CHAPTER 4

RESEARCH FINDINGS:
ASSESSMENT OF RELIABILITY AND VALIDITY

4.0 INTRODUCTION

The discussion of the quantitative analysis is divided into two chapters. Chapter Four presents the basic quantitative analysis tools used and the outcome of the analytical procedures. The chapter begins by highlighting the sampling results and the screening of the data conducted to ensure conformity and consistency. A brief discussion on the descriptive statistics is then presented to better understand the sample characteristics. This is followed by validity and reliability analysis. Finally, the chapter presents the outcomes of exploratory and confirmatory factor analysis that will be further utilised in the Structural Equation Modelling which is discussed in the following chapter.

4.1 SAMPLING RESULTS

4.1.1 Data Collection and Data Entry

In selecting potential respondents, companies were chosen according to three criteria. Firstly, they were selected from the manufacturing industry since this industry is among the most important industries in Malaysia, contributing 32% of the Malaysian GDP and more than 80% of Malaysian exports (Economic Report, 2007). Furthermore, this industry has the most complete background information.

Although this study used a single industry setting, differences in organisational behaviour were prevalent due to differences in products and markets. As mentioned by Levinthal (1997), it is quite possible to measure a considerable diversity of organisational forms due to the presence of interaction effects, even when a single industry setting is used. Secondly, the companies selected employed 50 employees and above (medium and large-sized companies as defined by SMIDEC) because different types of learning will be more prevalent in larger companies (Gupta & Govindarajan, 2000; Van Wijk, Jansen & Lyles, 2007). Finally, only companies that had been in operation for at least five years were selected in order to gauge the relationship between organisational learning and performance.

Based on the above criteria, the population of this study consisted of manufacturing companies registered under the Federation of Malaysian Manufacturing (FMM) companies. There were 2,155 companies registered under the FMM in 2005 and out of these, 1,550 companies were classified in the medium and large size category (FMM Directory, 2005). Before mailing the questionnaires, most of the companies on the list was contacted via telephone to confirm the name of the appropriate respondent and the correct postal address. After this exercise, 115 companies were excluded due to reasons such as no longer being in operation, having merged with another company in the list, refusing to participate, and could not be located. The final list consisted of 1,435 companies in various manufacturing categories which were located across the states in Malaysia (refer to Table 4.1).

In choosing the key informant, the sampling strategy as advocated by Seidler (1974) was used whereby the questionnaire was directed to the same kind of key informant in all of the selected companies. This exercise was believed to reduce bias resulting from the use of perceptual measures that depended highly on the characteristics of key informants. Therefore, this study specifically addressed the questionnaire to the Chief Executive Officer (CEO) or Managing Director (MD) of the companies because they could provide reliable information, especially about their business strategies, organisational processes, learning and performance. In the strategy literature, members of the top management team (TMT) were considered to be the most suitable people to measure organisational-level constructs (Conant et al., 1990).

The questionnaire was sent with a covering letter that provided a brief introduction and a general explanation of the study's intention, and a postage-paid return envelope. It was emphasised in the covering letter that it was critical that the respondent be a member of the top management team in case the CEO or MD was unable to participate. Each company was given approximately 30 days to return the questionnaire. A week before the due date, a reminder was sent to every company that had not responded to request participation in the survey.

As illustrated in Table 4.1, out of 1,435 distributed questionnaires, 98 usables responses were received, representing around 7% of the total sample. Due to the poor response rate, a follow-up mailing with a duplicate copy of the questionnaire and a return self-addressed envelope was conducted in respect of companies that had not yet responded. After excluding companies that could not be located and companies that returned unanswered questionnaires (indicating refusal to participate), only 1,144 questionnaires were distributed in the second mailing exercise, from which 114 responses were received. The total number of companies that responded was 216, this being about 16% of the total sample (total sample was reduced to 1,340). Consequently, the response rate of the study compared well with response rates reported for similar surveys (e.g. Boyd & Reuning-Elliot, 1998; Sidhu et al., 2007) and that are considered acceptable in this type of research (Davig, 1986; Hart, 1987). However, only 208 questionnaires were deemed usable for further analysis because of incomplete responses (many missing values) and questionable responses (no variation in the answers throughout the questionnaire) in eight of the questionnaires received.

Table 4.1
Response Rate

Item	N	Percentage
Total population	2155	
Total medium and large companies	1550	
1st Mailing : Questionnaires mailed (Total sample)	1435	100%
Questionnaires received	98	7%
Unanswered returned questionnaires	95	9%
Total sample (new)	1340	100%
2nd Mailing : Questionnaires mailed	1144	
Questionnaires received	114	
Total questionnaires received	216	16%
Less : Non-usable	8	
Total usable responses	208	15.5%

4.1.2 Profile of Companies

Although this research attempted to include the population of FMM-registered companies as the sample, it was unlikely to obtain even a 50% response rate. The response rate of 16% can be considered fair for mail surveys, and the final sample size was considered adequate (Davig, 1987). However, a somewhat larger sample would obviously have permitted firmer conclusions to be drawn from the results of the statistical analysis.

The demographic analysis of the sample is summarised in Table 4.2. In terms of industry group, the variation in the samples well represented the population of the manufacturing industry. The sample showed that electronics and metal manufacturing companies constituted 34% of the total sample. This was followed by rubber and plastics (13.5%), machinery (11.1%), and chemicals (10.6%). The wood-based, food, textile and automotive industries each contributed less than 10% of the total sample.

In terms of age, more than 50% of the companies involved in this study had been in operation for more than 20 years thereby indicating the stability of the companies in the sample. Furthermore, the size of the companies complemented the age of the companies in this industry. The sample managed to capture about 50% medium scale companies and 50% large companies in terms of the number of employees. These two criteria gave a positive implication to the results of this study.

The performance of the companies in the sample was quite difficult to categorise due to the wide range of performance. From the classification however, about 55% of the sample achieved less than RM100 million turnover, whilst another 25% received from RM100 million to RM500 million turnover annually. The study also managed to capture 13% of the sample with more than half a billion turnover per year.

About 20% of the sample was not involved in the export market whereas about 10% focused their production entirely on export. Generally, the production of the sample companies was directed to the local market, with less than 25% of total production being for the international market.

Table 4.2
Demographic Analysis of Respondent Companies

Demographic characteristics	N	Percentage	Cum. Percent
Industry			
Electronics	37	17.8	17.8
Metal	34	16.3	34.1
Rubber and plastics	28	13.5	47.6
Machinery	23	11.1	58.7
Chemical	22	10.6	69.3
Wood-based	18	8.7	78.0
Food	17	8.2	86.2
Automotive	14	6.7	92.9
Oil and gas	10	4.8	97.7
Textile	5	2.3	100.0
Total	208	100.0	
Years of operation			
5 to 10 years	39	18.8	18.8
11 to 20 years	81	38.9	57.7
21 to 30 years	45	21.6	79.3
31 to 40 years	24	11.5	90.8
41 to 50 years	13	6.3	97.1
more than 50 years	6	2.9	100.0
Total	208	100.0	

Table 4.2, continued

Demographic characteristics	N	Percentage	Cum. Percent
Size based on employees			
50 to 250 employees	107	51.4	51.4
251 to 500 employees	42	20.2	71.6
501 to 750 employees	13	6.3	77.9
751 to 1000 employees	10	4.8	82.7
1001 to 1250 employees	11	5.3	88.0
more than 1250 employees	25	12.0	100.0
Total	208	100.0	
Annual sales			
less than RM100 million	114	54.8	54.8
RM101 million to RM200 million	21	10.1	64.9
RM201 million to RM300 million	17	8.2	73.1
RM301 million to RM400 million	10	4.8	77.9
RM401 million to RM500 million	4	1.9	79.8
more than RM500 million	27	13.0	92.8
Missing values	15	7.2	100.0
Total	208	100.0	
Export intensity			
No export market	42	20.2	20.2
1% to 25% export market	59	28.4	48.6
26% to 50% export market	26	12.5	61.1
51% to 75% export market	16	7.7	68.8
76% to 99% export market	36	17.3	86.1
100% export market	25	12.0	98.1
Missing values	4	1.9	100.0
Total	208	100.0	

4.2 SCREENING THE DATA

4.2.1 Detection of Missing Data

In empirical research, it is important to treat missing values accordingly to avoid biased statistical inferences. The treatment of missing values is more pertinent in mailed questionnaires due to the greater tendency for respondents not to answer certain questions, either by mistake or even intentionally. Many ways of dealing with missing values are available and commented upon in the research methods literature, such as casewise/pairwise deletion, unconditional/conditional mean imputation, maximum likelihood, and multiple imputations (Fichman & Cummings, 2003).

In the process of treating missing values, frequency distributions for each item in the study were generated to manually detect the occurrence of missing values in the data. Once missing values have been located and identified, proper solutions can be utilised to overcome this problem. Instead of using ad-hoc methods, this study employed the Missing Values Analysis (MVA) as provided by the SPSS software that applies regression or the expectation-maximisation (EM) method to impute missing values. This technique attempts to model the processes underlying the missing data, and from there, imputation of the most accurate and reasonable estimate is made to replace the missing values (Hair et al., 1998).

In SPSS, MVA is an iterative two-stage process (E and M stages) where the best possible estimate for the missing data is made in the E (expectation) stage, and this is followed by the M (maximisation) stage where estimates of the parameters are made assuming the missing data were replaced. This process will continue until the change in the estimated values is negligible and the missing data is replaced (Hair et al., 1998). Studies have found that this method has out-performed other traditional techniques with respect to parameter estimate bias, model fit and parameter estimate efficiency (Fichman & Cummings, 2003; Peters & Enders, 2002).

4.2.2 Detection of Outliers

The presence of outliers can distort the values of estimates, thus making conclusion from findings meaningless. Bivariate detection of outliers can be performed by visual inspection of the data in the scatter plot to locate influential data points. When outliers are detected, the data need to be re-examined to identify the cause. Only outliers due to incorrect data entry and missing values that have been mis-recorded as real values can be deleted (Tabachnick & Fidell, 2001). In this study, the descriptive results of all of the items were examined to ensure that the responses were within the range of the items and scales with no extreme values. The results indicated that the data was clean with no major problem of outliers.

4.3 EXAMINATION OF RESPONSE BIAS

The likelihood of response bias was examined from two analyses: non-response bias and response bias between early and late respondents.

4.3.1 Examination of Non-response Bias

Non-response bias was examined by comparing the demographic variables of the population (all manufacturing companies in FMM database) to the sample. Due to data constraints, only demographic factors such as industry group, age and size, were used to indicate the representativeness of the sample to the population. Table 4.3 shows the percentage distribution of non-respondents as compared to respondents in three demographic factors.

Table 4.3
Non-response Bias: Comparison between Respondents and Non-Respondents

Demographic factors	Sample (208)		Non-respondents (1124)	
Industry				
Electronics	37	(17.8%)	191	(17%)
Metal	34	(16.3%)	204	(18.1%)
Rubber and plastics	28	(13.5%)	163	(14.5%)
Machinery	23	(11.1%)	88	(7.8%)
Chemical	22	(10.6%)	134	(11.9%)
Wood-based	18	(8.7%)	117	(10.4%)
Food	17	(8.2%)	120	(10.7%)
Automotive	14	(6.7%)	50	(4.4%)
Oil and gas	10	(4.8%)	9	(0.8%)
Textile	5	(2.3%)	48	(4.3%)
Total	208	100%	1124	100%
Years of operation				
5 to 10 years	39	(18.8%)	129	(11.5%)
11 to 20 years	81	(38.9%)	463	(41.2%)
21 to 30 years	45	(21.6%)	295	(26.2%)
31 to 40 years	24	(11.5%)	173	(15.4%)
41 to 50 years	13	(6.3%)	57	(5.1%)
more than 50 years	6	(2.9%)	7	(0.6%)
Total	208	100%	1124	100%

Table 4.3, continued

Demographic factors	Sample (208)		Non-respondents (1124)	
Size based on employees				
50 to 250 employees	107	(51.4%)	743	(66.1%)
251 to 500 employees	42	(20.2%)	207	(18.4%)
501 to 750 employees	13	(6.3%)	62	(5.5%)
751 to 1000 employees	10	(4.8%)	41	(3.6%)
1001 to 1250 employees	11	(5.3%)	16	(1.4%)
more than 1250 employees	25	(12.0%)	55	(4.9%)
Total	208	100%	1124	100%

Based on the results, it is fair to say that the pattern of non-respondents was quite similar across the distribution of companies according to industry. In terms of years of operation, the percentage distribution was also equitable where both samples and population were concentrated in the 11 to 20 years category. This was also true for the size of companies where relatively, the percentage distribution of the sample and non-respondents was quite equitable. For instance, 66% of non-respondents had 50 to 250 employees, while 51% of the respondents represented this category. Unfortunately, Chi-square analysis cannot be applied to examine differences between respondents and non-respondents due to the existence of cells with expected counts of less than five which violates the assumption in Chi-square analysis (Pallant, 2005). To overcome this, the use of the Armstrong and Overton (1977) procedure in examining early and late respondents was believed to at least give an indication of non-response bias.

4.3.2 Response Bias between Early and Late Respondents

Response bias between early and late respondents was measured by splitting the total sample into two groups; those received during the first wave of mailing (early respondents) and those received after the second wave (late respondents). Since the date of receipt of each questionnaire was recorded, it is likely that the possibility of non-response bias can be inferred. Group 1 consisted of 98 companies that responded in the first wave of mailing, and group 2 consisted of 110 companies that responded in the second wave. The mean score analysis and Chi-square test of the demographic variables, and t-test were used to measure the existence of differences in these two groups as shown in Tables 4.4 and 4.5.

Table 4.4
Mean Score Analysis and Chi-square Results – Early and Late Responses

Demographic factors	**Group 1 (N = 98)**		**Group 2 (N = 110)**	
Industry				
Electronics	17	(17.3%)	20	(18.2%)
Metal	11	(11.2%)	23	(20.9%)
Rubber and plastics	17	(17.3%)	11	(10.0%)
Machinery	14	(14.3%)	9	(8.2%)
Chemical	8	(8.2%)	14	(12.7%)
Wood-based	11	(11.2%)	7	(6.4%)
Food	6	(6.1%)	11	(10.0%)
Automotive	6	(6.1%)	8	(7.3%)
Oil and gas	5	(5.1%)	5	(4.5%)
Textile	3	(3.2%)	2	(1.8%)
	Value	df	Sig	
Pearson Chi-Square	14.246	9	0.114	

Table 4.4, continued

Demographic factors	Group 1 (N = 98)		Group 2 (N = 110)	
Years of operation				
5 to 10 years	17	(17.3%)	22	(20.0%)
11 to 20 years	42	(42.8%)	39	(35.5%)
21 to 30 years	17	(17.3%)	28	(25.5%)
31 to 40 years	12	(12.2%)	12	(10.9%)
41 to 50 years	6	(6.1%)	7	(6.4%)
more than 50 years	4	(4.2%)	2	(1.8%)
Mean	21.87		21.34	
Standard deviation	15.77		13.24	
	Value	df	Sig	
Pearson Chi-Square	3.504	5	0.623	
Size based on employees				
50 to 250 employees	52	(53.1%)	55	(50.0%)
251 to 500 employees	21	(21.4%)	21	(19.1%)
501 to 750 employees	3	(3.1%)	10	(9.1%)
751 to 1000 employees	5	(5.1%)	5	(4.5%)
1001 to 1250 employees	4	(4.1%)	7	(6.4%)
more than 1250 employees	13	(13.3%)	12	(10.9%)
Mean	1002.08		803.63	
Standard deviation	3345.81		3249.63	
	Value	df	Sig	
Pearson Chi-Square	4.033	5	0.545	
Annual sales				
less than RM100 mil	58	(59.2%)	56	(50.9%)
RM101 mil to RM200 mil	6	(6.1%)	15	(13.6%)
RM201 mil to RM300 mil	9	(9.2%)	8	(7.3%)
RM301 mil to RM400 mil	5	(5.1%)	5	(4.5%)
RM401 mil to RM500 mil	1	(1.0%)	3	(2.7%)
more than RM500 mil	12	(12.2%)	15	(13.6%)
Missing values	7	(7.1%)	8	(7.3%)
Mean	1,869,349,130		1,737,973,970	
Standard deviation	14,175,973,434		13,378,887,589	
	Value	df	Sig	
Pearson Chi-Square	4.673	5	0.457	

Table 4.4, continued

Demographic factors	Group 1 (N = 98)		Group 2 (N = 110)	
Export intensity				
No export market	24	(24.5%)	18	(16.4%)
1% to 25% export market	33	(33.7%)	26	(23.6%)
26% to 50% export market	11	(11.2%)	15	(13.6%)
51% to 75% export market	9	(9.2%)	7	(6.4%)
76% to 99% export market	15	(15.3%)	21	(19.1%)
100% export market	6	(6.1%)	19	(17.3%)
Missing values	0	(0.0%)	4	(3.6%)
Mean	33.31		47.68	
Standard deviation	36.44		40.27	
	Value	df	Sig	
Pearson Chi-Square	10.015	5	0.075	

The mean score analysis showed that there were no significant differences present in the early (group 1) and late responses (group 2). This gave an indication that in terms of sampling, demographic factors were found to be similar in both groups. This is further supported by the Chi square test results that found no significant relationships ($p > 0.05$) in the demographic variables indicating that there was no necessity to separately analyse the data.

In conducting the t-test, all study variables and demographic variables were considered as test variables. As illustrated in Table 4.5, the results of the t-test showed that the mean and standard deviations of all variables for the two groups of respondents (G1- early respondents and G2 – late respondents) were fairly close. The Levene test for the assumption of equality of variances indicated that all variables except coordination capabilities were not significant. This indicates that the variances of the two groups of respondents were generally equal. As suggested by

Armstrong and Overton (1977), this result also gave an indication of non-response bias, based on the assumption that late respondents were more similar to those who did not respond at all than those who responded early.

Table 4.5
T-test Results – Early and Late Responses

Variables	Mean		Std. deviation		Levene's Test for Equality of Variances	
	G1	G2	G1	G2	F	Sig
Innovative	3.367	3.451	1.122	0.955	2.588	0.109
Competitive Product	3.225	3.331	1.183	1.130	0.363	0.548
Aggressive	3.829	3.878	1.031	0.887	3.067	0.081
First-mover	3.424	3.570	1.267	1.135	1.997	0.159
Coordination	4.450	4.313	0.871	0.661	4.564	0.034
Socialisation	5.016	4.833	0.711	0.662	0.102	0.750
System	3.371	3.591	0.969	0.911	0.414	0.521
Experimentation	4.251	4.181	0.827	0.752	0.475	0.491
Information Acquisition	3.505	3.562	0.887	0.883	0.139	0.710
Financial	3.525	3.374	0.765	0.743	0.011	0.917
Product Innovation	3.511	3.384	0.658	0.669	0.117	0.733
Process Innovation	3.561	3.500	0.774	0.643	2.100	0.149

4.4 MEASURES DEVELOPMENT AND PURIFICATION

Although most of the scales used in this study were adopted from well established scales, they still need to be assessed and purified to ensure reliability and validity when used in a different context. It is a critical requirement of any study to develop good measurement scales in order to obtain valid and reliable estimates for the variables involved. Therefore, reliability and validity need to be ensured in order to determine accuracy and applicability of the measurements (Malhotra, 2004). The subsequent discussion will explain the reliability and validity assessment procedures used in this study.

4.4.1 Reliability

Reliability is an assessment of the degree of consistency between multiple items that are used to measure a construct. In other words, it determines the internal consistency of a scale to measure a latent variable. The estimate of reliability is based on the average correlation among items within a single variable. Acceptable reliability value will ensure that the measurement scale used will produce consistent results when administered over time. The issue of reliability is an important methodological aspect and needs to be examined especially when new measures are developed and used in a study (Torkzadeh & Doll, 1991).

4.4.1.1 Cronbach's Coefficient Alpha (α)

Cronbach's coefficient alpha is one of the most commonly-used techniques to assess internal consistency. The basic assumption of this measure is that the responses to the items that represent the construct should be highly correlated if all items are correctly extracted from the domain of a single construct (Hatcher, 1994). Following Nunnaly (1978), the recommended level of 0.70 and above is observed, and the minimally acceptable level of above 0.50 to 0.60 is also considered acceptable in preliminary research (Kline, 1998). The result of internal reliability based on Cronbach's alpha coefficient is presented in the discussion of exploratory factor analysis and confirmatory factor analysis.

4.4.1.2 Composite Reliability

The internal consistency of each construct in the measurement model is measured by composite reliability. Factor loadings and variance extracted measures can be used to assess composite reliability that indicates individual indicators are all consistent in their measurements. A commonly-used threshold value for acceptable reliability is 0.70, but this is not an absolute standard and values below 0.70 can still be acceptable depending on the nature of the research (Hair et al., 1998).

The composite reliability of the construct is calculated as

$$\text{Composite reliability} = \frac{(\sum \text{standard loading})^2}{(\sum \text{standard loading})^2 + \sum \varepsilon_j}$$

where the standardised loadings are obtained from software output, and ε_j is the measurement error for each indicator. The measurement error is calculated as 1.0 minus the reliability of the indicator, which is the square of the indicator's standardised loading. Using this formula, the indicator's reliability should exceed 0.50, which roughly corresponds to a standardised loading of 0.70.

4.4.1.3 Variance Extracted Measure

A variance extracted measure is a complementary measure to construct reliability value (Hair et al., 1998). It measures whether the overall amount of variance in the indicators is accounted for by the latent variable. Higher variance extracted values demonstrate that the indicators are truly representative of the latent construct. The variance extracted measure is calculated as

$$\text{Variance extracted} = \frac{\sum \text{standard loading}^2}{\sum \text{standard loading}^2 + \sum \varepsilon_j}$$

Fornell and Larcker (1981) suggested that the variance extracted value should exceed 0.50 for a construct, but it is not uncommon to find estimates below 0.50 even when other reliability measures achieved acceptable values (Hatcher, 1994).

In this study, Cronbach's coefficient alpha was firstly analysed to determine the internal consistency of the measurements. The procedure involved calculating reliability estimates for each of the dimensions and also for the variable as a whole. Internal reliability for the measurement model was also measured using composite reliability and variance extracted measures for each of the variables.

4.4.2 Validity

Validity testing is most important in the research process because it confirms the conclusion of the research study with confidence (Mentzer & Flint, 1997). Validity which is defined as the degree to which the measurement measures what it is supposed to measure (Sekaran, 2000), will indicate the validity of the instruments. As mentioned by Churchill (1979), a measure is considered valid if the differences in the observed scores reflect the true differences in the construct that the researcher attempts to measure. There are many types of validity test. However in this study, validity assessments concern some components of construct validity i.e. content validity, convergent validity, and discriminant validity, which are considered essential and appropriate for this study.

Construct validity examines the degree to which a scale measures what it intends to measure. As defined by Cronbach and Meell (1955, p. 282), construct validity is "*the extent to which an observed measure reflects the underlying theoretical construct that the investigator has intended to measure*". The issue in measuring construct validity is its explicit linkage to an unmeasured theoretical construct, thus making the theoretical model important in the construct validation process (Andrew, 1984). Construct validity is composed of several sub-dimensions which must be met to achieve construct validity. The sub-dimensions in construct validity include substantive validity, content validity, unidimensionality, reliability, convergent validity, discriminant validity, and predictive validity (not relevant to this study). The assessment of content and substantive validity involves subjective measures while the rest are based on statistics. However, the importance of the two subjective validity measures should not be understated because without them, construct validity cannot be achieved.

4.4.2.1 Content Validity

Content validity refers to the degree that the construct is represented by items that embrace the domain of meaning for the constructs. For content validity, researcher judgement and insight must be applied and further supported by assessment from an expert in the subject matter (Garver & Mentzer, 1999). In other words, testing for content validity is highly subjective, and thus, requires extensive knowledge and insight into the conceptual nature of the construct.

In this study, thorough exploration of the literature in related disciplines and an extensive review of the measures used in other studies has been possible to help to support content validity. Most of the measurements used in this study have been repeatedly used in many studies and the extension and development of new items has been based on an extensive review of the literature. These measures were also reviewed by three senior academicians and three practitioners to determine the relevance and the adequacy of the measurements. Based on this, content validity was assured. However, since the measurements have not been tested in the Malaysian context, other construct validity measures have to be further tested and analysed.

4.4.2.2 Convergent Validity

Convergent validity refers to the extent to which a latent variable correlates to items designed to measure the same latent variable. Convergent validity is detected when different methods used to measure the same variable yield similar results (Litwin, 1995). This test is appropriate when different items are used to measure a concept and the correlation of the summated scale will determine convergent validity. Based on confirmatory factor analysis results, the critical ratio (t-test) for the factor loadings is often used to indicate convergent validity. Convergent validity is achieved when all of the indicators have significant factor loadings which reflect the effectiveness of the indicators in measuring the same construct (Anderson & Gerbing, 1988). On the other hand, indicators with insignificant factor loadings demonstrate a lack of convergent validity and should, therefore, be excluded from further analysis.

4.4.2.3 Discriminant Validity

Discriminant validity is the extent to which items representing a latent variable discriminate that construct from other items representing other latent variables. In other words, discriminant validity measures the extent to which a certain construct is different from other constructs. Therefore, indicators from one scale should not load closely to other scales. If the scale is highly correlated, it suggests that they are measuring the same construct instead of measuring two different constructs. Therefore, contrary to convergent validity, the correlation should be low, indicating that the summated scale is sufficiently different from scales of other latent variables.

To measure discriminant validity, the Chi-square differences test is conducted by comparing the freely-estimated measurement model with the theoretical model where the correlation parameter is constrained to 1 (Joreskog, 1971). Discriminant validity between two constructs is achieved when the Chi square value for the unconstrained model is significantly lower than that of the constrained model (Bagozzi & Philips, 1982). The results of convergent and discriminant validity of this study are presented in the measurement and structural model findings discussion.

4.5 EXPLORATORY AND CONFIRMATORY FACTOR ANALYSIS

Exploratory factor analysis using the principal component method was utilised for all study variables because the objective was to identify the minimum number of factors needed to account for the maximum portion of variance found in the original set of variables. Generally, the Kaiser-Meyer-Olkin (KMO) index for all of the variables was found to be greater than 0.80 that indicates meritorious presence of inter-correlations in the data matrix. This was further supported by significant results from Bartlett's test of sphericity in all of the variables. Therefore, factor analysis in this study was strongly justified. The shared variance (communalities) of 18/18 items in prospector strategic orientation, 21/23 items in combinative capabilities, 16/18 items in explorative learning, and 13/14 items in performance were estimated to be greater than 0.4 which also explained the contribution of inter-related variables in defining variance in the variable.

4.5.1 Prospector Strategic Orientation

This scale was adopted from a number of authors who have adopted Miles and Snow (1978) measures of classifying prospector-oriented companies. Based on previous literature, firms employed different groups of strategies in order to be prospective. Although the scale was quite established, exploratory factor analysis was still required to examine the dimensionality of the scale (Kelloway, 1995).

As depicted in Table 4.6a, four factors were extracted from EFA analysis. Based on the interpretation and meaning of the items, the factors were classified as innovative, competitive product, first-mover and aggressive. However, innovative dimension explained 39% of the variance, which is in accordance with the focus of prospector strategic orientation (Andrew et al., 2006; Miles & Snow, 1978; Moore, 2005; Veliyath & Shortell, 1993). The value of Kaiser-Meyer-Olkin (KMO) showed a high level of acceptance (0.90) and, therefore, all four dimensions were included to represent this construct. However, one item (A2) was dropped due to cross-loading. In terms of reliability, values of Cronbach's alpha coefficient for innovative and competitive product were found to be above 0.70, which was above the recommended level by Nunnaly (1978). For aggressive and first mover, however, the values were less than 0.70, but they were still above the minimally-acceptable level of 0.50 (Kline, 1998). The result was within the range of reliability coefficient in strategy research such as the study by Conant et al. (1990) which reported reliability values between 0.56 and 0.82.

Table 4.6a
Results of EFA on Prospector Strategic Orientation

Items		**Value**	
Kaiser-Meyer-Olkin		0.899	
Bartlett's test of sphericity		1511.884 (sig. 0.00, df. 153)	
Factor	**Eigenvalue**	**% of variance**	**Cumulative variance**
1 : Innovative 2 : Competitive Product 3 : Aggressive 4 : First-mover	6.986 1.423 1.206 1.036	38.811 7.903 6.698 5.757	38.811 46.715 53.413 59.170
Factors/Items		**Factor Loading**	
Factor 1 : Innovative			
A3. My company's success depends on our ability to innovate frequently.		0.741	

Table 4.6a, continued

Factors/Items	Factor Loading
A7. My company is aggressively entering into new markets with new products.	0.616
A10. My company usually initiates actions that will be responded to by competitors.	0.583
A15. Owing to the nature of the environment, my company believes that bold, wide-ranging acts are necessary to achieve the company's objectives.	0.671
A16. One thing that protects my company's competitive position is that we are able to consistently develop new products and new markets.	0.512
A18. My company prepares for the future by identifying trends and opportunities in the market place, which can result in the creation of new products or reach new markets.	0.776
Internal consistency reliability (Cronbach's alpha)	0.838
Factor 2 : Competitive Product	
A1. My company's product lines are broader in nature throughout the marketplace.	0.670
A4. My company's products are innovative and continually changing throughout the marketplace.	0.787
A8. In general, my company emphasises on R&D to continuously market new and innovative products.	0.596
A12. Changes in product lines have usually been quite dramatic.	0.689
Internal consistency reliability (Cronbach's alpha)	0.777
Factor 3 : Aggressive	
A6. My company adopts a cautious, 'wait-and-see' posture in order to minimise the probability of making costly decisions. (R)	0.629
A9. My company is continuously monitoring changes and trends in the marketplace.	0.700
A11. My company adopts a very competitive, 'undo the competitors' posture.	0.482
A13. My company emphasises continuous improvement of products to secure a long-term competitive advantage.	0.465
A14. My company has a strong tendency to go for high-risk projects (with chances of very high returns).	0.450
Internal consistency reliability (Cronbach's alpha)	0.684

Table 4.6a, continued

Factors/Items	Factor Loading
Factor 4 : First-mover	
A5. My company is very seldom the first to introduce new technologies. (R)	0.848
A17. My company has an image in the marketplace as a company that frequently offers innovative and new products.	0.543
Internal consistency reliability (Cronbach 's alpha)	0.581

In order to assess the validity of the measure, all four factors were subjected to confirmatory factor analysis. As illustrated in Table 4.6b, the result showed an acceptable fitting model with χ^2 = 197.097, p<.05; GFI = 0.906; TLI = 0.918; CFI = 0.932; and RMSEA = 0.060. However, a closer examination of the standardised factor loadings revealed a score of less than 0.4 for item A6 (0.304) and consequently that item had to be dropped. After excluding items with a high modification index (A3, A16), an acceptable fitting model was achieved with χ^2 = 88.247, df = 71, p<0.05; GFI = 0.946; TLI = 0.975; CFI = 0.981 and RMSEA = 0.034. As for convergent validity, all items that collectively represented prospector strategic orientation were significantly loaded into their intended factors with standardised loadings of 0.40 and above.

Table 4.6b
Results of CFA on Prospector Strategic Orientation

Factors/Items	Std. loading	Std. Error	C.R
Factor 1 : Innovative			
A7. My company is aggressively entering into new markets with new products.	0.677		
A10. My company usually initiates actions that will be responded to by competitors.	0.556	0.112	6.833
A15. Owing to the nature of the environment, my company believes that bold, wide-ranging acts are necessary to achieve the company's objectives.	0.680	0.112	8.091
A18. My company prepares for the future by identifying trends and opportunities in the market place, which can result in the creation of new products or reach new markets.	0.721	0.128	8.451
Internal consistency reliability (Cronbach's alpha)		0.751	
Factor 2 : Competitive Product			
A1. My company's product lines are broader in nature throughout the marketplace.	0.549		
A4. My company's products are innovative and continually changing throughout the marketplace.	0.791	0.182	7.484
A8. In general, my company emphasises on R&D to continuously market new and innovative products.	0.734	0.170	7.224
A12. Changes in product lines have usually been quite dramatic.	0.700	0.151	7.046
Internal consistency reliability (Cronbach's alpha)		0.777	
Factor 3 : Aggressive			
A9. My company is continuously monitoring changes and trends in the marketplace.	0.505		
A11. My company adopts a very competitive, 'undo the competitors' posture.	0.679	0.213	6.227
A13. My company emphasises continuous improvement of products to secure a long-term competitive advantage.	0.593	0.231	5.809
A14. My company has a strong tendency to go for high-risk projects (with chances of very high returns).	0.677	0.210	6.218
Internal consistency reliability (Cronbach's alpha)		0.702	
Factor 4 : First-mover			
A5. My company is very seldom the first to introduce new technologies. (R)	0.425		
A17. My company has an image in the marketplace as a company that frequently offers innovative and new products.	0.964	0.476	4.543
Internal consistency reliability (Cronbach's alpha)		0.581	

All factors extracted from the confirmatory factor analyses were again analysed in terms of reliability using Cronbach's alpha coefficient and it was found that the values of three factors were above the recommended level of 0.7 (Nunnaly, 1978). The first-mover factor was still slightly above the acceptable level of 0.5 (Kline, 1998). The overall result of factor analysis indicated that the items were internally consistent in measuring a single concept (Bryman & Cramer, 2001).

4.5.2 Combinative Capabilities

In the combinative capabilities variable, exploratory factor analysis was restricted to three factors which were classified as system capabilities, socialisation capabilities, and coordination capabilities. As shown in Table 4.7a, the KMO index was found to be greater than 0.80 and that indicated the meritorious presence of inter-correlations in the data matrix. However, five items had to be dropped due to low loading (B3, B7) and cross-loading (B8, B13, B18).

Table 4.7a
Results of EFA on Combinative Capabilities

Items		**Value**	
Kaiser-Meyer-Olkin		0.841	
Bartlett's test of sphericity		1739.969 (sig. 0.00, df. 253)	
Factor	**Eigenvalue**	**% of variance**	**Cumulative variance**
1 : Coordination capabilities 2 : Socialisation capabilities 3 : System capabilities	6.342 2.973 1.545	27.575 12.925 6.719	27.525 40.500 47.219

Table 4.7a, continued

Factors/Items	Factor Loading
Factor 1 : Coordination capabilities	
B4. Most of our employees are highly skilled and qualified.	0.707
B15. The level of coordination between various activities carried out in this company is very high.	0.787
B16. Employees have proper channels to communicate with other departments.	0.478
B19. Most of our employees possess broad and diverse skills that allow them to be deployed across many areas or functions.	0.655
B21. All departments contribute to the implementation of projects that increase customer value.	0.597
B22. Resources are shared among functional units.	0.615
B23. Projects are often assigned to a team that involves employees from different departments.	0.619
Internal consistency reliability (Cronbach's alpha)	0.813
Factor 2 : Socialisation capabilities	
B6. It is easy to talk with virtually anyone you need to, regardless of rank or position.	0.815
B11.Employees from different departments feel comfortable to communicate with each other when the need arises.	0.787
B20.People around here are quite accessible to those in other departments.	0.839
Internal consistency reliability (Cronbach's alpha)	0.834
Factor 3 : System capabilities	
B1. Strong insistence on a uniform managerial style is applied throughout the company.	0.607
B2. Strong emphasis is given on holding fast to tried and true management principles despite any changes in business conditions.	0.561
B5. Strong emphasis always on getting employees to adhere to formal procedures.	0.751
B9. Tight formal control of most operations by using sophisticated control and information systems.	0.622
B10. Having a workforce with diverse educational background is critical to our value creation activities.	0.552
B12. Most activities are well defined by their formal job description.	0.572
B14. To handle some situations, decisions may not follow standard operating procedures. (R)	0.613
B17. If employees wish to make their own decisions, they are quickly referred to a policy manual.	0.598
Internal consistency reliability (Cronbach's alpha)	0.770

For the purpose of SEM, the combinative capabilities construct was subjected to confirmatory factor analysis. Initially, as illustrated in Table 4.7b, the result showed an ill-fitting model with χ^2 = 333.589, df = 132, p<0.05; GFI = 0.843; TLI = 0.797; CFI = 0.825; and RMSEA = 0.086. In terms of reliability, values of Cronbach's alpha coefficient for all three components of combinative capabilities were found to be above 0.70, which was above the recommended level by Nunnaly (1978). As for convergent validity, all items that collectively represent combinative capabilities were significantly loaded into their intended factors with standardised loadings of 0.40 and above.

In order to improve the measurement model, items with low loading (B12, B17) and high modification index (B5, B9, B10, B16, B18, B22) (taking into account theoretical considerations) were excluded. An acceptable fitting model was achieved with χ^2 = 78.475, df = 41, p<0.05; GFI = 0.933; TLI = 0.923; CFI = 0.942; and RMSEA = 0.066.

Table 4.7b
Results of CFA on Combinative Capabilities

Factors/Items	Std. loading	Std. error	C.R
Factor 1 : Coordination capabilities			
B4. Most of our employees are highly skilled and qualified.	0.647		
B15. The level of coordination between various activities carried out in this company is very high.	0.766	0.137	8.268
B19. Most of our employees possess broad and diverse skills that allow them to be deployed across many areas or functions.	0.672	0.134	7.631
B21. All departments contribute to the implementation of projects that increase customer value.	0.590	0.129	6.912
B23. Projects are often assigned to a team that involves employees from different departments.	0.559	0.144	

Table 4.7b, continued

Factors/Items	Std. loading	Std. Error	C.R
Internal consistency reliability (Cronbach's alpha)	0.776		
Factor 2 : Socialisation capabilities			
B6. It is easy to talk with virtually anyone you need to, regardless of rank or position.	0.833		
B11. Employees from different departments feel comfortable to communicate with each other when the need arises.	0.765	0.091	10.897
B20. People around here are quite accessible to those in other departments.	0.790	0.076	11.152
Internal consistency reliability (Cronbach's alpha)	0.834		
Factor 3 : System capabilities			
B1. Strong insistence on a uniform managerial style is applied throughout the company.	0.624		
B2. Strong emphasis is given on holding fast to tried and true management principles despite any changes in business conditions.	0.624	0.172	4.831
B14. To handle some situations, decisions may not follow standard operating procedures. (R)	0.487	0.145	4.535
Internal consistency reliability (Cronbach's alpha)	0.595		

After modification based on confirmatory factor analyses, reliability was again measured to maintain consistency and validity. Using Cronbach's alpha coefficient, it was found that the value was still above the minimally-acceptable level (Kline, 1998). This is considered acceptable since there is no established measurement on combinative capabilities due to limited studies having been undertaken on this construct.

4.5.3 Explorative Learning

In the explorative learning variable, three factors were found to have an eigenvalue of more than 1. However, only two factors can best describe the explorative learning construct due to imbalances in the number of items in the third factor to equally represent the learning variable (C7, C14). The EFA results concerning explorative learning as depicted in Table 4.8a found that the KMO index for this construct was greater than 0.80 which indicated the meritorious presence of inter-correlations in the data matrix.

Table 4.8a
Results of EFA on Explorative Learning

Items		**Value**	
Kaiser-Meyer-Olkin		0.840	
Bartlett's test of sphericity		1332.260 (sig. 0.00, df. 153)	
Factor	**Eigenvalue**	**% of variance**	**Cumulative variance**
1 : Experimentation	5.750	31.945	31.945
2 : Information acquisition	1.795	9.970	41.915
Factors/Items		**Factor Loading**	
Factor 1 : Experimentation			
C3. We constantly search for new ideas, even before old ones are fully implemented.		0.609	
C4. We make a point to try many of the innovative ideas that are proposed in the company.		0.705	
C5. Good ideas are usually captured through the company's corporate memory.		0.689	
C8. Although procedures have been established, experimentation and innovation is still encouraged as a way to improve work processes.		0.760	
C9. Efforts toward improvement focus more on looking for a new system.		0.766	

Table 4.8a, continued

Factors/Items	Factor Loading
C10. Experiences and ideas provided by external sources (advisors, customers, consultants) are considered useful instruments for learning.	0.741
C12. Most of the work is assigned to teams according to their expertise.	0.474
C13. All employees have access to more information than the minimum required to perform their job.	0.603
C15. We work to ensure that employees are directly exposed to variation and complexity of the environment.	0.632
C16. We try a lot of new ideas, even at the risk of implementing them before they are fully articulated.	0.827
C18. We seem to be always trying new ideas before exhaustively examining them in order to seize opportunities.	0.567
Internal consistency reliability (Cronbach's alpha)	0.880
Factor 2 : Information acquisition	
C1. We are knowledgeable about all the important opportunities in the geographic areas in which we operate.	0.577
C2. We are well aware of technological and technical developments within our industry.	0.765
C6. Our information gathering efforts cover all industries that employ the sort of technology that we use.	0.690
C11. There is close surveillance of advancements in process and product technologies in the supplier industries.	0.547
C17.We closely monitor companies not active in our product area, but having skills and know how comparable to ours.	0.500
Internal consistency reliability (Cronbach's alpha)	0.668

Since the explorative learning variable was mainly focussed on information acquisition in the prior studies, the incorporation of experimentation as a dimension in explorative learning requires confirmatory factor analysis. As shown in Table 4.8b, the initial analysis resulted in an ill-fitting model with χ^2 = 319.056, df = 103, p<0.05; GFI = 0.835; TLI = 0.784; CFI = 0.815; and RMSEA = 0.101. After excluding items with low loading (C11) and high modification index (C5, C10, C12, C15, C16), an acceptable fitting model was achieved with χ^2 = 70.165, df = 34, $p<0.05$; GFI = 0.936; TLI = 0.916; CFI = 0.936; and RMSEA = 0.072.

In terms of reliability, the value of Cronbach's alpha coefficient for experimentation was found to be above 0.7, which was above the recommended level by Nunnaly (1978). However, for information acquisition, the value of Cronbach's alpha was 0.668 which is slightly below the recommended level of 0.7. All items that collectively represented explorative learning were significantly loaded into their intended factors with standardised loadings of 0.40 and above which signified the existence of convergent validity.

Table 4.8b
Results of CFA on Explorative Learning

Factors/Items	**Std. loading**	**Std. Error**	**C.R**
Factor 1 : Experimentation			
C3. We constantly search for new ideas, even before old ones are fully implemented	0.653		
C4. We make a point to try many of the innovative ideas that are proposed in the company.	0.821	0.104	9.354
C8. Although procedures have been established, experimentation and innovation is still encouraged as a way to improve work processes.	0.779	0.104	9.067
C9. Efforts toward improvement focus more on looking for a new system.	0.540	0.099	6.741
C13. All employees have access to more information than the minimum required to perform their job.	0.510	0.126	6.415
C18. We seem to be always trying new ideas before exhaustively examining them in order to seize opportunities.	0.564	0.098	7.003
Internal consistency reliability (Cronbach's alpha)	0.800		

Table 4.8b, continued

Factors/Items	Std. loading	Std. Error	C.R
Factor 2 : Information acquisition			
C1. We are knowledgeable about all the important opportunities in the geographic areas in which we operate.	0.683		
C2. We are well aware of technological and technical developments within our industry.	0.722	0.139	7.156
C6. Our information gathering efforts cover all industries that employ the sort of technology that we use.	0.481	0.121	5.544
C17. We closely monitors companies not active in our product area, but having skills and know how comparable to ours.	0.468	0.122	5.419
Internal consistency reliability (Cronbach's alpha)	0.670		

All factors extracted from the confirmatory factor analyses were again analysed in terms of reliability using Cronbach's alpha coefficient and it was found that the values were within the acceptable range of 0.60 to 0.70 and this indicated that the items were internally consistent in measuring a single concept of explorative learning (Bryman & Cramer, 2001; Nunnally, 1978).

4.5.4 Performance

In respect of the company's performance variable, item D6 (export) was excluded from factor analysis because of high missing values. In addition, the measurement of performance based on comparison with competitors have to be excluded due to response inconsistency and high missing values. Hence, the measurement of performance was solely based on the perceptual comparison of performance to previous years. Based on eigenvalues, three factors were identified and the items were grouped nicely into the three categories of performance: financial, product innovation, and process innovation, as illustrated in Table 4.9a.

Table 4.9a
Results of EFA on Performance

Items		**Value**	
Kaiser-Meyer-Olkin		0.864	
Bartlett's test of sphericity		1404.145 (sig. 0.00, df. 78)	
Factor	**Eigenvalue**	**% of variance**	**Cumulative variance**
1 : Financial 2 : Product Innovation 3 : Process Innovation	5.622 1.781 1.390	43.245 13.697 10.695	43.245 56.942 67.637
Factors/Items		**Factor Loading**	
Factor 1 : Financial			
D1. Sales volume		0.831	
D2. Market share		0.749	
D3. Profit		0.848	
D4. Growth		0.804	
D5. Return on asset		0.830	
Internal consistency reliability (Cronbach's alpha)		0.903	
Factor 2 : Product innovation			
D7. Introduction of new products		0.739	
D8. Improvement of existing product quality		0.454	
D9. Extension of product range		0.783	
D13. Capturing new market		0.675	
D14. Entering new technology fields		0.768	
Internal consistency reliability (Cronbach's alpha)		0.804	

Table 4.9a, continued

Factors/Items	Factor Loading
Factor 3 : Process innovation	
D10. Improvement of production processes	0.641
D11. Reduction in production cost	0.839
D12. Improvement in yield	0.821
Internal consistency reliability (Cronbach's alpha)	0.760

For SEM purposes, the performance construct was also subjected to confirmatory factor analysis. Initially, the result as shown in Table 4.9b, was that an ill-fitting model was achieved with χ^2 = 212.565, df = 62, $p<0.05$; GFI = 0.870; TLI = 0.861; CFI = 0.889; and RMSEA = 0.108. After excluding items with a high modification index (D8, D10, D13), an acceptable fitting model was achieved with χ^2 = 82.911, df = 32, $p<0.05$; GFI = 0.922; TLI = 0.932; CFI = 0.952. However, the value of RMSEA (0.088) was still above the acceptable level. Therefore further exclusion based on the modification index (D1) was necessary. Finally, a better fitting model was achieved with χ^2 = 37.913, df = 24, $p<0.05$; GFI = 0.961; TLI = 0.975; CFI = 0.983; and RMSEA = 0.053.

In terms of reliability, the value of Cronbach's alpha coefficient for performance was found to be above 0.7, which was above the recommended level by Nunnaly (1978). All items that collectively represented performance were significantly loaded into their intended factors with standardised loadings of 0.40 and above which signified the existence of convergent validity.

Table 4.9b
Results of CFA on Performance

Factors/Items	Std. loading	Std. Error	C.R
Factor 1 : Financial			
D2. Market share	0.669		
D3. Profit	0.858	0.175	10.676
D4. Growth	0.783	0.146	9.923
D5. Return on asset	0.901	0.156	11.011
Internal consistency reliability (Cronbach's alpha)	0.877		
Factor 2 : Product innovation			
D7. Introduction of new products	0.707		
D9. Extension of product range	0.802	0.124	8.593
D14. Entering new technology fields	0.685	0.121	8.133
Internal consistency reliability (Cronbach's alpha)	0.733		
Factor 3 : Process innovation			
D11. Reduction in production cost	0.650		
D12. Improvement in yield	0.997	0.229	5.974
Internal consistency reliability (Cronbach's alpha)	0.783		

All factors for performance which were extracted from the confirmatory factor analyses were again analysed in terms of reliability using Cronbach's alpha coefficient and it was found that the values were above the acceptable level of 0.70 and this indicated that the items were internally consistent in measuring a single concept of performance.

4.6 SUMMARY OF INTERNAL CONSISTENCY RELIABILITY

To provide a better picture of the internal consistency reliability using the Cronbach's alpha coefficient, Table 4.10 summarises the findings based on both explanatory and confirmatory factor analysis. Although differences in value can be noticed, the changes are obviously due to the fact that the number of items was reduced as the result of confirmatory factor analysis. However, what is more important is that the new values of Cronbach's alpha signify that the internal consistency of the construct was not compromised during the elimination process.

Table 4.10
Summary of Internal Consistency Reliability

Variables	EFA		CFA	
	No. of items	Cronbach's α	No. of items	Cronbach's α
Prospector strategic orientation	**17**	**0.893**	**14**	**0.872**
1. Innovative	6	0.838	4	0.751
2. Competitive product	4	0.777	4	0.777
3. Aggressive	5	0.684	4	0.702
4. First-Mover	2	0.581	2	0.581
Combinative Capabilities	**18**	**0.678**	**11**	**0.518**
1. Coordination	7	0.813	5	0.776
2. Socialisation	3	0.834	3	0.834
3. System	8	0.770	3	0.595
Explorative Learning	**16**	**0.867**	**10**	**0.814**
1. Experimentation	11	0.880	6	0.800
2. Information Acquisition	5	0.668	4	0.670
Performance	13	**0.888**	9	**0.848**
1. Financial	5	0.903	4	0.877
2. Product Innovation	5	0.804	3	0.733
3. Process Innovation	3	0.760	2	0.783

4.7 CONCLUSION

This chapter presented firstly the demographic characteristics of the companies and respondents in the sample. As a requirement of the Structural Equation Modelling program (AMOS software) of no missing values, missing values were imputed using the EM method which was suggested to be less biased than other methods of estimation. The examination of early and late respondents did not suggest any presence of non-response bias in the sample. The scales used in this study were then subjected to both exploratory and confirmatory factor analysis. Scale reliability was assessed by values of Cronbach's coefficient alpha and convergent validity was determined from the values of factor loadings. In the process, items that did not fulfil convergent validity were deleted from the scale, based on both statistical and theoretical considerations. The objective of these procedures was to ensure that the scales used in this study were reliable and valid and, therefore, qualified for use in the sophisticated and rigorous techniques of SEM. Finally, a summary of reliability analysis was presented to explain the extent of internal consistency of the measurements used in the study.