```
data <- read.csv("D:/ANUPAM/study/sem3/pychometrics/group assignment - customer satisfaction/code customer satisfaction/response.csv")

> View(data)

> #attach(data)

> names(data)

 [1] "WD3"  "WD1"  "WD2"  "WD7"  "WD9"  "WD6"  "WD4"  "WD5"  "UI1"  "WD8"  "UI2"

[12] "UI3"  "UI4"  "UI9"  "UI6"  "UI5"  "UI10" "UI11" "UI7"  "UI8"  "UI12" "P1"

[23] "P8"   "P7"   "P2"   "P3"   "P4"   "P6"   "P5"   "DS1"  "DS2"  "DS3"  "DS4"

[34] "DS5"  "DS6"  "DS7"  "DS8"  "DS9"  "DS10" "BI1"  "BI2"  "BI3"  "BI4"  "BI5"

[45] "BI6"  "BI7"  "BI8"

>

> library(dplyr)

> library(psychometric)

> library(psych)

> ##################################

> #Scoring

> ##################################

> # For reverse scoring code the item as (x-item) x represents the maximum number on your response scale + 1

> # thus, if 5 point response scale reverse scoring will be item<-(6-item)

> #complete reverse scoring of all the items first

> # #st here stands for statement

> #data.frame(WD1)<- data$WD1

> data['WD1']<-data.frame(6-WD1)

> data['WD4']<-data.frame(6-WD4)

> data['WD6']<-data.frame(6-WD6)

> data['WD7']<-data.frame(6-WD7)

> data['WD9']<-data.frame(6-WD9)

> data['UI1']<-data.frame(6-UI1)

> data['UI2']<-data.frame(6-UI2)

> data['UI3']<-data.frame(6-UI3)

> data['UI4']<-data.frame(6-UI4)
```

```
> data['UI6']<-data.frame(6-UI6)
> data['UI9']<-data.frame(6-UI9)
> data['UI11']<-data.frame(6-UI11)
> data['P1']<-data.frame(6-P1)
> data['P6']<-data.frame(6-P6)
> data['DS5']<-data.frame(6-DS5)
> data['DS7']<-data.frame(6-DS7)
> data['BI3']<-data.frame(6-BI3)
> data['BI7']<-data.frame(6-BI7)
> #Create a data frame with all the statements/items
> #Scale_items <-data.frame()
>
> Scale_total <- rowSums(data)
> Scale_total
 [1] 154 166 172 160 138 139 135 188 144 143 151 146 210 143 119 160 161 160 153 166
[21] 151 127 212 103 202 157 164 161 128 189 198 160 136 191 146 171 171 156 152 165
[41] 168 149 190 201 157 166 181 162 126 164 147 138 141 156 143 149 162 161 124 212
> psych::alpha(data) #Reliability: check the raw_alpha and the raw alpha for each item
Some items ( UI1 UI5 P6 DS8 ) were negatively correlated with the total scale and
probably should be reversed.
To do this, run the function again with the 'check.keys=TRUE' option
Reliability analysis
Call: psych::alpha(x = data)

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
      0.92      0.92    0.99       0.2  12 0.013  3.4 0.5     0.26

    95% confidence boundaries
         lower alpha upper
Feldt     0.89  0.92  0.95
Duhachek  0.90  0.92  0.95
```

Reliability if an item is dropped:

	raw_alpha	std.alpha	G6(smc)	average_r	S/N	alpha se	var.r	med.r
WD3	0.92	0.92	0.99	0.20	11	0.014	0.065	0.25
WD1	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
WD2	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
WD7	0.92	0.92	0.99	0.21	12	0.013	0.066	0.26
WD9	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
WD6	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
WD4	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
WD5	0.92	0.92	0.99	0.20	11	0.014	0.065	0.25
UI1	0.93	0.93	0.99	0.23	14	0.012	0.054	0.27
WD8	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI2	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI3	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI4	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI9	0.92	0.92	0.99	0.21	12	0.013	0.067	0.27
UI6	0.92	0.93	0.99	0.21	12	0.013	0.066	0.27
UI5	0.93	0.93	0.99	0.22	13	0.012	0.057	0.27
UI10	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI11	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI7	0.92	0.92	0.99	0.20	11	0.013	0.065	0.25
UI8	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
UI12	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
P1	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
P8	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
P7	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
P2	0.92	0.92	0.99	0.20	11	0.013	0.065	0.25
P3	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
P4	0.92	0.92	0.99	0.20	11	0.014	0.065	0.25
P6	0.92	0.93	0.99	0.21	13	0.013	0.065	0.27

P5	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
DS1	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
DS2	0.92	0.92	0.99	0.20	11	0.014	0.065	0.25
DS3	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
DS4	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
DS5	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
DS6	0.92	0.92	0.99	0.20	11	0.014	0.065	0.25
DS7	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
DS8	0.93	0.93	0.99	0.22	13	0.012	0.060	0.27
DS9	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
DS10	0.92	0.92	0.99	0.20	11	0.013	0.066	0.26
BI1	0.92	0.93	0.99	0.21	12	0.013	0.065	0.27
BI2	0.92	0.92	0.99	0.20	11	0.014	0.064	0.25
BI3	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
BI4	0.92	0.92	0.99	0.20	12	0.013	0.067	0.26
BI5	0.92	0.92	0.99	0.20	11	0.013	0.065	0.25
BI6	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
BI7	0.92	0.92	0.99	0.20	12	0.013	0.066	0.26
BI8	0.92	0.92	0.99	0.21	12	0.013	0.067	0.26

Item statistics

	n	raw.r	std.r	r.cor	r.drop	mean	sd
WD3	60	0.6714	0.6717	0.6708	0.643	3.5	1.14
WD1	60	0.4376	0.4338	0.4274	0.396	3.3	1.17
WD2	60	0.5323	0.5305	0.5285	0.499	3.4	1.05
WD7	60	0.3873	0.3836	0.3820	0.344	3.8	1.15
WD9	60	0.5947	0.5886	0.5890	0.564	3.5	1.07
WD6	60	0.5178	0.5181	0.5161	0.487	3.4	0.96
WD4	60	0.5437	0.5317	0.5289	0.508	3.4	1.13
WD5	60	0.7349	0.7342	0.7342	0.713	3.4	1.06
UI1	60	-0.6353	-0.6354	-0.6428	-0.663	2.5	1.14

WD8 60 0.5330 0.5365 0.5324 0.497 3.2 1.11

UI2 60 0.6369 0.6319 0.6310 0.611 3.4 0.98

UI3 60 0.5795 0.5819 0.5805 0.544 3.4 1.18

UI4 60 0.5547 0.5506 0.5487 0.519 3.5 1.14

UI9 60 0.2008 0.1967 0.1894 0.157 3.4 1.06

UI6 60 0.0974 0.1003 0.0920 0.050 2.3 1.11

UI5 60 -0.4550 -0.4547 -0.4626 -0.489 2.0 1.02

UI10 60 0.5882 0.5954 0.5924 0.563 3.5 0.87

UI11 60 0.4793 0.4762 0.4751 0.444 3.7 1.04

UI7 60 0.7006 0.7054 0.7038 0.679 3.8 0.94

UI8 60 0.5989 0.6038 0.6034 0.572 3.7 0.93

UI12 60 0.5076 0.5172 0.5151 0.474 4.0 1.02

P1 60 0.6336 0.6235 0.6224 0.604 3.2 1.11

P8 60 0.5382 0.5457 0.5414 0.508 3.4 0.96

P7 60 0.4936 0.5013 0.4966 0.461 3.1 0.98

P2 60 0.7072 0.7107 0.7119 0.687 3.6 0.90

P3 60 0.6360 0.6290 0.6272 0.608 3.4 1.03

P4 60 0.7295 0.7403 0.7412 0.710 3.7 0.94

P6 60 -0.0034 0.0062 -0.0073 -0.040 2.8 0.86

P5 60 0.5690 0.5764 0.5750 0.540 3.6 0.98

DS1 60 0.5336 0.5316 0.5310 0.501 3.6 1.02

DS2 60 0.6867 0.6850 0.6870 0.658 3.5 1.20

DS3 60 0.4666 0.4659 0.4627 0.425 3.4 1.18

DS4 60 0.4423 0.4376 0.4343 0.406 3.1 1.02

DS5 60 0.6108 0.6078 0.6052 0.577 3.2 1.18

DS6 60 0.6936 0.6959 0.6945 0.671 3.8 0.96

DS7 60 0.5774 0.5694 0.5681 0.546 3.2 1.07

DS8 60 -0.3235 -0.3257 -0.3339 -0.363 2.9 1.06

DS9 60 0.5878 0.5839 0.5847 0.553 3.5 1.17

DS10 60 0.6577 0.6689 0.6673 0.634 3.9 0.94

BI1 60 0.0043 0.0150 0.0067 -0.037 4.1 0.95

BI2	60	0.7726	0.7697	0.7704	0.750	3.3	1.23
BI3	60	0.6213	0.6171	0.6149	0.588	3.4	1.21
BI4	60	0.4510	0.4596	0.4532	0.415	3.5	1.02
BI5	60	0.6398	0.6536	0.6533	0.620	4.0	0.77
BI6	60	0.6225	0.6109	0.6103	0.587	3.1	1.27
BI7	60	0.5240	0.5152	0.5099	0.485	3.2	1.20
BI8	60	0.3934	0.3905	0.3851	0.354	3.3	1.07

Non missing response frequency for each item

	1	2	3	4	5	miss
WD3	0.07	0.12	0.28	0.33	0.20	0
WD1	0.08	0.17	0.28	0.32	0.15	0
WD2	0.02	0.18	0.35	0.27	0.18	0
WD7	0.05	0.07	0.28	0.25	0.35	0
WD9	0.05	0.08	0.37	0.30	0.20	0
WD6	0.02	0.13	0.42	0.28	0.15	0
WD4	0.07	0.13	0.35	0.27	0.18	0
WD5	0.05	0.12	0.35	0.32	0.17	0
UI1	0.18	0.35	0.30	0.08	0.08	0
WD8	0.07	0.17	0.37	0.25	0.15	0
UI2	0.00	0.18	0.35	0.30	0.17	0
UI3	0.05	0.22	0.25	0.28	0.20	0
UI4	0.07	0.10	0.30	0.32	0.22	0
UI9	0.07	0.10	0.33	0.37	0.13	0
UI6	0.30	0.23	0.33	0.10	0.03	0
UI5	0.38	0.33	0.17	0.12	0.00	0
UI10	0.02	0.07	0.40	0.38	0.13	0
UI11	0.03	0.08	0.27	0.37	0.25	0
UI7	0.00	0.10	0.27	0.38	0.25	0
UI8	0.03	0.07	0.23	0.52	0.15	0
UI12	0.03	0.03	0.23	0.33	0.37	0

P1 0.08 0.17 0.35 0.28 0.12 0

P8 0.02 0.15 0.37 0.33 0.13 0

P7 0.07 0.17 0.40 0.32 0.05 0

P2 0.03 0.03 0.37 0.42 0.15 0

P3 0.05 0.12 0.32 0.38 0.13 0

P4 0.02 0.08 0.27 0.43 0.20 0

P6 0.08 0.23 0.48 0.20 0.00 0

P5 0.03 0.07 0.35 0.37 0.18 0

DS1 0.02 0.12 0.32 0.32 0.23 0

DS2 0.08 0.08 0.33 0.25 0.25 0

DS3 0.10 0.07 0.33 0.30 0.20 0

DS4 0.08 0.15 0.42 0.28 0.07 0

DS5 0.10 0.17 0.35 0.23 0.15 0

DS6 0.02 0.03 0.38 0.28 0.28 0

DS7 0.03 0.22 0.37 0.23 0.15 0

DS8 0.12 0.22 0.33 0.30 0.03 0

DS9 0.07 0.15 0.23 0.35 0.20 0

DS10 0.02 0.03 0.30 0.35 0.30 0

BI1 0.00 0.07 0.22 0.30 0.42 0

BI2 0.10 0.13 0.30 0.27 0.20 0

BI3 0.07 0.18 0.25 0.28 0.22 0

BI4 0.05 0.07 0.40 0.32 0.17 0

BI5 0.00 0.00 0.32 0.42 0.27 0

BI6 0.08 0.28 0.30 0.12 0.22 0

BI7 0.10 0.17 0.33 0.23 0.17 0

BI8 0.07 0.13 0.40 0.27 0.13 0

Warning message:

In psych::alpha(data) :

Some items were negatively correlated with the total scale and probably

should be reversed.

To do this, run the function again with the 'check.keys=TRUE' option

```
>
> #Similarly do facet wise scoring and scoring for the other scale (validation scale) as well
> #our validation will be through regression
> #predictive validity
>
> ###################################
> #INTER. COR among factor level scales/various facets
> ###################################
> #scales<-data.frame(Scale_total)
> #scales
> #r<-cor(scales,method=c("pearson"))
> #r
> #round(r, digits=2)
> #Create the correlation matrix from bfi_data
> bfi_cor <- cor(data)
> bfi_cor
            WD3         WD1         WD2         WD7         WD9         WD6
WD3   1.000000000  0.40453773  6.086497e-01  0.068100855  0.25089541  0.18383424
WD1   0.404537730  1.00000000  3.045595e-01  0.337008564  0.34408223  0.42197962
WD2   0.608649681  0.30455955  1.000000e+00  0.146592397  0.04687884  0.11088061
WD7   0.068100855  0.33700856  1.465924e-01  1.000000000  0.24481698  0.46561236
WD9   0.250895406  0.34408223  4.687884e-02  0.244816985  1.00000000  0.54713671
WD6   0.183834242  0.42197962  1.108806e-01  0.465612360  0.54713671  1.00000000
WD4   0.331778939  0.44555854  2.974968e-01  0.386328618  0.52768297  0.43233357
WD5   0.633876770  0.30941051  3.985812e-01  0.299498700  0.32257317  0.23472872
UI1  -0.512831646 -0.47193719 -4.303310e-01 -0.400571726 -0.36961634 -0.39093543
WD8   0.409489669  0.19246251  4.325367e-01 -0.009910609  0.08922629  0.10675050
UI2   0.301563871  0.34584348  2.269223e-01  0.417736933  0.51937306  0.44430371
UI3   0.193486649  0.33023411  6.644407e-02  0.546834703  0.45400039  0.49096964
UI4   0.182074042  0.34641327  1.713674e-01  0.486158470  0.34791139  0.30981855
UI9  -0.120286269  0.23572321 -1.068941e-01  0.335872336  0.33887616  0.43187621
```

UI6 -0.008872779 0.13475586 -1.792130e-01 0.136468568 0.23780154 0.21601398

UI5 -0.401111829 -0.16135773 -3.412605e-01 -0.402366373 -0.27407064 -0.24987871

UI10 0.545441847 0.22761945 4.691589e-01 0.036307818 0.21802350 0.16674111

UI11 0.059987364 0.33199213 1.721468e-01 0.555019785 0.51523812 0.44067857

UI7 0.430460360 0.19607645 3.344634e-01 0.284675768 0.24892021 0.32633909

UI8 0.370052558 0.39700181 1.553918e-01 0.299093831 0.47600070 0.41546110

UI12 0.433988132 0.13575516 3.610330e-01 0.194963735 0.24893056 0.15192609

	WD4	WD5	UI1	WD8	UI2	UI3
WD3	0.33177894	0.633876770	-0.512831646	0.409489669	0.30156387	0.19348665
WD1	0.44555854	0.309410507	-0.471937192	0.192462513	0.34584348	0.33023411
WD2	0.29749680	0.398581158	-0.430331002	0.432536665	0.22692233	0.06644407
WD7	0.38632862	0.299498700	-0.400571726	-0.009910609	0.41773693	0.54683470
WD9	0.52768297	0.322573168	-0.369616338	0.089226288	0.51937306	0.45400039
WD6	0.43233357	0.234728725	-0.390935434	0.106750503	0.44430371	0.49096964
WD4	1.00000000	0.329658109	-0.441352662	0.140789171	0.64076773	0.31610677
WD5	0.32965811	1.000000000	-0.444741804	0.421936205	0.44322679	0.38497710
UI1	-0.44135266	-0.444741804	1.000000000	-0.346347661	-0.36894983	-0.50045774
WD8	0.14078917	0.421936205	-0.346347661	1.000000000	0.20532736	0.25171001
UI2	0.64076773	0.443226791	-0.368949832	0.205327363	1.00000000	0.41172835
UI3	0.31610677	0.384977098	-0.500457744	0.251710009	0.41172835	1.00000000
UI4	0.42682205	0.356701014	-0.461721735	0.296297403	0.36353940	0.59976664
UI9	0.15773125	-0.021031613	-0.011193056	-0.071693891	0.21484471	0.34165375
UI6	-0.03126870	-0.081003828	0.031064817	-0.245594127	-0.06195039	0.25371710
UI5	-0.24051293	-0.414357252	0.328001468	-0.228171002	-0.44921563	-0.44374398
UI10	0.15250797	0.414928460	-0.265574333	0.396913950	0.26042297	0.27878870
UI11	0.34712492	0.219519686	-0.326361390	0.149488890	0.54051384	0.48586128
UI7	0.34578789	0.536052888	-0.348267983	0.392231094	0.52968134	0.53170021
UI8	0.27268810	0.312593936	-0.508821260	0.192273724	0.38170907	0.40176470
UI12	0.14193292	0.464572093	-0.491594506	0.304360171	0.21740136	0.30509409

	UI4	UI9	UI6	UI5	UI10	UI11
WD3	0.18207404	-0.120286269	-8.872779e-03	-0.40111183	0.54544185	0.059987364

WD1	0.34641327	0.235723214	1.347559e-01	-0.16135773	0.22761945	0.331992132
WD2	0.17136739	-0.106894109	-1.792130e-01	-0.34126054	0.46915887	0.172146831
WD7	0.48615847	0.335872336	1.364686e-01	-0.40236637	0.03630782	0.555019785
WD9	0.34791139	0.338876163	2.378015e-01	-0.27407064	0.21802350	0.515238119
WD6	0.30981855	0.431876210	2.160140e-01	-0.24987871	0.16674111	0.440678569
WD4	0.42682205	0.157731252	-3.126870e-02	-0.24051293	0.15250797	0.347124917
WD5	0.35670101	-0.021031613	-8.100383e-02	-0.41435725	0.41492846	0.219519686
UI1	-0.46172174	-0.011193056	3.106482e-02	0.32800147	-0.26557433	-0.326361390
WD8	0.29629740	-0.071693891	-2.455941e-01	-0.22817100	0.39691395	0.149488890
UI2	0.36353940	0.214844706	-6.195039e-02	-0.44921563	0.26042297	0.540513838
UI3	0.59976664	0.341653748	2.537171e-01	-0.44374398	0.27878870	0.485861276
UI4	1.00000000	0.106299494	6.210945e-02	-0.32862467	0.32249994	0.565967742
UI9	0.10629949	1.000000000	3.869270e-01	0.08800319	0.03298430	0.257344036
UI6	0.06210945	0.386926978	1.000000e+00	0.17445784	0.01743685	0.038869315
UI5	-0.32862467	0.088003189	1.744578e-01	1.00000000	-0.35469667	-0.427037052
UI10	0.32249994	0.032984298	1.743685e-02	-0.35469667	1.00000000	0.081076856
UI11	0.56596774	0.257344036	3.886931e-02	-0.42703705	0.08107686	1.000000000
UI7	0.37418759	0.003397661	5.388428e-03	-0.51023424	0.47852415	0.247380163
UI8	0.42804785	0.096247592	1.035780e-01	-0.22746455	0.19762254	0.412851011
UI12	0.20323582	-0.003118773	-7.913813e-02	-0.48760778	0.19163636	0.260646743

	UI7	UI8	UI12	P1	P8	P7
WD3	0.430460360	0.37005256	0.433988132	0.47605290	0.47694059	0.52636032
WD1	0.196076454	0.39700181	0.135755165	0.41678283	0.30105412	0.22373181
WD2	0.334463352	0.15539183	0.361032968	0.25368393	0.27930684	0.39980905
WD7	0.284675768	0.29909383	0.194963735	0.30955476	-0.10077637	-0.02238092
WD9	0.248920215	0.47600070	0.248930560	0.64813091	0.19983583	0.20186008
WD6	0.326339095	0.41546110	0.151926091	0.38685169	0.15725191	0.12790982
WD4	0.345787895	0.27268810	0.141932920	0.51000495	0.16827355	0.05256492
WD5	0.536052888	0.31259394	0.464572093	0.33291109	0.43355776	0.40774196
UI1	-0.348267983	-0.50882126	-0.491594506	-0.42527271	-0.19032383	-0.37620245
WD8	0.392231094	0.19227372	0.304360171	0.20857112	0.40723340	0.50271536

UI2	0.529681341	0.38170907	0.217401356	0.38889347	0.17502874	0.17428790
UI3	0.531700212	0.40176470	0.305094095	0.47804429	0.14704167	0.30116546
UI4	0.374187594	0.42804785	0.203235822	0.47116118	0.20183200	0.15788275
UI9	0.003397661	0.09624759	-0.003118773	0.13790352	0.11627436	-0.01309792
UI6	0.005388428	0.10357800	-0.079138131	0.22326069	0.08956677	0.02596536
UI5	-0.510234240	-0.22746455	-0.487607784	-0.36249226	0.02744333	-0.29242188
UI10	0.478524153	0.19762254	0.191636364	0.40113413	0.49011782	0.44125410
UI11	0.247380163	0.41285101	0.260646743	0.39619895	0.13656812	0.09963876
UI7	1.000000000	0.32732424	0.344182441	0.34649554	0.32633909	0.30503716
UI8	0.327324244	1.00000000	0.540406771	0.45055047	0.20694070	0.20957812
UI12	0.344182441	0.54040677	1.000000000	0.12444527	0.20352363	0.30910077

	P2	P3	P4	P6	P5	DS1
WD3	0.46165448	0.58182450	0.571405230	-7.249494e-02	0.47956687	0.50157249
WD1	0.10484194	0.30502273	0.275434599	1.758928e-01	0.23495002	-0.02506977
WD2	0.35105727	0.52106562	0.432074974	2.043181e-20	0.39765959	0.38211518
WD7	0.35871212	0.23750514	0.224139766	2.123838e-01	-0.10842660	-0.11161315
WD9	0.29718467	0.28641871	0.233133655	-1.480346e-02	0.26682156	0.06779606
WD6	0.32336528	0.08829401	0.245144679	2.049872e-01	0.16220825	0.07166325
WD4	0.27168209	0.34000554	0.257884693	4.171111e-02	0.10390899	0.16137579
WD5	0.59900866	0.50590578	0.582371472	-3.337013e-02	0.38142126	0.39716766
UI1	-0.32411174	-0.41551832	-0.614466774	-9.669132e-02	-0.24593378	-0.23565631
WD8	0.41660355	0.34666889	0.456929007	-2.123412e-01	0.48230118	0.27466650
UI2	0.40792867	0.23945374	0.305691311	-3.213746e-02	0.24371053	0.23425417
UI3	0.40478513	0.31337125	0.416490003	1.907354e-01	0.15887439	0.23958309
UI4	0.12943839	0.41106645	0.422571654	1.070163e-01	0.23371297	0.28047509
UI9	0.18032989	-0.02169176	-0.003397661	2.378936e-01	0.07516822	-0.08108809
UI6	0.06168397	-0.05405944	0.091603284	3.006457e-01	0.06219704	-0.03956907
UI5	-0.41722911	-0.24951978	-0.225424855	1.590249e-01	-0.19779388	-0.23810881
UI10	0.31514323	0.46565744	0.482658271	-7.688727e-02	0.56069713	0.47624483
UI11	0.27842287	0.30520705	0.296913792	-2.646511e-02	0.25263464	-0.01956172
UI7	0.53878741	0.32566828	0.485148515	-7.547330e-02	0.43870390	0.49663122

UI8 0.27674899 0.26935910 0.535415866 1.951329e-01 0.17529688 0.14296162

UI12 0.42530538 0.14224892 0.552920003 1.077662e-01 0.27410265 0.23035522

	DS2	DS3	DS4	DS5	DS6	DS7
WD3	0.29050930	0.318687233	0.30690214	0.42915720	0.39147417	0.49685715
WD1	0.07873391	-0.102723581	-0.08123602	0.18666386	0.19242367	0.30980841
WD2	0.26318729	0.248527676	0.27790326	0.16227777	0.44656525	0.42107224
WD7	0.12880204	-0.066727871	0.06206220	0.13918057	0.32546504	0.38959665
WD9	0.52348502	0.155376230	0.21674408	0.44212365	0.36047648	0.30171403
WD6	0.30096388	0.240574834	0.07773172	0.45994150	0.26509526	0.32597998
WD4	0.19915641	0.119437469	0.21675109	0.39628033	0.19903453	0.37083737
WD5	0.53110345	0.225201248	0.34993906	0.27881182	0.64247748	0.45528389
UI1	-0.25968840	-0.236481755	-0.10475893	-0.40626121	-0.51215366	-0.54220209
WD8	0.39920620	0.160570566	0.27585682	0.22534420	0.51190933	0.30276731
UI2	0.39560156	0.295999203	0.15741044	0.37272378	0.33963564	0.37602055
UI3	0.26362276	0.114981114	0.16636712	0.25974103	0.43174406	0.34352925
UI4	0.20397462	0.082282287	0.08581624	0.19887773	0.46011763	0.36482518
UI9	0.14641959	0.008095188	-0.16287901	0.14877186	0.03667801	0.04489429
UI6	0.05066404	-0.072750619	0.20863787	0.13727459	-0.08989677	-0.09967843
UI5	-0.28473367	-0.259512353	-0.29579362	-0.19992829	-0.41374645	-0.30059310
UI10	0.41299947	0.356236364	0.22295666	0.25507190	0.42903852	0.14111538
UI11	0.30462246	0.005031761	0.04300990	0.20405149	0.41234435	0.33866689
UI7	0.47297173	0.420559169	0.42929535	0.41445997	0.54882783	0.29119040
UI8	0.32659902	0.111374074	0.12332491	0.38843981	0.39733136	0.47391748
UI12	0.33078023	0.193717826	0.14919058	0.18671906	0.47587092	0.33314254

	DS8	DS9	DS10	BI1	BI2	BI3
WD3	-0.217660307	0.27195844	0.38470587	-0.045608015	0.61900526	0.409535204
WD1	-0.035355390	-0.01158593	0.04612048	-0.062970405	0.25206346	0.338805291
WD2	-0.105476049	0.29507660	0.13636918	-0.265946625	0.53539163	0.281126765
WD7	-0.278353021	0.21454969	0.17978149	0.136798520	0.12364501	0.318777257
WD9	-0.141003877	0.23813180	0.34871382	-0.034448091	0.42229377	0.402236222
WD6	-0.264021520	0.05015162	0.29823334	0.153874564	0.22435709	0.334919888

WD4	-0.016407703	0.20069696	0.21552170	-0.163858988	0.29949354	0.360503718
WD5	-0.372546804	0.51525469	0.47504792	0.004453233	0.69074945	0.468836826
UI1	0.009314696	-0.27796086	-0.46190225	-0.048733481	-0.47847766	-0.451371021
WD8	-0.411671942	0.36365579	0.33562042	0.175334339	0.58101491	0.201121869
UI2	-0.125966105	0.35971693	0.49846962	-0.050660667	0.35080680	0.530787680
UI3	-0.354270772	0.31601087	0.34512085	0.128607563	0.33507353	0.251969908
UI4	-0.187397377	0.31080965	0.29372280	-0.016584733	0.36979535	0.313895246
UI9	-0.075197465	0.06547771	0.06455556	0.073662549	0.01298402	0.110901744
UI6	0.023851477	0.12547648	0.05388428	-0.100892699	-0.05765664	-0.113066754
UI5	0.440717513	-0.29132505	-0.26383276	-0.210794777	-0.30258068	-0.322369100
UI10	-0.260765945	0.35851622	0.38964062	-0.044814604	0.61613604	0.237751694
UI11	-0.189937677	0.11007301	0.24219641	-0.031785844	0.22010548	0.413602077
UI7	-0.255887254	0.47804088	0.54583200	0.073021195	0.50285560	0.345513646
UI8	-0.044338763	0.24700621	0.40293517	0.062412103	0.28647442	0.687058723
UI12	-0.158319201	0.26742447	0.45324195	0.227662158	0.34506465	0.421048009

	BI4	BI5	BI6	BI7	BI8
WD3	0.27705662	3.755086e-01	0.47958907	0.28579376	0.39144885
WD1	0.24001069	5.391398e-02	0.10633267	0.20036836	0.04704016
WD2	0.42889943	2.582108e-01	0.57966487	0.22863979	0.26207201
WD7	-0.01037898	2.174390e-01	0.22347350	0.15401981	-0.21345501
WD9	0.04719961	3.425415e-01	0.19890219	0.41995897	0.23358026
WD6	0.18921451	2.808696e-01	0.18708094	0.33648129	-0.04385685
WD4	0.09356002	1.574590e-01	0.39712413	0.54079588	0.26679223
WD5	0.35165502	5.038874e-01	0.61912929	0.32812807	0.41746321
UI1	-0.18200675	-4.519155e-01	-0.37585853	-0.44854625	-0.14591748
WD8	0.32542422	4.502733e-01	0.34093129	0.27783182	0.36912062
UI2	0.32183880	3.448592e-01	0.41143687	0.49599121	0.15792817
UI3	0.04762821	4.322951e-01	0.19002239	0.19821700	0.02863698
UI4	0.17538001	2.616011e-01	0.25554746	0.30550368	0.10709450
UI9	-0.15086261	-1.621471e-01	0.07036064	-0.02387545	-0.18489979
UI6	-0.21931843	3.857034e-20	-0.15542413	-0.31553854	-0.03310738

```
UI5  -0.22109866 -3.676738e-01 -0.28974270 -0.18269702 -0.12862448
UI10  0.45986280  4.717330e-01  0.34703274  0.20012603  0.13063214
UI11  0.11535062  2.568998e-01  0.17507948  0.31569510 -0.06774405
UI7   0.35955708  5.944436e-01  0.42944004  0.36807161  0.29379398
UI8   0.36197052  4.282148e-01  0.18497005  0.26944430  0.12025393
UI12  0.27607604  4.498655e-01  0.27580329  0.11536662  0.27070797
 [ reached getOption("max.print") -- omitted 26 rows ]
> ###################################
> #VALIDITY
> #regression
> ###################################
> #Neuroticism--not
> #cor.test(scale_1, scale_2) #check for correlations between the scales
>
> ###################################
> #FACTOR ANALYISIS
> ###################################
> #Neuroticism
> #fit<-principal(scale_items, nfactors=#total number of items,residuals=FALSE, rotate= "none",
n.obs=#number of observations in the data set)
>
> #eigen<-fit$values
> #pc_number<-1:#total number of nfactors
> #plot(pc_number, eigen, pch=20,cex=3,cex.lab=2,cex.axis=2,
> #main="The Scree Plot",type="b")
>
> #fa.parallel(scale_items, n.obs=#observations in the dataset, fa="pc", main="Parallel
Analysis",n.iter=1000)
> #Factor analysis of the data
> factors_data <- fa(r = bfi_cor, nfactors = 5)
> #Getting the factor loadings and model analysis
> factors_data
```

Factor Analysis using method = minres

Call: fa(r = bfi_cor, nfactors = 5)

Standardized loadings (pattern matrix) based upon correlation matrix

	MR1	MR5	MR2	MR3	MR4	h2	u2	com
WD3	0.74	-0.01	0.18	-0.07	-0.09	0.67	0.33	1.2
WD1	0.49	-0.46	0.27	0.29	0.19	0.56	0.44	3.6
WD2	0.66	-0.10	0.16	-0.06	-0.28	0.56	0.44	1.6
WD7	-0.18	0.04	0.28	0.65	0.07	0.58	0.42	1.6
WD9	-0.04	0.20	0.55	0.14	0.33	0.59	0.41	2.1
WD6	-0.04	0.09	0.38	0.39	0.29	0.51	0.49	3.0
WD4	0.00	-0.07	0.77	0.04	0.00	0.60	0.40	1.0
WD5	0.44	0.32	0.13	0.16	-0.12	0.60	0.40	2.5
UI1	-0.44	0.11	-0.28	-0.39	0.11	0.60	0.40	3.0
WD8	0.49	0.27	-0.11	0.09	-0.17	0.45	0.55	2.1
UI2	-0.07	0.24	0.57	0.24	-0.06	0.56	0.44	1.8
UI3	0.09	0.22	0.15	0.52	0.30	0.61	0.39	2.3
UI4	0.22	-0.02	0.29	0.36	0.08	0.40	0.60	2.8
UI9	-0.11	0.01	0.14	0.21	0.51	0.37	0.63	1.6
UI6	0.05	0.04	-0.05	-0.05	0.80	0.63	0.37	1.0
UI5	-0.01	-0.35	-0.15	-0.38	0.24	0.43	0.57	3.0
UI10	0.61	0.19	-0.02	-0.06	0.08	0.49	0.51	1.2
UI11	-0.04	0.04	0.36	0.49	0.07	0.49	0.51	1.9
UI7	0.19	0.49	0.19	0.15	-0.04	0.55	0.45	1.9
UI8	0.28	-0.04	0.22	0.45	0.06	0.47	0.53	2.3
UI12	0.35	0.18	-0.14	0.44	-0.18	0.45	0.55	2.9
P1	0.18	0.06	0.64	-0.02	0.24	0.62	0.38	1.5
P8	0.68	0.08	-0.06	-0.14	0.21	0.49	0.51	1.3
P7	0.61	0.19	-0.22	0.06	0.06	0.43	0.57	1.5
P2	0.17	0.65	0.05	0.17	0.04	0.65	0.35	1.3
P3	0.51	0.07	0.29	-0.07	-0.02	0.49	0.51	1.7
P4	0.69	0.14	-0.07	0.25	0.05	0.67	0.33	1.4

P6	0.11	-0.32	-0.10	0.28	0.27	0.23	0.77	3.5
P5	0.60	0.17	-0.04	-0.07	0.10	0.45	0.55	1.3
DS1	0.39	0.33	0.21	-0.35	-0.03	0.51	0.49	3.5
DS2	0.12	0.68	0.13	-0.01	0.10	0.64	0.36	1.2
DS3	0.12	0.38	0.24	-0.16	-0.08	0.31	0.69	2.4
DS4	0.00	0.53	0.26	-0.25	0.04	0.40	0.60	2.0
DS5	0.06	0.26	0.52	-0.06	0.11	0.44	0.56	1.6
DS6	0.35	0.35	0.07	0.29	-0.13	0.58	0.42	3.3
DS7	0.22	-0.09	0.51	0.21	-0.21	0.51	0.49	2.2
DS8	-0.04	-0.49	0.14	-0.21	-0.06	0.30	0.70	1.6
DS9	0.16	0.62	0.06	-0.04	0.05	0.51	0.49	1.2
DS10	0.18	0.53	0.03	0.24	0.01	0.52	0.48	1.7
BI1	-0.20	0.28	-0.32	0.45	-0.07	0.30	0.70	3.1
BI2	0.58	0.36	0.15	-0.09	0.02	0.74	0.26	1.9
BI3	0.16	0.09	0.37	0.32	-0.13	0.46	0.54	2.8
BI4	0.39	0.13	-0.04	0.12	-0.22	0.29	0.71	2.1
BI5	0.27	0.50	-0.06	0.28	-0.05	0.56	0.44	2.3
BI6	0.26	0.27	0.38	-0.10	-0.24	0.50	0.50	3.6
BI7	-0.02	0.12	0.64	0.01	-0.28	0.51	0.49	1.4
BI8	0.26	0.33	0.14	-0.34	-0.02	0.35	0.65	3.2

	MR1	MR5	MR2	MR3	MR4
SS loadings	7.08	5.50	5.17	3.86	2.03
Proportion Var	0.15	0.12	0.11	0.08	0.04
Cumulative Var	0.15	0.27	0.38	0.46	0.50
Proportion Explained	0.30	0.23	0.22	0.16	0.09
Cumulative Proportion	0.30	0.53	0.75	0.91	1.00

With factor correlations of

	MR1	MR5	MR2	MR3	MR4
MR1	1.00	0.44	0.39	0.19	-0.05

MR5 0.44 1.00 0.25 0.15 -0.03

MR2 0.39 0.25 1.00 0.30 0.06

MR3 0.19 0.15 0.30 1.00 0.09

MR4 -0.05 -0.03 0.06 0.09 1.00

Mean item complexity = 2.1

Test of the hypothesis that 5 factors are sufficient.

The degrees of freedom for the null model are 1081 and the objective function was 51.58

The degrees of freedom for the model are 856 and the objective function was 27.99

The root mean square of the residuals (RMSR) is 0.07

The df corrected root mean square of the residuals is 0.08

Fit based upon off diagonal values = 0.95

Measures of factor score adequacy

MR1 MR5 MR2 MR3 MR4

Correlation of (regression) scores with factors 0.97 0.96 0.95 0.94 0.92

Multiple R square of scores with factors 0.93 0.91 0.90 0.88 0.84

Minimum correlation of possible factor scores 0.87 0.82 0.81 0.76 0.69

>

>

> #unrotated

> #fit_1<-principal(scale_items, nfactors= #final number as shown,residuals=FALSE, rotate= "none", n.obs=#no. of observations)

>

> #rotated

> #fit_2<-principal(scale_items, nfactors=#final number as shown,residuals=FALSE, rotate= "varimax", n.obs=60)

>

> ###################################

> #PERCENTILE NORMS

```
> ###################################
>
>
> N_norms <- quantile(Scale_total, probs = seq(0, 1, 0.10), na.rm = T,names = TRUE, type = 7)
> range(Scale_total)
[1] 103 212
>
>
>
> #elbow point
> library(cluster)
> library(factoextra)
>
> #create plot of number of clusters vs total within sum of squares
> fviz_nbclust(data, kmeans, method = "wss")
>
>
> #linear model
> data_target<- read.csv("D:/ANUPAM/study/sem3/pychometrics/group assignment - customer satisfaction/code customer satisfaction/response_with_target.csv")
> View(data_target)
> attach(data_target)
The following objects are masked from data_target (pos = 3):

    BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
    DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, target, UI1, UI10,
    UI11, UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4,
    WD5, WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 4):
```

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, UI1, UI10, UI11,
UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data_target (pos = 5):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, target, UI1, UI10,
UI11, UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4,
WD5, WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 6):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, UI1, UI10, UI11,
UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 7):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, UI1, UI10, UI11,
UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 8):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, UI1, UI10, UI11,
UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,

WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 9):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, UI1, UI10, UI11, UI12,
UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5, WD6, WD7,
WD8, WD9

The following objects are masked from data (pos = 10):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, UI1, UI10, UI11, UI12,
UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5, WD6, WD7,
WD8, WD9

The following objects are masked from data (pos = 11):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, UI1, UI10, UI11, UI12,
UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5, WD6, WD7,
WD8, WD9

The following objects are masked from data (pos = 12):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, UI1, UI10, UI11,
UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 13):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, UI1, UI10, UI11,
UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data_target (pos = 14):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P6, P7, P8, target, UI1, UI10,
UI11, UI12, UI2, UI3, UI4, UI5, UI6, UI7, UI8, UI9, WD1, WD2, WD3, WD4,
WD5, WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 15):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, UI1, UI10, UI11, UI12,
UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5, WD6, WD7,
WD8, WD9

The following objects are masked from data_target (pos = 16):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, target, UI1, UI10,
UI11, UI12, UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 17):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, UI1, UI10, UI11, UI12,

UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5, WD6, WD7,
WD8, WD9

The following objects are masked from data_target (pos = 18):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, target, UI1, UI10,
UI11, UI12, UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5,
WD6, WD7, WD8, WD9

The following objects are masked from data (pos = 29):

BI1, BI2, BI3, BI4, BI5, BI6, BI7, BI8, DS1, DS10, DS2, DS3, DS4, DS5,
DS6, DS7, DS8, DS9, P1, P2, P3, P4, P5, P7, P8, UI1, UI10, UI11, UI12,
UI2, UI3, UI4, UI5, UI7, UI8, UI9, WD1, WD2, WD3, WD4, WD5, WD6, WD7,
WD8, WD9

```
> names(data_target)
 [1] "WD3"   "WD1"   "WD2"   "WD7"   "WD9"   "WD6"   "WD4"   "WD5"   "UI1"
[10] "WD8"   "UI2"   "UI3"   "UI4"   "UI9"   "UI6"   "UI5"   "UI10"  "UI11"
[19] "UI7"   "UI8"   "UI12"  "P1"    "P8"    "P7"    "P2"    "P3"    "P4"
[28] "P6"    "P5"    "DS1"   "DS2"   "DS3"   "DS4"   "DS5"   "DS6"   "DS7"
[37] "DS8"   "DS9"   "DS10"  "BI1"   "BI2"   "BI3"   "BI4"   "BI5"   "BI6"
[46] "BI7"   "BI8"   "target"
> data_target.fit = lm(target ~ ., data=data_target)
> summary(data_target.fit)

Call:
lm(formula = target ~ ., data = data_target)

Residuals:
```

Min	1Q	Median	3Q	Max
-0.79765	-0.15395	0.01085	0.18929	0.93176

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)	
(Intercept)	-1.849153	2.718693	-0.680	0.509	
WD3	0.068953	0.242450	0.284	0.781	
WD1	-0.044782	0.176664	-0.253	0.804	
WD2	-0.061566	0.256041	-0.240	0.814	
WD7	0.053658	0.267906	0.200	0.845	
WD9	-0.036037	0.319566	-0.113	0.912	
WD6	0.256798	0.281776	0.911	0.380	
WD4	0.054040	0.221733	0.244	0.812	
WD5	0.174679	0.272769	0.640	0.534	
UI1	0.522505	0.290249	1.800	0.097	.
WD8	-0.037640	0.204065	-0.184	0.857	
UI2	-0.322791	0.286758	-1.126	0.282	
UI3	0.080219	0.234832	0.342	0.739	
UI4	0.046037	0.236063	0.195	0.849	
UI9	0.102650	0.198623	0.517	0.615	
UI6	0.006986	0.185704	0.038	0.971	
UI5	0.388795	0.271099	1.434	0.177	
UI10	0.119975	0.275686	0.435	0.671	
UI11	-0.233085	0.297436	-0.784	0.448	
UI7	0.226693	0.268677	0.844	0.415	
UI8	-0.072839	0.330555	-0.220	0.829	
UI12	0.211658	0.262528	0.806	0.436	
P1	-0.137312	0.252186	-0.544	0.596	
P8	0.330467	0.233047	1.418	0.182	
P7	0.036418	0.228140	0.160	0.876	
P2	0.107803	0.385617	0.280	0.785	

P3	-0.193613	0.250933	-0.772	0.455
P4	-0.073129	0.346053	-0.211	0.836
P6	-0.079701	0.195801	-0.407	0.691
P5	-0.163803	0.285606	-0.574	0.577
DS1	0.064528	0.307447	0.210	0.837
DS2	0.040647	0.344978	0.118	0.908
DS3	0.120937	0.210697	0.574	0.577
DS4	0.083106	0.248905	0.334	0.744
DS5	-0.012973	0.208325	-0.062	0.951
DS6	-0.207755	0.269798	-0.770	0.456
DS7	0.014890	0.266490	0.056	0.956
DS8	-0.262927	0.232418	-1.131	0.280
DS9	0.137102	0.315703	0.434	0.672
DS10	-0.347338	0.274129	-1.267	0.229
BI1	0.188056	0.223597	0.841	0.417
BI2	0.231426	0.251361	0.921	0.375
BI3	0.157075	0.207396	0.757	0.463
BI4	0.111860	0.200326	0.558	0.587
BI5	-0.167407	0.389621	-0.430	0.675
BI6	0.150370	0.234467	0.641	0.533
BI7	0.110488	0.176192	0.627	0.542
BI8	-0.058631	0.206194	-0.284	0.781

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.7031 on 12 degrees of freedom

Multiple R-squared: 0.9184, Adjusted R-squared: 0.599

F-statistic: 2.875 on 47 and 12 DF, p-value: 0.02519