CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter applies SPSS version 18.0 to analyze the gathered data. It identifies the determinant factors that are able to distinguish between E-HRM adopters and non-adopters. A total of 200 questionnaires were distributed via email to the HR managers of companies in China. There were 127 questionnaires received within two weeks, however, six of which were uncompleted. This resulted in 121 effective questionnaires for data analysis. The response rate is 60.5 percent.

4.2 Sample characteristics

Tables below demonstrated the results of statistical analysis of sample characteristics, which includes the number of E-HRM adopters, firm ownership, organization size, and industry.

Table 4. 1: Statistics of E-HRM adopter

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non-adopter	21	17.4	17.4	17.4
	adopter	100	82.6	82.6	100.0
	Total	121	100.0	100.0	

Table 4. 2: Firm ownership statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Vaild	Government-linked company	33	27.3	27.3	28.1
	Joint venture	13	10.7	10.7	38.8
	Local ownership	42	34.7	34.7	73.6
	Foreign ownership	19	15.7	15.7	84.3
	Others	13	10.7	10.7	100.0
	Total	121	100.0	100.0	

Of the 121 respondent companies, 21 (17.4%) are adopters of E-HRM, 100 (82.6%) are non-adopters. For the type of ownership, 27.3 % of companies are state-owned and 34.7% of companies are private; 10.7 percent and 15.7 percent are joint venture and foreign-owned respectively. Others occupies 10.7 percent.

Table 4. 3: Organization size statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 50	12	9.9	9.9	9.9
	50-99	17	14.0	14.0	23.9
	100-199	21	17.3	17.3	41.2
	200-499	18	14.8	14.8	56
	500-999	11	9.1	9.1	65.1
	>1000	42	34.9	34.9	100.0
	Total	121	100.0	100.0	

Refer to the organization size, the number of companies with less than 100 employee accounts for 23.9 percent. 32.1% of the companies possess more than 100 employees, but less than 500. There are 11 companies that have people less than 1000, but more than 500. The quantity of companies with more than 1000 employees is up to 42, accounting for 34.9% of the total firms.

Table 4. 4: Industry statistics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Computers/telecommunication	18	14.9	14.9	14.9
	Architecture/engineering	17	14.0	14.0	28.9
	Education	12	9.9	9.9	38.8
	Retail/wholesale/trading	9	7.4	7.4	46.3
	Travel/tourism/hotel	3	2.5	2.5	48.8
	Others	22	18.2	18.2	66.9
	Business service	6	5.0	5.0	71.9
	Logistics/transportation	3	2.5	2.5	74.4
	Banking/finance	10	8.3	8.3	82.6
	Manufacturing	21	17.4	17.4	100.0
	Total	121	100.0	100.0	

Table 4.4 shows the industry statistic data of the total 121 companies. 14.9 percent of the companies are in the industry of computer or telecommunication.

14 percent of the companies are from architecture industry. 9.9 percent and 7.4 percent are from education and retailing industry respectively. There are 2.5 percent of the companies come from tourism companies, the number of companies from the industry of business industry accounts for 5.0 percent. 2.5 percent and 8.3 percent of the total firms are from logistics and banking/finance industry respectively. Up to 17.4 percent of the companies operate in the manufacturing industry. Others make up 18.2 percent.

4.3 Validity analysis

The validity is to identify if a series of items measured are in accordance with the intended constructs. The following tables indicate the results of factor analysis.

Table 4. 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.819
Bartlett's Test of Sphericity	Approx. Chi-Square	2284.791
	Df	496
	Sig.	.000

KMO and Bartlett's test measures the adequacy of the sampling, whose value should be above 0.6 so as to conduct factor analysis. It can be seen that the Bartlett test of sphericity is significant and that the Kaiser-Meyer-Olkin measure of sampling adequacy (= .819) is far greater than 0.6.

Table 4. 6: Total variance explained

Factors	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative
1	10.757	33.617	4.817	15.052	15.052	15.052
2	3.376	10.549	3.574	11.168	26.220	26.220
3	2.897	9.053	3.371	10.534	36.754	36.754
4	1.734	5.417	2.821	8.816	45.569	45.569
5	1.493	4.664	2.819	8.810	54.379	54.379
6	1.320	4.125	2.709	8.466	62.845	62.845
7	1.110	3.468	2.576	8.049	70.895	70.895

Table 4.2.2 displayed the initial analysis that seven factors were extracted, which had eigenvalues more than 1. These factors collectively explained 71 percent of the total variance.

Table 4. 7: Rotated component matrix[a]

	Component						
	1	2	3	4	5	6	7
4.1REL1	**.808**	.183			.193		.196
4.2REL2	**.792**	.222			.142		
4.3REL3	**.786**	.267					
4.4REL4	**.707**	.181		.278			.191
2.3ATT3	**.656**	.157	.381	.114	-.145		
2.1ATT1	**.551**	.421	.525		-.110	-.145	
2.2ATT2	**.510**	.367	.499	.177	-.104	-.182	
3.3SUB3	.217	**.732**			.133		.152
3.1SUB1	.386	**.724**	.174	.100			.117
3.2SUB2	.395	**.690**	.173	.162	.128		.149
3.4SUB4	.395	**.678**		.249			.225
2.4ATT4	.436	.438	.310		-.193		.295
5.1TOP1			**.795**	.171	.269		.141

5.3TOP3		.119	**.740**		.387		.239
5.4TOP4		.127	**.673**	.203	.489		
5.2TOP2			**.606**	.390	.368		.227
4.8COMPA4		.239		**.826**		.101	
4.7COMPA3	.196		.212	**.770**	.121		.260
5.8EXP4	-.202	.118	.122	**.539**	.528	.164	
4.5COMPA1	.488	.262	.325	**.519**			.177
4.6COMPA2	.438	.225	.163	.481	.219		.208
5.7EXP3		.116	.238		**.795**		
5.6EXP2	.134	.152	.217		**.725**		-.132
5.5EXP1	.201	-.125	.218	.257	**.543**		.397
4.11COMPL3						**.851**	.248
4.9COMPL1		-.116		.215		**.808**	.184
4.12COMPL4				-.135	-.256	**.795**	-.125
4.10COMPL2	.127	.159		.112	.260	**.704**	-.167
6.4IND4		.165	.104	.134		.148	**.773**
6.3IND3	.221	.230	.161				**.708**
6.2IND2	.131	.430	.201	.321	.234	-.138	**.568**
6.1IND1	.193	.516	.287	.134	.147	-.137	**.525**

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

The factor analysis revealed that most of the multi-item indicators demonstrated enough convergent validity except relative advantage and HR manager's attitude. It is seen that discriminant validity is also adequate because these items more strongly loaded on single factors than other factors. It seems that there is much similarity on the content between the items of relative advantage and HR managers' attitude towards E-HRM. Therefore here we combined the two constructs into one single factor, renamed as relative advantage. So far seven factors have been extracted from the validity analysis. In the next step, reliability analysis will be conducted for each constructs.

4.4 Reliability analysis

As mentioned in chapter 3, reliability showed the extent to which the measure is error free and thus provided the consistent measurement across a set of items, (Sekaran, 2003), which can also help evaluate measure goodness. Cronbach's alpha (α) was applied in this study in order to measure the reliability of each item. Those items with reliability above 0.7 are regarded to be acceptable. The higher the Cronbach's a value, the better the reliability. The following tables show the reliability of each constructs in the research model.

Table 4. 8: Reliability statistics

Construct	Cronbach's Alpha
Relative advantage	0.896
Subjective norm	0.867
Top management support	0.890
Compatibility	0.760
IT expertise	0.726
Complexity	0.814
Industry pressure	0.812

The results of the reliability analysis in this study are displayed in Table 4.2.1. The general reliability of all seven constructs applied for this research was 0.908, which indicated that the collected data is quite reliable for the purpose of analysis. Specifically, it can be seen that all the Cronbach's alpha (a) coefficients are greater than 0.7. Respectively the Cronbach's a values are relative advantage= 0.896, Subjective norm= 0.867, top management

support= 0.890, compatibility= 0.760, IT expertise= 0.726, complexity= 0.814, Industry pressure= 0.812.

4.5 Hypothesis testing

The Hypothesis in this study were analyzed by using Discriminant anlaysis. As mentioned earlier, the multivariate statistical technique of discriminant anlaysis was applied for two purposes. One is to test Hypothesis and the second was to identify the degree of importance of the determinant factors in discriminating the E-HRM adopters from non-adopters.

Table 4. 9: Wilk's Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.754	32.538	7	.000

Table 4. 10: Classification results[a]

		Dependent Variable	Predicted Group Membership		
			Non-adopters	adopters	Total
Original	Count	Non-adopter	16	5	21
		adopter	20	80	100
	%	Non-adopter	76.2	23.8	100.0
		adopter	20.0	80.0	100.0

a.79.3% of original grouped cases correctly classified.

Table 4.9 and Table 4.10 indicate the reliability of the discriminant function. The value of Wilk's Lambda (= .754, p< 0.01) was used to test whether the overall model was statistically significant. The results demonstrated very high statistical significance, thus it is seen that these two groups have a statistical difference. In addition, without using discriminant function the proportional chance criterion in this paper is 70.2 percent [$(21/121)^2 + (100/121)^2 = 0.703$]. The results displayed that the predictive ability of the discriminant function can correctly classify 79.3 percent of the cases assuming homogeneity of the covariance matrices. Since the hit ratio is greater than the proportional chance criterion, therefore, the validity of the discriminant function is high. Next, the means among the groups will be compared.

Table 4. 11: Group statistics

Independent variables	**E-HRM adopters (N=100)**		**E-HRM non-adopters (N=21)**	
	M	**SD**	**M**	**SD**
Subjective norm	3.5952	.65896	3.6875	.69574
compatibility	3.2143	.54935	3.8475	.58914
complexity	3.0833	.87440	3.1975	.75486
Top management support	3.2381	.62986	3.8300	.68246
IT Expertise	3.5000	.37914	3.9000	.59671
Industry pressure	3.2619	.75613	3.6200	.59084
Relative advantage	3.9524	.54411	3.9975	.57926

Table 4. 12: Tests of equality of group means

Independent variables	Wilks' Lambda	F	Sig.
Subjective norm	.997	.311	.578
compatibility	.853	20.499	.000*
complexity	.997	.375	.541
Top management support	.899	13.389	.000*
IT Expertise	.932	8.667	.004*
Industry pressure	.954	5.758	.018*
Relative advantage	.999	.107	.744

Notes: F-test with statistical confidence level of 95 percent; * $p < 0.05$

Table 4.12 shows the group means, standard deviations, and the test for equality of the group means, from which we can see that for H2: subjective norm, F=.311, $p > 0.05$, so H2 is not significant. For H3: Relative advantage, F=.107, $p > 0.05$, thus H3 is also not statistically significant. For H4: Compatibility, we can see that F=20.499, $p < 0.05$, therefore there is a significantly difference between the two groups on compatibility. For H5: Complexity, F=.375, $p > 0.05$, so H4 was rejected. For H6: Top management support, F= 13.389, $p < 0.05$, thus we can say that H5 is statistically significant. For H7: IT expertise, F=8.667, $p < 0.05$, so there is difference between the groups on IT expertise. For H8: Industry pressure, F=5.758, $p < 0.05$, therefore, H8 is also significant. From the above, it can be seen that there are four factors, including compatibility, top management support, IT expertise and industry pressure, which were statistically significant. However, three factors relative

advantage, HR manager's subjective norms and complexity is found to be not significant.

Table 4. 13: Discriminant power

Discriminant factors	**Function**
Compatibility	.728
Top management support	.588
IT expertise	.473
Industry pressure	.386
Complexity	.098
Subjective norm	.090
Relative advantage	.053

Discriminant function also can test the degree of importance of the discriminant factors. Table 4.12 shows the discriminant power of each determinant factor from the most to the least important. The results are in line with the previous test of Hypothesis, it can be seen that compatibility, top management support, IT expertise and industry pressure were more important than other three factors (complexity, subjective norm and relative advantage) in distinguishing the E-HRM adopters from non-adopters.

To conclude the results of data analysis, a summary of Hypothesis testing is presented so as to explain as clear as possible. As the table4.14 displayed that the Hypothesis 4,6,7,8 are accepted, which indicates that the four independent variables (compatibility, top management support, IT expertise and industry pressure) are significantly influential to the adoption of E-HRM among China's

firms. However, Hypothesis 2, 3 and 5 are rejected, which indicates that HR manager's subjective norms, relative advantage and complexity do not significantly affect the decision to adopt E-HRM among China's firms.

Table 4. 14: Summary of Hypothesis testing

Hypothesis	Test	Sig.	Results
H2- HR manager's subjective norms is positively related to the adoption of E-HRM.	Discriminant analysis	p > 0.05	Not Significant
H3- Relative advantages is positively related to the adoption of E-HRM.	Discriminant analysis	P > 0.05	Not Significant
H4- Compatibility is positively related to the adoption of E-HRM.	Discriminant analysis	P< 0.05	Significant
H5- Complexity is negatively related to the adoption of E-HRM.	Discriminant analysis	p> 0.05	Not Significant
H6- Top management support is positively related to the adoption of E-HRM.	Discriminant analysis	P<0.05	Significant
H7- IT expertise is positively related to the adoption of E-HRM.	Discriminant analysis	P<0.05	Significant
H8- Industry pressure is positively related to the adoption of E-HRM.	Discriminant analysis	P<0.05	Significant

4.6 Summary

Chapter 4 describes the results of data analysis and findings through using the software SPSS version 18.0. To sum up, through validity analysis, seven factors were extracted, and the two constructs of departmental relative

advantage and HR manager's attitude were combined, and renamed as relative advantage. The reliability analysis showed that the collected data is reliable with all the Cronbach's coefficient greater than 0.7. The results of discriminant analysis exhibits compatibility, top management support, IT expertise and industry pressure are statistically significant for affecting the adoption of E-HRM, thus Hypothesis 4, 6, 7, 8 are supported. However, HR manager's subjective norms, relative advantage and complexity do not show the significance, thus Hypothesis 2, 3, 5 are not supported.