4.273 -0.066  -0.066   -0.264   -0.264
93   JC =~ D21  4.226  1.851   0.562    0.629    0.629
172 C15 ~~ D19  4.108 -0.054  -0.054   -0.246   -0.246
69    C =~ D21  4.091  0.914   0.506    0.566    0.566
45    A =~ D18  3.862  0.295   0.141    0.182    0.182
> fitmeasures(Model.Analysis.7,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.000 119.604  73.000   0.861   0.941   0.080   0.076   0.927
```

MODEL 8

```
##renaming data
> data<-data_2
> View(data)
>
> ##Multivariate Normality Assesment
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.480182       0  NO
>
> ###CFA MODELING
> ##Model 8
> Model.8<-'
+ A=~A1+A2+A3
+ B=~B6+B7+B9
+ C=~C12+C14+C15+C16
+ D=~D17+D19+D20+D21
+ JC=~A+B+C+D'
>
> ###CFA Analysis Model 8
> Model.Analysis.8<cfa(Model.8, data = data, estimator="MLR")
Error: object 'Model.Analysis.8' not found
> Model.Analysis.8<-cfa(Model.8, data = data, estimator="MLR")
> summary(Model.Analysis.8,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 60 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        32

Number of observations                           100

Model Test User Model:
Standard      Scaled
```

Test Statistic	114.204	100.729
Degrees of freedom	73	73
P-value (Chi-square)	0.001	0.017
Scaling correction factor		1.134
Yuan-Bentler correction (Mplus variant)		

Model Test Baseline Model:

Test statistic	832.785	628.399
Degrees of freedom	91	91
P-value	0.000	0.000
Scaling correction factor		1.325

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.944	0.948
Tucker-Lewis Index (TLI)	0.931	0.936
Robust Comparative Fit Index (CFI)		0.956
Robust Tucker-Lewis Index (TLI)		0.945

Loglikelihood and Information Criteria:

Loglikelihood user model (H0)	-1229.106	-1229.106
Scaling correction factor for the MLR correction		1.585
Loglikelihood unrestricted model (H1)	-1172.004	-1172.004
Scaling correction factor for the MLR correction		1.271
Akaike (AIC)	2522.212	2522.212
Bayesian (BIC)	2605.577	2605.577
Sample-size adjusted Bayesian (SABIC)	2504.513	2504.513

Root Mean Square Error of Approximation:

RMSEA	0.075	0.062
90 Percent confidence interval - lower	0.047	0.030
90 Percent confidence interval - upper	0.101	0.088
P-value H_0: RMSEA <= 0.050	0.068	0.239
P-value H_0: RMSEA >= 0.080	0.398	0.131
Robust RMSEA		0.066
90 Percent confidence interval - lower		0.029
90 Percent confidence interval - upper		0.095
P-value H_0: Robust RMSEA <= 0.050		0.205

P-value H_0: Robust RMSEA <= 0.080 0.228

Standardized Root Mean Square Residual:

SRMR 0.076 0.076

Parameter Estimates:

Standard errors Sandwich
Information bread Observed
Observed information based on Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.479	0.891
A2	1.011	0.082	12.377	0.000	0.484	0.902
A3	0.948	0.110	8.645	0.000	0.454	0.791
B =~						
B6	1.000				0.983	0.897
B7	1.008	0.088	11.431	0.000	0.991	0.944
B9	0.343	0.104	3.293	0.001	0.337	0.412
C =~						
C12	1.000				0.555	0.725
C14	0.863	0.138	6.259	0.000	0.479	0.642
C15	0.932	0.109	8.541	0.000	0.517	0.762
C16	0.882	0.154	5.725	0.000	0.489	0.671
D =~						
D17	1.000				0.475	0.624
D19	1.109	0.178	6.225	0.000	0.527	0.698
D20	1.260	0.277	4.553	0.000	0.599	0.728
D21	1.600	0.252	6.359	0.000	0.761	0.851
JC =~						
A	1.000				0.623	0.623
B	1.610	0.408	3.946	0.000	0.489	0.489
C	1.857	0.344	5.390	0.000	0.999	0.999
D	1.456	0.292	4.986	0.000	0.914	0.914

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.A1	0.060	0.021	2.873	0.004	0.060	0.206
.A2	0.054	0.019	2.769	0.006	0.054	0.187
.A3	0.123	0.030	4.053	0.000	0.123	0.374
.B6	0.233	0.145	1.608	0.108	0.233	0.195
.B7	0.119	0.087	1.376	0.169	0.119	0.108
.B9	0.556	0.081	6.854	0.000	0.556	0.830

```
.C12            0.278    0.052    5.336    0.000    0.278    0.474
.C14            0.327    0.138    2.368    0.018    0.327    0.588
.C15            0.194    0.035    5.588    0.000    0.194    0.420
.C16            0.292    0.069    4.244    0.000    0.292    0.550
.D17            0.354    0.066    5.332    0.000    0.354    0.610
.D19            0.292    0.078    3.747    0.000    0.292    0.512
.D20            0.319    0.078    4.106    0.000    0.319    0.471
.D21            0.221    0.052    4.221    0.000    0.221    0.276
.A             0.140    0.026    5.421    0.000    0.612    0.612
.B             0.736    0.163    4.500    0.000    0.761    0.761
.C             0.000    0.037    0.012    0.990    0.001    0.001
.D             0.037    0.029    1.293    0.196    0.164    0.164
JC             0.089    0.027    3.318    0.001    1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.8,standardized = TRUE, sort. = T
RUE)
> subset(data_mi, mi > 3.84)
lhs op rhs    mi    epc sepc.lv sepc.all sepc.nox
51    B =~  A3 8.568  0.125   0.123    0.215    0.215
136  B6 ~~ D17 8.460 -0.104  -0.104   -0.362   -0.362
53    B =~ C14 8.336  0.222   0.218    0.292    0.292
75    D =~  B9 7.709  0.538   0.256    0.312    0.312
184 D20 ~~ D21 7.582  0.121   0.121    0.457    0.457
85   JC =~  B9 7.430  0.870   0.260    0.317    0.317
130  B6 ~~  B7 7.430  1.169   1.169    7.008    7.008
65    C =~  B9 7.424  0.468   0.260    0.317    0.317
92   JC =~ D20 6.707 -2.830  -0.845   -1.026   -1.026
68    C =~ D20 6.698 -1.512  -0.839   -1.018   -1.018
126  A3 ~~ D17 5.642 -0.056  -0.056   -0.267   -0.267
145  B7 ~~ D17 5.078  0.076   0.076    0.369    0.369
170 C15 ~~ C16 4.620  0.066   0.066    0.278    0.278
90   JC =~ D17 4.487  2.136   0.638    0.838    0.838
66    C =~ D17 4.486  1.142   0.634    0.832    0.832
50    B =~  A2 4.263 -0.070  -0.069   -0.128   -0.128
> fitmeasures(Model.Analysis.8,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue   chisq      df     gfi     cfi   rmsea    srmr     tli
0.001 114.204  73.000   0.867   0.944   0.075   0.076   0.931
```

MODEL 9

##renamind data

```
> data<-data_2
> View(data)
>
> ##Multivariate Normality Assesment
```

```
> mvn(data, mvnTest = "hz", multivariatePlot = "qq")$multivariateNormality
Test       HZ p value MVN
1 Henze-Zirkler 1.606939       0  NO
##CFA MODELING
> ##Model 9
> Model.9<-'
+ A=~A1+A2+A3
+ B=~B6+B7+B9
+ C=~C12+C14+C15+C16
+ D=~D19+D20+D21
+ JC=~A+B+C+D'
>
> ##CFA Analysis Model 9
> Model.Analysis.9<-cfa(Model.9, data = data, estimator="MLR")
Warning message:
In lav_object_post_check(object) :
lavaan WARNING: some estimated lv variances are negative
> summary(Model.Analysis.9,fit.measures=TRUE,standardized=TRUE)
lavaan 0.6.17 ended normally after 54 iterations

Estimator                                         ML
Optimization method                           NLMINB
Number of model parameters                        30

Number of observations                           100

Model Test User Model:
Standard      Scaled
Test Statistic                        82.728      71.925
Degrees of freedom                        61          61
P-value (Chi-square)                   0.034       0.160
Scaling correction factor                          1.150
Yuan-Bentler correction (Mplus variant)

Model Test Baseline Model:

Test statistic                       760.806     557.918
Degrees of freedom                        78          78
P-value                                0.000       0.000
Scaling correction factor                          1.364

User Model versus Baseline Model:

Comparative Fit Index (CFI)                    0.968       0.977
Tucker-Lewis Index (TLI)                       0.959       0.971
```

Robust Comparative Fit Index (CFI) 0.981
Robust Tucker-Lewis Index (TLI) 0.975

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) -1134.734 -1134.734
Scaling correction factor 1.613
for the MLR correction
Loglikelihood unrestricted model (H1) -1093.370 -1093.370
Scaling correction factor 1.303
for the MLR correction

Akaike (AIC) 2329.469 2329.469
Bayesian (BIC) 2407.624 2407.624
Sample-size adjusted Bayesian (SABIC) 2312.876 2312.876

Root Mean Square Error of Approximation:

RMSEA 0.060 0.042
90 Percent confidence interval - lower 0.018 0.000
90 Percent confidence interval - upper 0.090 0.075
P-value H_0: RMSEA <= 0.050 0.300 0.616
P-value H_0: RMSEA >= 0.080 0.148 0.026

Robust RMSEA 0.045
90 Percent confidence interval - lower 0.000
90 Percent confidence interval - upper 0.083
P-value H_0: Robust RMSEA <= 0.050 0.548
P-value H_0: Robust RMSEA >= 0.080 0.066

Standardized Root Mean Square Residual:

SRMR 0.076 0.076

Parameter Estimates:

Standard errors Sandwich
Information bread Observed
Observed information based on Hessian

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
A =~						
A1	1.000				0.479	0.891
A2	1.011	0.082	12.398	0.000	0.484	0.901
A3	0.949	0.110	8.622	0.000	0.455	0.792

```
B =~
B6          1.000                           0.988    0.902
B7          0.998    0.086   11.593  0.000  0.986    0.940
B9          0.342    0.104    3.281  0.001  0.338    0.413
C =~
C12         1.000                           0.553    0.723
C14         0.872    0.135    6.466  0.000  0.482    0.646
C15         0.938    0.116    8.099  0.000  0.519    0.764
C16         0.878    0.157    5.587  0.000  0.485    0.666
D =~
D19         1.000                           0.511    0.677
D20         1.210    0.195    6.222  0.000  0.618    0.751
D21         1.538    0.219    7.010  0.000  0.786    0.879
JC =~
A           1.000                           0.618    0.618
B           1.660    0.407    4.081  0.000  0.497    0.497
C           1.872    0.357    5.242  0.000  1.002    1.002
D           1.516    0.279    5.437  0.000  0.878    0.878

Variances:
Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
.A1         0.060    0.021    2.864  0.004  0.060    0.206
.A2         0.054    0.020    2.765  0.006  0.054    0.187
.A3         0.123    0.030    4.031  0.000  0.123    0.372
.B6         0.224    0.143    1.563  0.118  0.224    0.187
.B7         0.129    0.085    1.521  0.128  0.129    0.117
.B9         0.556    0.081    6.849  0.000  0.556    0.830
.C12        0.280    0.053    5.288  0.000  0.280    0.478
.C14        0.324    0.136    2.383  0.017  0.324    0.582
.C15        0.192    0.036    5.353  0.000  0.192    0.417
.C16        0.296    0.070    4.239  0.000  0.296    0.557
.D19        0.309    0.082    3.774  0.000  0.309    0.542
.D20        0.296    0.073    4.063  0.000  0.296    0.436
.D21        0.183    0.044    4.152  0.000  0.183    0.228
.A          0.142    0.027    5.315  0.000  0.618    0.618
.B          0.735    0.164    4.490  0.000  0.753    0.753
.C         -0.001    0.039   -0.026  0.979 -0.003   -0.003
.D          0.060    0.040    1.487  0.137  0.229    0.229
JC          0.088    0.026    3.315  0.001  1.000    1.000

> ##Modification Indices
> data_mi=modificationindices(Model.Analysis.9,standardized = TRUE, sort. = T
RUE)
> subset(data_mi, mi > 3.84)
lhs op rhs    mi    epc sepc.lv sepc.all sepc.nox
48    B =~  A3 8.660  0.126   0.124    0.216    0.216
```

```
70    D =~  B9 8.523  0.524   0.268    0.327    0.327
50    B =~ C14 8.056  0.220   0.217    0.291    0.291
61    C =~  B9 7.756  0.486   0.269    0.328    0.328
80   JC =~  B9 7.735  0.906   0.268    0.328    0.328
121  B6 ~~  B7 7.735  1.171   1.171    6.890    6.890
63    C =~ D20 6.404 -1.235  -0.683   -0.829   -0.829
86   JC =~ D20 6.385 -2.282  -0.675   -0.820   -0.820
164 D19 ~~ D21 6.385 -0.115  -0.115   -0.482   -0.482
156 C15 ~~ C16 5.048  0.070   0.070    0.295    0.295
47    B =~  A2 4.311 -0.071  -0.070   -0.130   -0.130
151 C14 ~~ C15 4.309 -0.067  -0.067   -0.267   -0.267
> fitmeasures(Model.Analysis.9,c("pvalue", "chisq", "df", "gfi", "cfi", "rmsea", "sr
mr", "tli"))
pvalue  chisq     df    gfi    cfi  rmsea   srmr    tli
0.034 82.728 61.000  0.891  0.968  0.060  0.076  0.959
```

- **Hasil Uji SPSS – Reliabilitas *Job Crafting***

Reliability Statistics

Cronbach's Alpha	N of Items
.880	12

3. Uji Asumsi

- **Normalitas Residual**

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			100
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		5.88600349
Most Extreme Differences	Absolute		.089
	Positive		.089
	Negative		-.072
Test Statistic			.089
Asymp. Sig. (2-tailed)[c]			.047
Monte Carlo Sig. (2-tailed)[d]	Sig.		.047
	99% Confidence Interval	Lower Bound	.041
		Upper Bound	.052

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

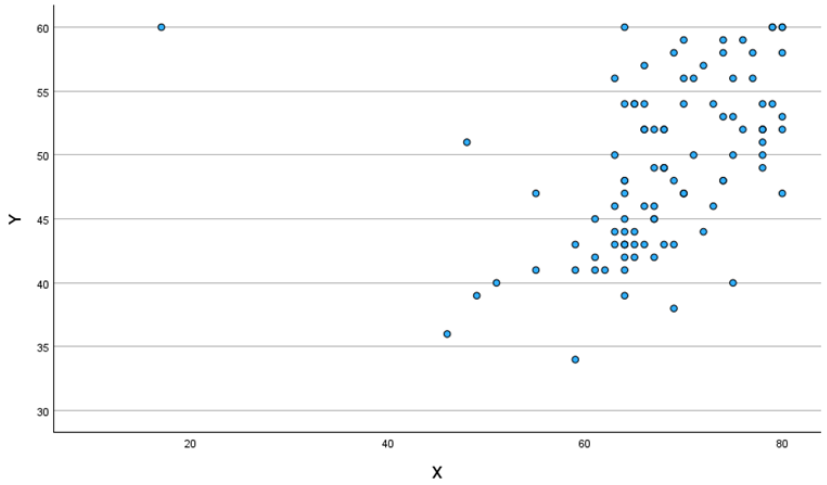
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

- **Uji Linearitas**

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
Y * X	Between Groups	(Combined)	2090.753	26	80.414	3.046	<,001
		Linearity	588.331	1	588.331	22.283	<,001
		Deviation from Linearity	1502.421	25	60.097	2.276	.004
	Within Groups		1927.437	73	26.403		
	Total		4018.190	99			

- **Uji Linearitas Scatterplot**



4. Uji Deskriptif

	N	Persentase (%)
Jenis Kelamin	**100**	**100**
Wanita	72	28.0
Pria	28	72.0
Usia	**100**	**100**
22-30 tahun	24	24.0
31-40 tahun	36	36.0
41-50 tahun	24	24.0
51-60 tahun	16	16.0
Suku	**100**	**100**
Bugis	71	71.0
Makassar	11	11.0
Toraja	14	14.0
Jawa	1	1.0
Asmat	1	1.0
Poso	1	1.0
Maluku	1	1.0
Masa kerja	**100**	**100**
1-10 tahun	26	26.0
11-20 tahun	40	40.0
21-30 tahun	21	21.0
31-40 tahun	13	13.0
Instansi	**100**	**100**
SMAN 10 Makassar	17	17.0
SMAN 21 Makassar	16	16.0
SMA Kristen Gamaliel	7	7.0
SMA Islam Athirah 1 Makassar	14	14.0
SMA Negeri 7	18	18.0
SMA Angkasa	28	28.0

Correlations

		X	Y	Masa_Kerja
X	Pearson Correlation	1	.383**	-.057
	Sig. (2-tailed)		<,001	.576
	N	100	100	100
Y	Pearson Correlation	.383**	1	-.040
	Sig. (2-tailed)	<,001		.691
	N	100	100	100
Masa_Kerja	Pearson Correlation	-.057	-.040	1
	Sig. (2-tailed)	.576	.691	
	N	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

4. *Robust Regression – Boostrapping*

- **Rscript**

```
##renaming data
> data.angel<-data_boostrap
> View(data.angel)
> library(car)
Loading required package: carData
> library(QuantPsyc)
Loading required package: boot
Attaching package: ‘boot’

The following object is masked from ‘package:car’:

    logit

Loading required package: dplyr

Attaching package: ‘dplyr’

The following object is masked from ‘package:car’:

    recode

The following objects are masked from ‘package:stats’:

    filter, lag

The following objects are masked from ‘package:base’:

    intersect, setdiff, setequal, union

Loading required package: purrr

Attaching package: ‘purrr’

The following object is masked from ‘package:car’:

    some

Loading required package: MASS

Attaching package: ‘MASS’

The following object is masked from ‘package:dplyr’:

    select
```

```
Attaching package: 'QuantPsyc'

The following object is masked from 'package:base':

    norm

> library(boot)
> library(readxl)
> album2<-data.angel
> head(album2)
# A tibble: 6 × 2
      X     Y
  <dbl> <dbl>
1    68    43
2    75    53
3    80    47
4    64    47
5    79    60
6    77    56
> albumSales.2<-lm(X~Y,data=album2)
> summary(albumSales.2)

Call:
lm(formula = X ~ Y, data = album2)

Residuals:
    Min      1Q  Median      3Q     Max
-56.780  -3.086   0.169   5.059  13.250

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  41.3316     6.5289   6.331 7.38e-09 ***
Y             0.5408     0.1319   4.100 8.53e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 8.361 on 98 degrees of freedom
Multiple R-squared:  0.1464,            Adjusted R-squared:  0.1377
F-statistic: 16.81 on 1 and 98 DF,  p-value: 8.531e-05

> #Beta setiap koefisien
> lm.beta(albumSales.2)
        Y
0.3826447
```

```
> #Confident interval setiap koefisien
> confint(albumSales.2)
                2.5 %     97.5 %
(Intercept) 28.3751181 54.2880909
Y            0.2790506  0.8025707
> bootReg<-function(formula, data, indices) {}
> bootReg<-function(formula, data, indices) {
+ d <- data[indices,] #allows boot to select sample
+ fit<- lm(formula, data=d) #fit regression model
+ return(summary(fit)$r.square) #return R-squared of model
+ }
> bootResults<-boot(statistic = bootReg, formula = CA ~ , data = album2, R = 200
0)
Error: unexpected ',' in "bootResults<-boot(statistic = bootReg, formula = CA ~ ,"
> ##Robust regression
> #IMPORTANT: N should be >=100!
> fit.rob<-lmrob(X ~ Y, data=data_boostrap)
Error in lmrob(X ~ Y, data = data_boostrap) :
  could not find function "lmrob"
> fit.rob<- lmrob(X ~ Y, data=data_boostrap)
Error in lmrob(X ~ Y, data = data_boostrap) :
  could not find function "lmrob"
> fit.rob<-lmrob(TF ~ JC, data=data_boostrap)
Error in lmrob(TF ~ JC, data = data_boostrap) :
  could not find function "lmrob"
> install.packages("robustbase")
WARNING: Rtools is required to build R packages but is not currently installed. P
lease download and install the appropriate version of Rtools before proceeding:

https://cran.rstudio.com/bin/windows/Rtools/
Installing package into ‘C:/Users/LENOVO/AppData/Local/R/win-library/4.3’
(as ‘lib’ is unspecified)
also installing the dependency ‘DEoptimR’

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.3/DEoptimR_1.1-3.zi
p'
Content type 'application/zip' length 74909 bytes (73 KB)
downloaded 73 KB

trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.3/robustbase_0.99-2.z
ip'
Content type 'application/zip' length 3092817 bytes (2.9 MB)
downloaded 2.9 MB

package ‘DEoptimR’ successfully unpacked and MD5 sums checked
package ‘robustbase’ successfully unpacked and MD5 sums checked
```

```
The downloaded binary packages are in
        C:\Users\LENOVO\AppData\Local\Temp\RtmpC4g3Eg\downloaded_p
ackages
> fit.rob<-lmrob(X ~ Y, data=data_boostrap)
Error in lmrob(X ~ Y, data = data_boostrap) :
  could not find function "lmrob"
> install.packages("boot")
WARNING: Rtools is required to build R packages but is not currently installed. P
lease download and install the appropriate version of Rtools before proceeding:

https://cran.rstudio.com/bin/windows/Rtools/
Warning in install.packages :
  package ‘boot’ is in use and will not be installed
> fit.rob<-lmrob(X ~ Y, data=data_boostrap)
Error in lmrob(X ~ Y, data = data_boostrap) :
  could not find function "lmrob"
> fit.rob<-lmRob(X ~ Y, data=data_boostrap)
Error in lmRob(X ~ Y, data = data_boostrap) :
  could not find function "lmRob"
> fit.rob<-lmRob(TF ~ JC, data=data_boostrap)
Error in lmRob(TF ~ JC, data = data_boostrap) :
  could not find function "lmRob"
> install.packages("robustbase")
WARNING: Rtools is required to build R packages but is not currently installed. P
lease download and install the appropriate version of Rtools before proceeding:

https://cran.rstudio.com/bin/windows/Rtools/
Installing package into ‘C:/Users/LENOVO/AppData/Local/R/win-library/4.3’
(as ‘lib’ is unspecified)
trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.3/robustbase_0.99-2.z
ip'
Content type 'application/zip' length 3092817 bytes (2.9 MB)
downloaded 2.9 MB

package ‘robustbase’ successfully unpacked and MD5 sums checked

The downloaded binary packages are in
        C:\Users\LENOVO\AppData\Local\Temp\RtmpC4g3Eg\downloaded_p
ackages
> library(robustbase)

Attaching package: ‘robustbase’

The following object is masked from ‘package:boot’:
```

salinity

```
> fit.rob<-lmrob(X ~ Y, data=data_boostrap)
> summary(fit.rob)

Call:
lmrob(formula = X ~ Y, data = data_boostrap)
 \--> method = "MM"
Residuals:
    Min      1Q  Median      3Q     Max
-59.4647  -3.6916  -0.3384   3.3823  12.6954

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 34.18740    4.81996   7.093 2.06e-10 ***
Y            0.70462    0.09799   7.191 1.29e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Robust residual standard error: 5.575
Multiple R-squared:  0.3814,    Adjusted R-squared:  0.3751
Convergence in 10 IRWLS iterations

Robustness weights:
 observation 19 is an outlier with |weight| = 0 ( < 0.001);
 8 weights are ~= 1. The remaining 91 ones are summarized as
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
 0.0799  0.8618  0.9614  0.8992  0.9867  0.9989
Algorithmic parameters:
      tuning.chi              bb       tuning.psi        refine.tol
       1.548e+00        5.000e-01        4.685e+00        1.000e-07
         rel.tol       scale.tol       solve.tol            zero.tol
       1.000e-07        1.000e-10        1.000e-07        1.000e-10
     eps.outlier             eps.x warn.limit.reject warn.limit.meanrw
       1.000e-03        1.091e-10        5.000e-01        5.000e-01
    nResample         max.it       best.r.s       k.fast.s          k.max
          500             50              2              1            200
  maxit.scale      trace.lev            mts     compute.rd fast.s.large.n
          200              0           1000              0           2000
                psi          subsampling                  cov
         "bisquare"       "nonsingular"        ".vcov.avar1"
compute.outlier.stats
                "SM"
seed : int(0)
```