CHAPTER SEVEN
Results

7.1 Introduction

This chapter contains the results of this study obtained by utilising the methodology set out in Chapter Six. The division of the sample in two groups is explained. I then proceed to report how the responses of participants in Group One are used to perform the exploratory factor analysis. In this analysis, the number of factors to be extracted is determined by the Scree-test. Three principal axis factor analyses with iterative communalities are performed with the data of Group One. The Scree-test results are reported for each of the principal axis analysis. The results of these factor analyses are reported. A fourth principal factor analysis is performed with the data of Group Two. The results of this factor analysis are used for performing the confirmatory factor analysis. The final set of results reported in this chapter is that of the confirmatory factor analysis. The outcome of the exploratory factor analyses of Groups One and Two are used to draft a postulated model or a measurement model. The fit between the postulated model and the obtained data is reported in the rest of this chapter.

7.2 Division of the sample

The SPSS-programme divides the sample of 1354 participants randomly in two groups. These groups are not equal in size. Group One consists of 637 participants and Group Two consists of 717 participants. The responses of participants in Group One are used for the exploratory factor analysis and the responses of participants in Group Two are used to perform a fourth principal axis factor analysis and a confirmatory factor analysis in order to validate the structure obtained with Group One.

7.3 Number of factors

The Scree-test is used to determine the number of factors to be extracted. Six factors with eigenvalues that contribute significantly to the variance of the variables are identified with the Scree-test. The eigenvalues of the factors are the following:

Table 7.1 Table of eigenvalues

Factor no.	Eigen value	Factor no.	Eigen value	Factor no.	Eigen value	Factor no.	Eigen value	Factor no.	Eigen value
1	9,45	23	1,11	45	0,73	67	0,47	89	0,28
2	5,64	24	1,10	46	0,71	68	0,47	90	0,28
3	4,15	25	1,07	47	0,70	69	0,46	91	0,26
4	3,32	26	1,05	48	0,70	70	0,46	92	0,25
5	2,74	27	1,02	49	0,68	71	0,45	93	0,24
6	2,03	28	1,01	50	0,67	72	0,43		
7	1,78	29	1,01	51	0,66	73	0,43		
8	1,76	30	0,99	52	0,65	74	0,42		
9	1,69	31	0,97	53	0,63	75	0,41		
10	1,65	32	0,94	54	0,62	76	0,40		
11	1,52	33	0,91	55	0,62	77	0,40		
12	1,44	34	0,90	56	0,59	78	0,39		
13	1,42	35	0,89	57	0,58	79	0,37		
14	1,36	36	0,87	58	0,57	80	0,37		
15	1,34	37	0,85	59	0,56	81	0,35		
16	1,29	38	0,84	60	0,55	82	0,35		
17	1,26	39	0,82	61	0,54	83	0,33		
18	1,22	40	0,78	62	0,53	84	0,33		
19	1,21	41	0,78	63	0,51	85	0,33		
20	1,17	42	0,77	64	0,51	86	0,31		
21	1,14	43	0,76	65	0,50	87	0,30		
22	1,13	44	0,75	66	0,49	88	0,29		

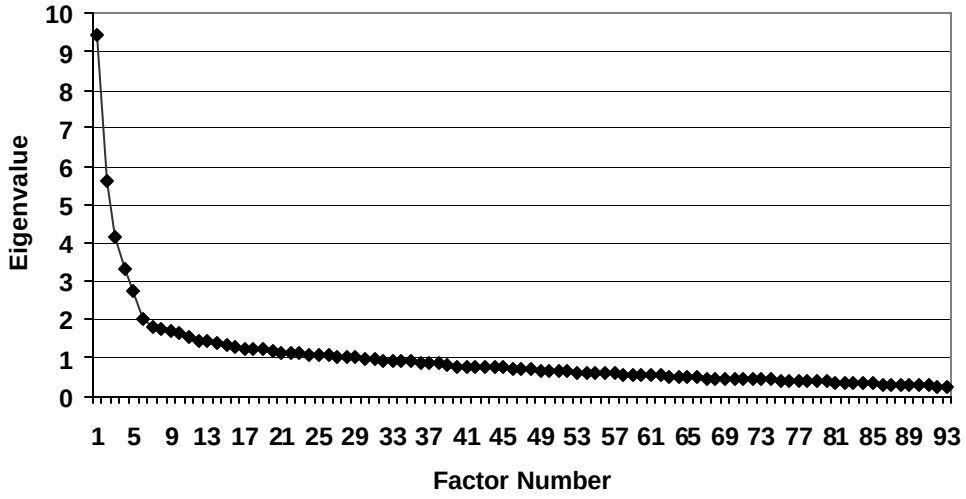

Figure 1. Scree-plot for the number of factors (Analysis 1)

With the Scree-test the variance of each successive factor decreases to an extent where a flattening of the Scree-plot is visible. This flattening is visible after the extraction of the sixth factor. It is noticeable that the difference between the sixth and seventh eigenvalue is 0,35 while the difference between the seventh and eight eigenvalue is only 0,02. At this point of flattening, the remaining factors have approximately the same variance. All factors above the flattening contribute significantly to the variance in the variables.

The Scree-test identifies six factors that contribute significantly to the explanation of the variance of each variable. Although 29 factors with an eigenvalue > 1 are identified, the first six factors account cumulatively for 29% of the variance in the correlation matrix of variables. Therefore a six-factor solution will be implemented in this study.

7.4 First principal axis factoring and rotatio n

The six factors are rotated with the oblique Promax Rotation. A number of 22 iterations of the Promax Rotation (k = 4) were required to obtain optimum distribution of variance in the correlation matrix of variables.

The Promax rotated factor matrix is reported in Table 7.2. The variables in this Table are presented according to significant loading per factor. In other words, the items that obtained significant loading for Factor One are reported first from the variable with the highest significant loading to the items with the lowest significant loading. All loadings = 0,30 are regarded as practically meaningful and underlined in Table 7.2.

Table 7.2 Promax rotated factor matrix

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Q55	0,51	-0,04	0,16	0,15	0,18	0,03
Q89	0,46	0,05	0,02	0,19	0,19	-0,13
Q69	0,46	0,08	0,06	0,08	-0,21	0,06
Q56	0,46	-0,07	0,04	0,05	0,08	0,19
Q65	0,43	-0,01	-0,06	0,26	0,14	-0,09
Q22	0,41	0,08	0,06	-0,18	0,07	-0,01
Q87	0,40	-0,11	-0,01	-0,09	-0,06	0,17
Q81	0,40	0,05	0,08	-0,06	0,12	0,03
Q36	0,40	-0,02	0,24	-0,15	0,08	0,01
Q4	0,37	0,11	-0.09	-0,02	-0,15	0,26
Q88	0,37	0,05	-0,02	-0,07	0,32	0,05
Q74	0,36	-0,17	0,25	-0,07	0,09	-0,11
Q82	0,35	0,12	0,26	-0,15	0,08	-0,19
Q71	0,33	0,03	0,15	0,03	-0,07	0,03
Q85	0,33	0,01	0,02	0,05	0,26	0,13
Q48	0,31	-0,14	0,01	0,17	-0,12	0,05
Q54	0,31	0,05	0,05	-0,03	0,04	0,04
Q23	0,31	-0,06	-0,04	0,04	0,16	0,18
Q46+	0,28	0,07	0,02	0,20	0,02	0,19
Q16	-0,03	0,64	-0,01	-0,08	-0,03	-0,04
Q9	0,06	0,51	-0,03	-0,23	0,05	0,14
Q1	0,08	0,47	0,03	-0,07	-0,02	0,03
Q60	-0,09	0,47	0,16	0,03	0,11	0,01
Q66*	0,31	-0,45	0,35	0,11	0,01	0,11
Q20*	-0,01	0,45	0,01	-0,10	-0,09	0,31

Q47	-0,01	0,45	-0,07	0,06	0,01	-0,02
Q57	-0.01	0,44	0,11	-0,03	0,13	-0,09
Q43	0,23	0,43	-0,08	-0,01	0,06	0,10
Q28	-0,02	0,43	-0.03	-0,04	0,06	0,07
Q64*	0,32	-0,41	0,33	0,11	0,08	0,12
Q17	0,17	0,39	0,18	0,09	-0,29	-0,07
Q41	0,20	0,39	-0,15	0,12	-0,07	0,17
Q19	-0,21	0,36	-0,02	0,18	0,05	0,15
Q83	0,30	0,36	0,05	-0,12	0,16	0,01
Q18	0,08	0,35	0,16	0,14	-0,08	-0,17
Q35	-0,13	0,34	-0,04	0,26	0,13	0,03
Q7	0,28	0,33	0,04	0,15	-0,22	-0,06
Q8	-0,07	-0,32	0,02	0,18	-0,05	0,00
Q78	-0,19	0,30	0,02	0,28	0,04	-0,04
Q25+	0,27	0,29	-0,05	-0.09	-0,16	0,15
Q70+	-0,19	0,26	-0,11	0,20	0,03	-0,01
Q84+	0,17	0,24	-0,06	0,23	0,02	0,00
Q58	-0,01	-0,22	0,56	-0,02	0,01	0,21
Q72	0,12	-0,06	0,54	-0,08	-0,03	-0,01
Q33	0,02	0,00	0,53	-0,01	-0,04	0,13
Q67	0,15	-0,05	0,52	-0,05	0,00	-0,19
Q37	0,12	-0,07	0,47	0,10	0,01	0,07
Q62	-0,16	0,17	0,46	0,07	0,17	-0,08
Q93	0,06	0,14	0,44	-0,07	0,01	0,07
Q61	-0,17	0,20	0,43	0,13	0,14	0,08
Q59	0,08	0,02	0,41	0,01	-0,04	0,05
Q68	0,11	00,02	0,41	-0,02	0,00	-0,22
Q34	0,05	0,21	0,40	0,08	-0,01	0,10
Q13	0,01	-0,06	0,40	-0,01	-0,15	0,02
Q92	-0,07	0,23	0,39	0,02	-0,07	-0,09
Q31	0,06	0,02	0,38	-0,11	-0,03	0,19
Q32	0,10	0,00	0,38	-0,12	-0,07	0,16
Q24	0,06	0,27	0,35	-0,10	-0,01	0,01

Q29	0,07	0,11	0,35	0,22	-0,09	0,09
Q91+	0,17	0,11	0,20	-0,07	0,04	0,18
Q73+	0,19	-0,04	0,20	-0,04	0,11	0,03
Q75	0,29	-0,02	-0,23	0,51	0,13	0,00
Q53	-0,16	0,09	0,22	0,46	-0,01	-0,02
Q49	0,35	-0,05	-0,28	0,44	0,04	0,05
Q12	-0,11	-0,06	-0,07	0,43	0,09	0,27
Q44	0,36	0,06	-0,10	0,42	0,04	0,04
Q2	0,15	0,05	-0,14	0,42	0,17	0,05
Q3	-0,11	0,02	0,05	0,39	-0,03	0,02
Q76	0,00	-0,04	0,04	0,38	0,09	-0,12
Q86	0,23	0,08	0,11	-0,37	0,25	0,06
Q63	0,29	0,03	-0,07	0,36	0,12	0,04
Q11	0,05	-0,10	-0,04	0,33	-0,01	0,03
Q42	0,09	-0,05	0,23	0,33	-0,10	-0,03
Q50	0,30	0,19	0,11	-0,33	0,25	0,05
Q80	-0,28	0,01	0,24	0,30	0,22	0,02
Q10	-0,18	0,05	0,13	0,30	-0,01	0,15
Q40+	0,40	0,00	0,29	0,29	-0,25	-0,02
Q38+	-0,05	0,02	0,06	0,25	0,05	0,14
Q26+	0,01	0,11	-0,03	0,24	0,00	0,11
Q52	0,03	0,00	-0,07	0,08	0,67	0,02
Q90	0,20	0,15	-0,07	0,11	0,59	-0,09
Q79	0,14	-0,03	-0,03	0,09	0,52	-0,05
Q51	0,08	-0,02	0,05	0,10	0,32	0,16
Q77+	0,02	0,19	0,17	0,04	-0,20	0,03
Q14	0,12	-0,05	0,05	0,12	-0,05	0,39
Q45	0,19	0,08	0,01	-0,09	-0,01	0,36
Q21	0,16	-0,06	0,05	0,14	0,09	0,34
Q39	0,17	0,19	0,06	-0,01	0,00	0,34
Q30	0,30	0,29	0,13	0,10	0,01	0,32
Q5	0,31	0,05	-0,07	-0,07	-0,07	0,32
Q27	0,03	0,13	0,18	0,22	0,04	0,30

Q15+	-0,09	0,08	0,14	0,21	0,06	0,24
Q6+	0,17	0,19	0,01	-0,01	0,03	0,22

Note. Factor loadings = 0,30 are underlined. Items are sorted in terms of magnitude of factor loadings. All factor loadings are rounded to two decimal places.

* Multidimensional items with more than one factor loading ≥ 0,30

\+ Item with no factor loading ≥ 0,30

Eighteen items meet the criteria for loading on Factor One (≥ 0,30). Question 46 loads on factor one with a loading of 0,28. This does not meet the criteria set out and therefore this item and all others that fail to load ≥ 0,30 on any factor, will not be included in the second principal axis factor analysis.

Twenty items meet the criteria for loading on Factor Two. Three of these items are multidimensional and loaded significantly on other factors as well (Q66, Q20 and Q64) and will therefore not be included in the second principal axis factor analysis. Question 83 has a significant loading of 0,36 on Factor Two and a loading of 0,30 on Factor One. This item will be included in the next factor analysis on discretion. Seventeen items load significantly on Factor Three. All these items will be included in the second principal axis factor analysis. Fifteen items load significantly on Factor Four. Two items (Q86 and Q50) load significantly negatively on Factor Four and will be excluded from the second principal axis factor analysis because no negative loadings are theoretically expected. Four items load significantly on Factor Five. Seven items load significantly on Factor Six.

7.5 Second principal axis factor analysis

All 38 items that withstood the scrutiny of the previous step are used in performing the second principal axis factor analysis. The Scree-test now suggests that five factors should be extracted. The results of the Scree-test are reported in Table 7.3 and Figure 2. In light of this, items obtained for Factor Six with the first principal axis factor analysis are omitted from the second principal axis factor analysis.

Table 7.3 Table of eigenvalues

Factor Number	Eigenvalue	Factor number	Eigenvalue	Factor number	Eigenvalue
1	4,92	14	0.91	27	0,55
2	3,15	15	0,85	28	0,54
3	2,66	16	0,83	29	0,52
4	1,88	17	0,81	30	0,50
5	1,75	18	0,76	31	0,48
6	1,32	19	0,74	32	0,46
7	1,26	20	0,73	33	0,44
8	1,15	21	0,71	34	0,42
9	1,13	22	0,69	35	0,39
10	1,05	23	0,65	36	0,38
11	1,02	24	0,60	37	0,37
12	0,97	25	0,58	38	0,32
13	0,93	26	0,57		

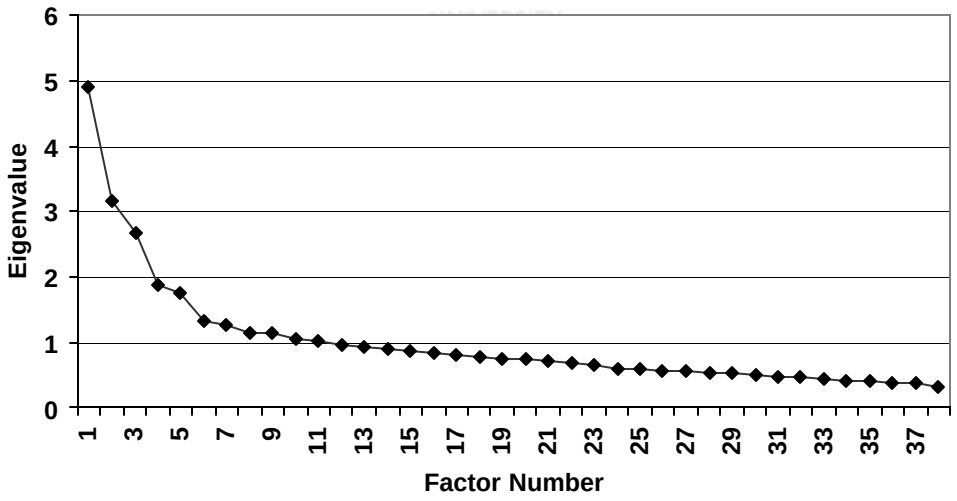

Figure 2. Scree-plot for the number of factors (Analysis 2)

The obtained five factor matrix is rotated with an oblique Promax (k = 4) rotation. Eight iterations of the Promax Rotation (k = 4) are required to obtain optimum distribution of variance in the factor matrix.

The Promax rotated factor matrix for the second principal axis factor analysis is reported in Table 7.4. The variables in the table are again presented according to significant loading per factor. All factor loadings = 0,30 are regarded as salient or practically meaningful and are underlined in Table 7.4. The discussion of the results obtained with the Promax rotation is reported after this Table.

Table 7.4 Promax rotated factor matrix

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q33	0,58	-0,02	0,05	-0,06	-0,01
Q58	0,55	-0,10	0,07	-0,08	0,01
Q67	0,53	-0,11	0,13	-0,08	-0,02
Q72	0,53	-0,02	0,18	-0,13	-0,06
Q59	0,51	0,01	0,07	0,00	-0,07
Q37	0,49	-0,10	0,14	0,04	0,05
Q61	0,48	0,14	-0,29	0,09	0,10
Q62	0,46	0,12	-0,19	-0,02	0,17
Q93	0,43	0,19	0,14	-0,10	0,01
Q13	0,42	-0,12	0,06	-0,11	-0,06
Q34	0,42	0,16	0,00	0,11	-0,05
Q68	0,40	-0,10	0,07	-0,04	0,00
Q16	-0,08	0,67	-0,03	-0,03	-0,06
Q9	-0,12	0,64	0,19	-0,17	0,05
Q1	-0,05	0,59	0,10	-0,05	-0,08
Q28	-0,09	0,50	0,03	-0,03	-0,01
Q43	-0,10	0,48	0,21	0,05	0,00
Q60	0,14	0,47	-0,15	0,05	0,06
Q47	-0,10	0,44	-0,07	0,10	-0,04
Q57	0,11	0,42	-0,09	0,05	0,06
Q22	0,08	0,08	0,52	-0,15	0,13

Q36	0,26	-0,01	0,48	-0,12	0,09
Q56	0,11	0,00	0,44	0,16	0,09
Q87	0,03	-0,06	0,43	-0,01	0,01
Q81	0,06	0,10	0,41	0,05	0,09
Q55	0,22	-0,02	0,40	0,27	-0,20
Q69	0,12	0,11	0,37	0,16	-0,21
Q89*	0,04	0,00	0,34	0,31	0,08
Q75	-0,14	-0,07	0,04	0,58	0,08
Q49	-0,18	-0,06	0,10	0,55	0,02
Q44	-0,03	0,06	0,18	0,48	-0,04
Q2	-0,10	0,05	-0,01	0,46	0,09
Q53*	0,23	0,02	-0,33	0,39	-0,10
Q65*	-0,01	0,00	0,30	0,34	0,06
Q12	-0,01	-0,04	-0,13	0,32	0,07
Q52	-0,03	-0,04	0,08	0,06	0,74
Q70	0,03	-0,09	0,18	0,08	0,61
Q90	-0,06	0,09	0,01	0,10	0,54

Note. Factor loadings = 0,30 are underlined. Items are sorted in terms of magnitude of factor loadings. All factor loadings are rounded to two decimal places.

* Multidimensional items with more than one factor loading ≥ 0,30

\+ Item with no factor loading ≥ 0,30

It is apparent that the rotated factor structure is now sharper and better defined than in the previous analysis. Twelve items load significantly on Factor One. All these items loaded on this factor (Factor Three) in the first principal axis factor analysis. Eight items load significantly on Factor Two. All these items loaded on this factor (Factor Two) in the first principal axis factor analysis. Eight items load significantly on Factor Three. All these items loaded on this factor (Factor One) in the first principal axis factor analysis. Question 89 appears to be multidimensional and loads on significantly on Factor Four as well. This item will not be included in the third principal axis factor analysis. Seven items load significantly on Factor Four. All these items with the exception of Question 65 loaded on this factor (Factor Four) in the first principal axis factor analysis. Two items appear to be multidimensional and load significantly on

other factors as well (Q53 and Q65). These items will not be included in the third principal axis factor analysis. Three items meet the criteria for inclusion in Factor Five. All these items loaded on this factor (Factor Five) in the first principal factor analysis.

7.6 Third principal axis factor analysis

All items used in performing the second principal axis factor analysis with the exception of items Q53, Q65 and Q89, are used for performing the third principal axis factor analysis. After eleven iterations the Scree-test suggests that five factors should be extracted. The results of the Scree-test are reported in Table 7.5 and Figure 3.

Table 7.5 Table of eigenvalues

Factor number	Eigenvalue	Factor number	Eigenvalue
1	4,455	20	0,664
2	2,775	21	0,642
3	2,485	22	0.596
4	1,721	23	0,573
5	1,575	24	0,563
6	1,288	25	0,541
7	1,145	26	0,520
8	1,083	27	0,487
9	1,036	28	0,483
10	0,987	29	0,472
11	0,948	30	0,437
12	0,913	31	0,392
13	0,884	32	0,377
14	0,838	33	0,323
15	0,817		
16	0,788		
17	0,752		
18	0,740		
19	0,701		

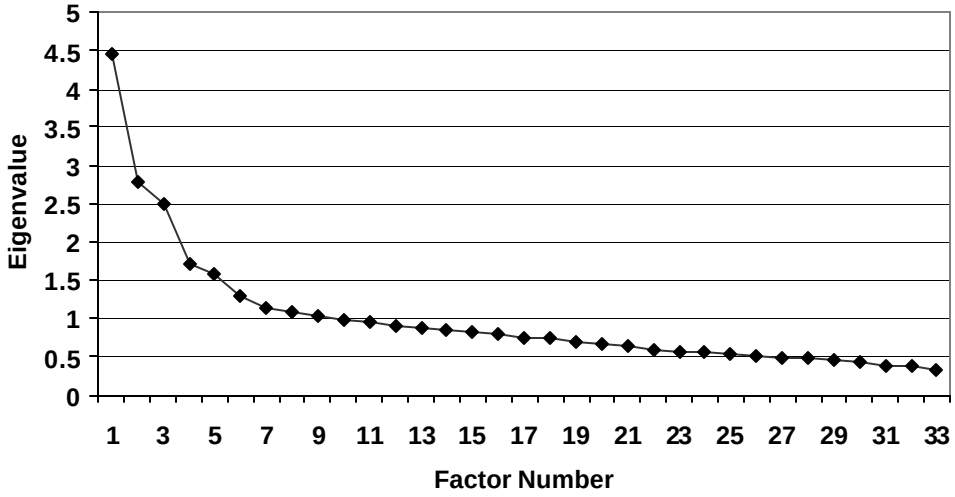

Figure 3. Scree-plot for the number of factors (Analysis 3)

The five factor matrix is again rotated with an oblique Promax (k = 4) rotation. Seven iterations of the Promax Rotation (k = 4) are required to obtain optimum distribution of variance in the correlation matrix of variables. The Promax rotated factor matrix for the third principal axis factor analysis is reported in Table 7.6. All loadings = 0,30 are regarded as salient and are underlined in Table 7.6. The discussion of the results obtained with the Promax rotation is reported after Table 7.6.

Table 7.6 Promax rotated factor matrix

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q33	0,61	-0,05	0,03	-0,02	-0,04
Q61	0,54	0,12	-0,30	0,13	0,06
Q58	0,54	-0,11	0,06	-0,04	-0,01
Q62	0,52	0,08	-0,23	0,03	0,13
Q59	0,50	0,01	0,10	-0,02	-0,07
Q67	0,49	-0,10	0,13	-0,11	-0,03
Q37	0,46	-0,09	0,17	0,01	0,05
Q34	0,45	0,13	-0,02	0,10	-0,07
Q93	0,41	0,17	0,15	-0,12	0,02
Q13	0,39	-0,12	0,11	-0,11	-0,05

Q68	0,36	-0,07	0,09	-0,04	-0,01
Q16	-0,08	0,68	-0,01	-0,06	-0,05
Q1	-0,06	0,58	0,13	-0,07	-0,06
Q60	0,15	0,50	-0,12	0,03	0,05
Q28	-0,08	0,48	0,05	-0,03	0,01
Q47	-0,13	0,47	-0,01	0,05	-0,02
Q43	-0,10	0,47	0,25	0,00	0,03
Q57	0,10	0,45	-0,06	0,02	0,06
Q22	0,02	0,07	0,53	-0,14	0,16
Q36	0,21	-0,01	0,50	-0,12	0,11
Q56	0,08	-0,01	0,44	0,16	0,11
Q55	0,18	0,00	0,44	0,24	-0,18
Q81	0,03	0,09	0,43	0,02	0,11
Q87	0,00	-0,07	0,43	0,00	0,03
Q69	0,10	0,12	0,40	0,15	-0,20
Q75	-0,05	-0,09	-0,03	0,65	0,05
Q49	-0,10	-0,08	0,06	0,63	-0,01
Q44	-0,01	0,08	0,18	0,44	-0,02
Q2	-0,08	0,08	0,03	0,42	0,10
Q12	0,00	-0,02	-010	0,29	0,07
Q52	-0,05	-0,03	0,09	0,04	0,76
Q79	0,03	-0,09	0,18	0,06	0,61
Q90	-0,06	0,10	0,00	0,06	0,54

Note. Factor loadings = 0,30 are underlined. Items are sorted in terms of magnitude of factor loadings. All factor loadings are rounded to two decimal places.

* Multidimensional items with more than one factor loading ≥ 0,30

\+ Item with no factor loading ≥ 0,30

Eleven items load significantly on Factor One. All these items loaded on this factor (Factor One) in the second principal axis factor analysis. Question 61 appears to be multidimensional and loads with -0,30 on Factor Three. This item is included on discretion, because it appears to be a very good indicator of Factor One and the

absolute difference between the primary and secondary loadings is large (0,54 – 0,30 = 0,24).

Seven items meet the criteria for loading on Factor Two. All seven these items loaded on this factor (Factor Two) in the second principal axis factor analysis. Seven items meet the criteria for loading on Factor Three. All seven these items loaded on this factor (Factor Three) in the second principal axis factor analysis. Five items load on Factor Four. All five these items loaded on this factor (Factor Four) in the second principal axis factor analysis. Question 12 obtains a loading of 0,29 and is included in the next principal axis factor analysis on discretion. Three items meet the criteria for loading on Factor Five. All three these items loaded on this factor (Factor Five) in the second principal axis factor analysis.

7.7 Fourth principal axis factor analysis

All items used in performing the third principal axis factor analysis are used for performing the fourth principal axis factor analysis. These items are included as they could be considered as satisfactory indicators of the respective constructs. The data of Group Two is used for the fourth principle axis factor analysis. The sample is divided in two random groups to cross validate the descriptions of the constructs. The responses of participants in Group One are used for the exploratory factor analysis and the responses of participants in Group Two are used to perform the fourth principle axis factor analysis and a confirmatory factor analysis. After eleven iterations the Scree-test suggests that five factors should be extracted. The results of the Scree-test are reported in Table 7.7 and Figure 4.

Table 7.7 Table of eigenvalues

Factor number	Eigenvalue	Factor number	Eigenvalue	Factor number	Eigenvalue
1	4,585	12	0,863	23	0,613
2	2,938	13	0,838	24	0,582
3	2,501	14	0,779	25	0,572
4	1,626	15	0,775	26	0,535
5	1,408	16	0,762	27	0,511
6	1,186	17	0,749	28	0,500
7	1,126	18	0,743	29	0,472
8	1,038	19	0,718	30	0,469
9	1,006	20	0,693	31	0,448
10	0,964	21	0,658	32	0,405
11	0,925	22	0,639	33	0,375

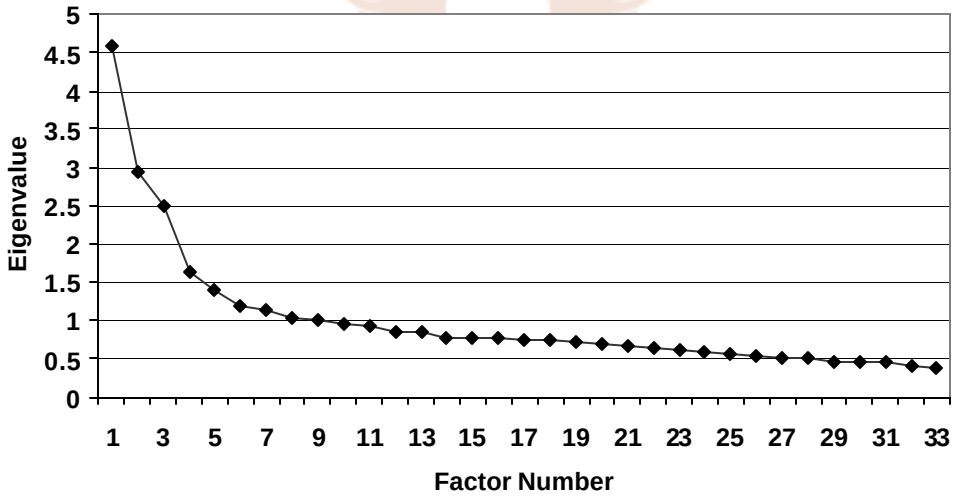

Figure 4. Scree-plot for the number of factors (Analysis 4)

The five factor matrix is rotated with an oblique Promax (k = 4) rotation. Seven iterations of the Promax Rotation (k = 4) are required to obtain optimum distribution of variance in the correlation matrix of variables. The Promax rotated factor matrix

for the fourth principal axis factor analysis is reported in Table 7.8. The discussion of the results obtained with the Promax rotation is reported after Table 7.8.

Table 7.8 Promax rotated factor matrix

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q33	0,71	0,02	-0,07	0,10	-0,10
Q67	0,65	0,06	-0,11	0,02	0,18
Q58	0,59	0,03	-0,22	-0,06	0,03
Q59	0,58	-0,04	-0,08	-0,03	-0,04
Q68	0,55	0,04	-0,03	-0,11	0,08
Q93	0,51	0,11	0,13	-0,01	-0,01
Q34	0,48	-0,02	0,09	0,15	-0,09
Q13	0,40	-0,03	-0,03	0,05	-0,09
Q55	-0,05	0,63	0,05	0,04	-0,06
Q87	-0,13	0,55	-0,04	-0,19	0,02
Q36	0,01	0,54	0,00	-0,09	0,02
Q22	0,06	0,45	-0,02	-0,02	0,04
Q69	0,06	0,44	0,08	0,02	-0,11
Q56	0,13	0,43	-0,14	0,03	0,06
Q81	0,06	0,42	-0,04	-0,02	0,19
Q43	0,04	0,32	0,28	0,14	0,00
Q37+	0,19	0,20	0,15	0,15	-0,14
Q16	-0,14	0,03	0,63	-0,04	-0,05
Q28	-0,14	0,03	0,63	-0,04	-0,05
Q1	-0,12	0,04	0,51	0,01	-0,07
Q47	-0,06	-0,07	0,44	0,03	0,04
Q60	0,29	-0,09	0,41	-0,07	0,03
Q57	0,12	-0,04	0,39	-0,04	0,06
Q62*	0,30	-0,08	0,35	-0,05	0,11
Q61	0,29	-0,11	0,35	-0,08	0,10
Q44	0,11	0,01	-0,05	0,58	-0,11
Q75	-0,11	-0,06	-0,05	0,53	0,13
Q2	0,08	-0,09	0,01	0,51	0,00

Q49	-0,18	0,07	-0,05	0,51	0,21
Q12	0,06	-0,06	0,05	<u>0,42</u>	0,01
Q52	-0,06	0,00	0,03	0,02	<u>0,68</u>
Q79	0,07	0,04	-0,08	0,01	<u>0,55</u>
Q90	-0,04	0,03	0,16	0,10	<u>0,43</u>

Note. Factor loadings = 0,30 are underlined. Items are sorted in terms of magnitude of factor loadings. All factor loadings are rounded to two decimal places.

* Multidimensional items with more than one factor loading ≥ 0,30

\+ Item with no factor loading ≥ 0,30

Eight items meet the criteria for loading on Factor One. All eight these items loaded on this factor (Factor One) in the third principal axis factor analysis performed with the data of Group One's participants. Three items (Q61, Q62, and Q37) that were included in Factor One in the third principal axis factor analysis with Group One data, are not included in this factor with the Group Two data. Question 61 loads on Factor Three with a loading of 0,35. Question 62 presents as a multi-dimensional item with a loading of 0,35 on Factor Three and a loading of 0,30 on Factor One. Question 37 does not obtain a loading = 0,30 on any factor. None of these items will be included in further analysis.

Eight items meet the criteria for loading on Factor Two. Seven of these items loaded on this factor (Factor Three) in the third principal axis factor analysis performed with the data of Group One's participants. Question 43 loads on this factor with a loading of 0,32. In the third principal axis factor analysis, Question 43 loaded on Factor Two with a loading of 0,47. This item will not be included in the confirmatory factor analysis.

Seven items meet the criteria for loading on Factor Three. Six of these items loaded on this factor (Factor Two) in the third principal axis factor analysis performed with the data of Group One's participants. As mentioned before Question 62 also loads on Factor One and Factor Three with respective loadings of 0,30 and 0,35. This item loaded on Factor One during the third principal axis factor analysis.

Five items meet the criteria for loading on Factor Four. All five these items loaded on this factor (Factor Four) in the third principal axis factor analysis performed with the data of Group One's participants. The loading on Question 12 is 0,42 in the fourth principal factor analysis, in comparison with the loading of 0,29 obtained with the data of Group One during the third principal axis factor analysis. This provides support for the validity of this item as an indicator of this particular factor.

Three items meet the criteria for loading on Factor Five. All three these items loaded on this factor (Factor Five) in the third principal axis factor analysis performed with the data of Group One's participants.

7.8 Factor correlations

The correlations between the rotated factors are reported in Table 7.9. In light of the fact that a Promax rotation was used during the principal axis factor analyses, it could be expected that the factors will be correlated.

Table 7.9 Factor correlation matrix after Promax rotation

Factor	1	2	3	4	5
1	1,00				
2	0,24	1,00			
3	0,49	-0,11	1,00		
4	0,03	0,30	0,17	1,00	
5	0,07	-0,09	0,19	0,21	1,00

Inspection of Table 7.9 reveals that with the exception of Factors One and Three (r = 0,49), and Factors Two and Four (r = 0,30), the correlations between the factors are small. These findings suggest that the five factors represent independent constructs.

7.9 Confirmatory factor analysis

7.9.1 Measurement model

The results of the third and fourth principal axis factor analyses are combined to generate a postulated measurement model for the items of the proposed questionnaire. The postulated model is presented in Table 7.10.

Table 7.10 Postulated measurement model

Item	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q13	X	0	0	0	0
Q33	X	0	0	0	0
Q34	X	0	0	0	0
Q58	X	0	0	0	0
Q59	X	0	0	0	0
Q67	X	0	0	0	0
Q68	X	0	0	0	0
Q93	X	0	0	0	0
Q1	0	X	0	0	0
Q9	0	X	0	0	0
Q16	0	X	0	0	0
Q28	0	X	0	0	0
Q47	0	X	0	0	0
Q57	0	X	0	0	0
Q22	0	0	X	0	0
Q36	0	0	X	0	0
Q55	0	0	X	0	0
Q56	0	0	X	0	0
Q69	0	0	X	0	0
Q81	0	0	X	0	0
Q87	0	0	X	0	0
Q2	0	0	0	X	0
Q12	0	0	0	X	0

Q44	0	0	0	X	0
Q49	0	0	0	X	0
Q75	0	0	0	X	0
Q52	0	0	0	0	X
Q79	0	0	0	0	X
Q90	0	0	0	0	X

In this table an X represents that an item is an indicator of the factor represented by the column. The loading of the factor on this variable will be freely estimated from the data. In contrast a 0 indicates that the factor loading will be constrained to be equal to zero. As an example Question 13 is postulated to be an indicator of Factor One and it's factor loading will be estimated. In addition, it is postulated that Question 13 is not an indicator of Factors Two, Three, Four and Five and these loadings will be constrained to be equal to zero. Every item is an indicator of one factor and in this sense the postulated model represents Thurstone's ideal of a perfect simple structure.

7.9.2 Indices of fit

The fit between the postulated measurement model and the observed data are evaluated by means of several goodness of fit indices. These indices are reported in Table 7.11. After reporting the table, each of the indices will be discussed.

Table 7.11 Indices of fit

Index	χ^2	*df*	GFI	AGFI	RMSEA
Scores	803,402	367,00	0,925	0,911	0,042
	$p < 0{,}001$				(0,039-0,046)

Note. For the RMSEA both the point estimate as well as the 90% confidence intervals (in brackets) are reported.

7.9.2.1 Chi-square statistic

The chi-square is statistically significant ($\chi^2 = 803{,}402$; $df = 369$; $p < 0{,}001$). Therefore the postulated model does not show an adequate fit with the data in a strict

statistical sense. However, it has been pointed out that the chi-square test is unrealistic and that it is highly sensitive to sample size. In the present study the sample size is large, rendering the chi-square test overly sensitive to minor differences between the observed and reproduced covariance matrices.

7.9.2.2 Goodness of Fit Index

A value of 0,925 is obtained for this index. This value is greater than the required value of 0,90. In other words this index indicates an adequate fit between the postulated data and the model, in a practical sense.

7.9.2.3 Adjusted Goodness of Fit Index

Cole (1987) and Sharma (1996) suggest that a value ≥ 0,80 is indicative of a satisfactory fit between the model and data. A value of 0,911 is obtained, thus satisfying this requirement.

7.9.2.4 Root Mean Square Error of Approximation

Values ≤ 0,05 are indicative of a close fit between the postulated model and the observed data and values between 0,05 and 0,08 indicate a reasonable fit between the model and data (Finch & West, 1997). A point estimate of 0,042 is obtained, which indicates a close fit between the postulated measurement model and data.

Overall, the goodness of fit indices indicate a satisfactory fit between the postulated measurement model and the observed data. This finding provides support for the validity of the factors. Next, the estimated factor loadings of every item will be presented and discussed.

7.9.3 Estimated factor loadings

The standardized estimated factor loadings of the confirmatory factor analysis are presented in Table 7.12.

Table 7.12 Standardized estimated parameters of the confirmatory factor analysis

Factor	Item	Factor Loading	Standard Error	*t*- Statistic*
1	Q13	0,39	0,04	10,57
1	Q33	0,67	0,03	24,68
1	Q34	0,50	0,03	15,16
1	Q58	0,50	0,03	15,06
1	Q59	0,52	0,03	16,05
1	Q67	0,63	0,03	21,77
1	Q68	0,55	0,03	17,32
1	Q93	0,62	0,09	21,16
2	Q1	0,49	0,04	12,72
2	Q9	0,54	0,04	14,55
2	Q16	0,53	0,04	14,17
2	Q28	0,44	0,04	10,96
2	Q47	0,48	0,04	12,45
2	Q57	0,47	0,04	12,04
3	Q22	0,46	0,04	12,21
3	Q36	0,49	0,04	13,30
3	Q55	0,65	0,03	20,10
3	Q56	0,49	0,04	13,31
3	Q69	0,51	0,04	13,91
3	Q81	0,41	0,04	10,41
3	Q87	0,42	0,04	10,95
4	Q2	0,41	0,04	10,28
4	Q12	0,31	0,04	7,44
4	Q44	0,43	0,04	10,90
4	Q49	0,68	0,40	19,52

4	Q75	0,65	0,04	18,38
5	Q52	0,67	0,04	15,79
5	Q79	0,53	0,04	12,91
5	Q90	0,54	0,04	13,05

*$p < 0,05$ for all factor loadings

Note. All factor loadings are rounded to two decimal places.

Inspection of Table 7.12 reveals that all the items are efficient indicators of their respective factors, with factor loadings ranging between 0,31 (Question 12) and 0,68 (Question 49). The last column reveals that all the factor loadings are statistically significant.

7.9.4 Correlations between factors

In Table 7.13 the correlations between the five factors are reported.

Table 7.13 Factor correlation matrix after confirmatory factor analysis

Factors	1	2	3	4	5
2	0,36				
3	0,33	-0,10			
4	-0,07	0,10	0,19		
5	0,07	0,25	-0,06	0,36	

Note. All statistically significant correlations ($p < 0,05$) are underlined

Inspection of Table 7.13 reveals that several of the factors appear to be moderately correlated ($r \geq 0,25$). Statistically significant correlations exist between Factors One and Two, Factors One and Three as well as Factors Two and Five. However, none of the correlations are high enough to disqualify the conclusion that each factor represents a distinctive construct.

7.9.5 Discussion of the confirmatory factor analysis

The results of the Goodness of fit Indices indicate a satisfactory fit between the postulated measurement model and the data. Inspection of the factor loadings, as reported in Table 7.13, indicates that all items loaded with values of 0,31 and higher on their respective postulated factors. This means that each item can be regarded as a satisfactory indicator of the factor it is associated with. In the following paragraphs, I will attempt to interpret and give psychological meaning to the obtained factors.

7.10 Can the extracted factors be described as psychologically meaningful?

7.10.1 Factor One: Group Involvement

The items that loaded on Factor One, labelled the Group Involvement scale, are listed in Table 7.14.

Table 7.14 Items loaded on Factor One

Question number	Item
Q13	To what extent do you desire to work in an organisation that is involved in society's problems (poverty, discrimination, the environment)?
Q33	To what extent do you have a desire to take care of co-workers?
Q34	To what extent do you view the survival of the group in the organisation as important?
Q58	To what extent are you willing to share responsibility for your co-workers mistakes or failures?
Q59	To what extent are you willing to help a co-worker who tells you that he or she experiences some financial difficulties?
Q67	To what extent do you feel it is important to know about the living conditions of your co-workers?
Q68	How frequently do you enquire about your co-workers family life?
Q93	To what extent do you feel it is your responsibility to contribute to your co-workers' happiness?

The items included in Factor One represent constructs that are derived from the work of Buchholz (1978), Hofstede (1980) and Koopman (1991).

In general the items represented in Factor One can be associated with Buchholz's notion that the value of work is determined by the extent that it serves group interests and contributes to the individual's success in the company. Such success is determined by conformity as opposed to individual effort. Buchholz accommodates these views in a scale called the Organisational scale (Buchholz, 1978).

A description of the construct Collectivity is given in paragraph two of Chapter Five. In this construct emphasis is placed on horizontal relationships in the organisation as opposed to the importance of vertical relationships. Bochner and Hesketh (1994) refer to kinship, mutual obligation and reciprocity as the emphasis of Hofstede's description of Collectivity.

Koopman's description of Collectivity as manifesting through the culture of Ubuntu highlighted the following components. Persons have a desire to take care of their co-workers. They are willing to help a co-worker in general or specifically when a co-worker tells them that he or she experiences some financial difficulty. Co-workers are informed about each other's living circumstances and family life. They are willing to share the responsibility for co-workers' mistakes and failures and believe that the whole group should be punished for the mistakes of one member. People see it as their responsibility to contribute to co-worker's happiness (Koopman, 1991).

The organisation has a duty to be involved in society's problems (poverty, discrimination and environment). The organisation should take responsibility for workers and their families' health and welfare. The organisation should have a genuine interest in workers' welfare.

Collectivity has been described in numerous studies as an important construct. It is not surprising that this construct was identified as important in this study. Schwartz and Bilsky (1987) regarded Collectivity and Individuality as so important that they

proposed that all values serve either a collective, individual or mixed (both collective and individual) interest.

This construct concurs with a construct postulated by Hofstede in 1991. In describing organisational culture Hofstede (1991) described a culture where people feel that the organisation takes account for their personal problems, welfare and that important decisions are made by groups. The items included in this factor form a psychological meaningful scale that can be referred to as the Group Involvement scale.

7.10.2 Factor Two: Uncertainty Tolerance

The second factor consists of six items. The following questions are included in Factor Two.

Table 7.15 Items loaded on Factor Two

Question number	Item
Q1	To what extent do you feel it is important to work with people who co-operate well with one another?
Q9	To what extent do you believe that you need to obey rules in the work pla ce?
Q16	To what extent do you view it as important to work in a friendly atmosphere?
Q28	To what extent do you believe it is important to be trained for the job that you want to do?
Q47	To what extent do you need to know exactly what your job is about?
Q57	To what extent to feel that you should be able to trust all your co-workers?

Factor Two represents a construct that forms part of Hofstede's Uncertainty Avoidance scale and refers to three aspects namely rule orientation, employment stability and stress. Question 9 is included in this factor and refers to the need to obey rules in the work place. Within the context of work behaviour, a person's need to know exactly what their job is about and to be adequately trained for it can be

associated with a need to minimize uncertainty or maximizes feelings of psychological security. Hofstede (1980) further include stress in this construct. Questions 1, 16 and 57 refer to harmonious interpersonal relationships. Although these items do not refer to the direct and subjective experience that an individual has insofar as stress is concerned, these items can be interpreted as impacting on the stress levels that people experience within a relational context.

Schwartz and Bilsky (1987) postulate a motivational domain of values, which they refer to as the security domain. They associate inner harmony and the security of groups as it manifests in social interaction and institutional functioning as values within this domain. Cropanzano, Howes, Grandey and Toth's (1997) research indicate that this factor will have specific significance as to the type of organisation that an individual would fit into. Persons with high scores on this factor would find it important to work in supportive organisations and will probably find it problematic to work in political organisations.

The items included in this factor form a psychological meaningful scale that can be referred to as Uncertainty Tolerance.

7.10.3 Factor Three: Structured Work

Factor three consists of seven items, which included the following questions.

Table 7.16 Items loaded on Factor Three

Question number	Item
Q22	To what extent do you need your boss to tell you how to do your work?
Q36	To what extent do you need your boss to supervise your work regularly?
Q55	To what extent do you feel that the only way to secure your position at work is to participate in the labour movement?
Q56	To what extent do you think that promotion should be granted according to seniority in the organisation?

Q69	To what extent do you view membership of a trade union as important for the protection of your interests?
Q81	To what extent do you find it desirable for a manager to determine your priorities at work?
Q87	To what extent will you feel uncomfortable if the manager asks your advice when making a decision?

Four items in Factor Three, namely questions 22, 36, 81 and 87, refer to the so-called boss-subordinate relationship. This aspect is described as a component of Hofstede's construct of Power Distance. This construct is associated with the idea of hierarchy. In organisations where superiors maintain high levels of Power Distance, subordinates become dependant or counter-dependant. In other words, they prefer for their superiors to make all the decisions or leave all decisions to a majority vote. In the event where superiors maintain low levels of Power Distance, interdependence exists between employees and managers. Question 56 forms part of this factor. This question deals with the aspect of a hierarchical system of promotion (Hofstede, 1980).

The remaining two items of this scale, Question 55 and 69, deals with worker participation in the labour movement. Items referring to worker participation in the labour movement were originally included in Buchholz's Marxist scale. The premise of this scale is that labour movement presentation can prevent the exploitation and alienation of workers from their productive activity. This will only be achieved when workers have more say and control in organisations (Buchholz, 1978).

In South Africa the labour movement is associated with a participative approach. The other items in this scale do not indicate this to be important to high scorers of this scale and can in fact be regarded as symmetrically opposed to the construct of participative decision-making. Knoop (1991) defines participative decision making as an active involvement in deciding on organizational objectives. In this study Knoop (1991) found that for a group of 171 nurses values associated with participative decision-making was influence over work, independence in work, influence in the organisation, convenient hours of work and having responsibility. Knoop (1991) associates participative decision making with a need for security and a sense of status

and autonomy. The lack of relevance and importance that participative decision making has in this context probably act as explanation for the correlations between Factor Three and Factor One. Further, people who score high on this scale can be expected to score low on items of Factor Four.

The items included in this factor form a psychological meaningful scale that can be referred to as Structured Work.

7.10.4 Factor Four: Visible Advancement Success

Factor four consists of five items including the following questions.

Table 7.17 Items loaded on Factor Four

Question number	Item
Q2	To what extent do you believe a job can provide you with status?
Q12	To what extent do you need to work in a competitive environment?
Q44	To what extent do you view your social status in the organistion as important?
Q49	To what extent do you view it as important to become rich?
Q75	To what extent is it important that your job provide you with the means to become very wealthy?

Items in this factor refer to status, wealth and competitiveness. These are all constructs that were included in Hofstede's Masculinity Scale. The elements of Femininity and a strong gender base to working roles as incorporated in this dimension of Hofstede, are not included in the items extracted in this factor. (Hofstede, 1980). Schwartz and Bilsky (1987) commented that the values of achievement, recognition and success are found in almost all sources dealing with the topic of values. The content of these aspects might present with cultural differences.

The items included in this factor form a psychological meaningful scale that can tentatively be referred to as Visible Advancement Success.

7.10.5 Factor Five: Progressive Advancement Success

Factor five consists of three items, including the following questions.

Table 7.18 Items loaded on Factor Five

Question number	Item
Q52	To what extent do you believe that the boss is entitled to more privileges (for example a company car) than the workers?
Q79	To what extent do you feel it is fair for senior people in the organisation to have more privileges?
Q90	To what extent do you believe that managers should get higher salaries?

Items on all these factors were statistically significant on the 0,001 level.

Three items were extracted in Factor Five. All three these items refer to privileges and remuneration. In this scale the criteria for increases or greater remuneration is linked to seniority of hierarchy.

The items included in this factor provisionally form a psychological meaningful scale that can provisionally be referred to as Progressive Advancement Success. One cannot lose sight of the limitations of this factor in light of the fact that it only consists of three items.

7.11 Conclusion

The results of the study were reported in this chapter. The sample was randomly divided in two groups. The responses of participants in Group One were used to perform the exploratory factor analysis. In this analysis, the number of factors to be extracted was determined by the Scree-test. Three principal axis factor analyses with iterative communalities were performed with the data of Group One. The results of these factor analyses confirmed the extraction of five factors.

A fourth principal factor analysis was performed with the data of Group Two. The results of this factor analysis were used for performing the confirmatory factor analysis. The results of the confirmatory factor analysis also confirmed the extraction of five factors. The outcome of the exploratory factor analyses of Groups One and Two were used to draft a postulated model or a measurement model. This model consists of five scales. Four Goodness of Fit Indices determined the fit between the postulated model and the obtained data. The results of the Goodness of fit Indices indicated a satisfactory fit between the postulated measurement model and the data.

The results of both the exploratory and confirmatory factor analyses confirmed the extraction of five factors. These factors are well defined and present as psychological meaningful constructs. These factors were named as Group Involvement, Uncertainty Tolerance, Structured Work, Visible Advancement Success, as well as, Progressive Advancement Success. In light of the fact that Factor Four consists of five items and Factor Five consists of three items, these two factors should be treated with some caution. The following chapter, Chapter Eight, presents the conclusion of this study.