CHAPTER 4

METHOD

4.1 Introduction

This chapter discusses the research design, sample, and data collection procedures. It also describes the development of the questionnaires, the selection of the research measures, and the results of the pilot study. It briefly explains the data analysis techniques and provides an overview of Exploratory Factor Analysis (EFA) and Structural Equation Modeling (SEM).

4.2 Research Design

The selection of appropriate research design is crucial to prevent misleading findings and conclusions (Cavana, Delahaye, & Sekaran, 2001). This study examined the extent to which trust in co-workers mediates the relationships between co-workers' trustworthiness and employees' job performance, as well as between co-workers' social undermining behaviour and employees' job performance. To test the research hypotheses, primary data were collected from full-time employees working in ten private companies located around Kuala Lumpur and the neighbouring state of Selangor. Companies from different industries were approached so as to avoid contextual constraints associated with focusing on just one industry.

This multi-source and cross-sectional field study obtained data between January and September 2010. Three sets of questionnaires were developed to collect data from a group of employees, their co-workers, and immediate supervisors. My personal and direct involvement in collecting the data had given me the opportunity to introduce the

study and to solicit voluntarily participation in the survey. Individuals who were unable to return the form to me on the same day were requested to mail the completed form directly to me in a pre-addressed, postage-paid return envelope. All participants were assured of confidentiality.

Table 4.1 summarizes the different components of the research design in this study.

Table 4.1

The Research Design of this Study

Issues involved	Decisions made
The purpose of the study	*Hypothesis testing*
Extent of researcher interference	*Minimal*
Study setting	*Field study*
Time horizon	*Cross-sectional*
Data collection method	*Questionnaires*
Data analysis	*Quantitative*

4.3 Sample and Data Collection Procedures

To avoid problems associated with the common method variance arising from using self-report data only, data were collected from full-time employees, their co-workers, and immediate supervisors in Malaysia. The participating employees have at least one co-worker with whom they interact with in their respective organisations. Their co-workers reported to the same supervisor, and their immediate supervisors have managed at least one employee who agreed to participate in the survey.

The participants were from ten different organisations located in Kuala Lumpur and the state of Selangor. The locations were restricted to these areas to make it practical for me to make a number of visits to each of the participating organisations.

Through my personal contacts, I was personally introduced to the human resource (HR) managers or their representatives. They were contacted via the telephone, emails, and in person. The information about the company size was provided by HR managers. Only organisations with at least 30 employees were included in the sample frame.

After some persistent attempts, only ten organisations agreed to allow their employees to participate in the survey. The organisations were from the telecommunication, financial services, insurance, manufacturing, education, information technology, and properties development industries. Some organisations did not participate because the senior management thought the survey was not timely or appropriate for their organisations, or they had policies of refusing all external surveys requests.

The research procedures involved several steps. First, the participating organisations' HR representatives were asked to identify some supervisors to me. They were briefed about the purpose and nature of the survey, as well as the importance of being frank in answering the survey. They were also informed that their responses would be aggregated to maintain anonymity and used for research purposes only. Supervisors who agreed to participate voluntarily in the study were then asked to encourage their employees to participate in the survey. Along with the supervisors, the employees were explained about the purpose and requirements of the study.

The employee's questionnaires were distributed to 596 employees who agreed to participate voluntarily in the survey. They were asked to evaluate their co-workers' trustworthiness and social undermining behaviour at work, as well as trust in co-workers. A total of 165 supervisors received another set of questionnaires. The supervisors were asked to evaluate the participating employees' organisation-directed OCB (OCBO) and organisation-targeted CWB (CWBO), and task performance. In

addition, one of the participating employees' co-workers was randomly chosen by the researcher and invited to participate voluntarily in the survey. A total of 383 co-workers agreed to do so and they were each given a separate questionnaire. The co-workers were requested to evaluate the participating employees' co-workers directed OCB (OCBC) and co-workers targeted CWB (CWBC). This multi-source data collection procedure was necessary to address the one source biasness.

Each participant was asked to return their completed survey forms in sealed envelopes to protect the confidentiality of their responses. The participants took about 15 to 20 minutes to complete the questionnaires. Most of the participants chose to return their questionnaires immediately to me, but a small number of participants who were busy or wished to complete the questionnaires in their own time were requested to mail the questionnaires in the pre-paid envelopes addressed directly to me. To boost the response rates, follow-up letters and emails were sent to the non-returns two weeks after the questionnaires were distributed.

4.4 The Questionnaires

Three sets of questionnaires were developed to collect the data from the employees, their co-workers, and immediate supervisors (refer to Appendix A). An information sheet that explained the objective of the survey, the voluntary nature of participation, and assurance of confidentiality of the respondents' responses accompanied each set of the questionnaires. My contact details and that of my supervisor's were enclosed in the information sheet, just in case the participants required more information about the research.

The employees' names were written on the corresponding questionnaires for their co-workers and supervisors in pencil so that they could focus on the participating

employee. To ensure anonymity for the employees, they were asked to erase the employees' names after completing the survey.

Pre-assigned matched code numbers were also used to match each questionnaire for employee with corresponding co-workers' and supervisors' ratings. Besides, a unique 3-digit ID numbers were written on each of the co-workers' and supervisors' survey forms to identify the participating co-workers and supervisors. Participants were assured that the coding system and their returned questionnaires were confidential, and that no one in their organisation had access to them.

The employee's questionnaire (Questionnaire 1) as shown in Appendix A-1 comprises of four major sections. In Sections I and II, the participating employees were asked to assess their co-workers' trustworthiness and social undermining behaviour, respectively. In Sections III and IV, they were asked to evaluate their trust in co-workers and to provide information about their demographic characteristics, respectively.

The co-worker's questionnaire (Questionnaire 2) has three sections (refer to Appendix A-2). The co-workers were asked to evaluate the participating employees' co-workers directed OCB (OCBC) and co-workers targeted CWB (CWBC). The final section of the questionnaire, Section III, sought information on the demographic characteristics of the participating co-workers.

The supervisor's questionnaire (Questionnaire 3) had four sections (see Appendix A-3). In Sections I and II, the supervisors were asked to evaluate the participating employees' organisation-directed OCB (OCBO) and organisation-targeted CWB (CWBO), respectively. The supervisors were also asked to evaluate the task performance of the participating employees and to provide information about their demographic characteristics in Sections III and IV, respectively.

The contents of Questionnaires 1, 2, and 3 are summarized in Table 4.2, Table 4.3, and Table 4.4, respectively.

Table 4.2

Contents in Questionnaire 1 (Employees)

Section	Construct	No. of Items
I	Co-workers' trustworthiness	17
II	Co-workers' social undermining behaviour	13
III	Trust in co-workers	4
IV	Demographic characteristics	*Gender, ethnicity, age, marital status, academic qualification, gross monthly income, tenure in organisation, job designation level, and industry category*

Table 4.3

Contents in Questionnaire 2 (Co-workers)

Section	Construct	No. of Items
I	Co-workers directed OCB (OCBC)	8
II	Co-workers targeted CWB (CWBC)	7
III	Demographic characteristics	*Gender, ethnicity, age, marital status, academic qualification, gross monthly income, tenure in organisation, and job designation level*

Note. OCB = organisational citizenship behaviour; CWB = counterproductive work behaviour.

Table 4.4

Contents in Questionnaire 3 (Supervisors)

Section	Construct	No. of Items
I	Organisation-directed OCB (OCBO)	8
II	Organisation-targeted CWB (CWBO)	12
III	Task performance	7
IV	Demographic characteristics	*Gender, ethnicity, age, marital status, academic qualification, gross monthly income, tenure in organisation, and job designation level*

Note. OCB = organisational citizenship behaviour; CWB = counterproductive work behaviour.

4.5 Research Measures

The established and valid research measures with high reliabilities of past authors were adopted in this study. However, the measures were subjected to Exploratory Factor Analysis (EFA). The EFA was used to assess the underlying structure of the measures in the sample from Malaysia. The results of EFA are provided in Chapter 5 and Appendix B.

The participating employees rated co-workers' trustworthiness, social undermining behaviour, and trust in co-workers. The co-workers assessed the employees' co-workers directed OCB (OCBC) and co-workers targeted CWB (CWBC). The supervisors evaluated the employees' organisation-directed OCB (OCBO), organisation-targeted CWB (CWBO), and task performance. The following sub-sections provide details of the research measures, including the sources and some example items.

4.5.1 Co-workers' Trustworthiness Measures

The 17-item measures for the co-workers' trustworthiness, namely their ability, integrity, and benevolence, were taken from Mayer and Davis (1999). The authors used six items to assess the managers' ability, five items to evaluate their benevolence, and six items to measure their integrity. They reported internal consistency reliabilities of .94, .92, and .90 in scales that defined the ability, benevolence, and integrity of managers, respectively. In this study, the Mayer and Davis's items were slightly rephrased to reflect co-workers' trustworthiness. The word "*Top management*" in each of the 17 items was substituted with "*My co-workers*". For example, "*Top management is very capable of performing its jobs.*" was rephrased as, "*My co-workers are very capable of performing their jobs.*" The participants were asked to state their opinions based on a 7-point Likert scale anchored at 1 = strongly disagree and 7 = strongly agree.

4.5.2 Co-workers' Social Undermining Behaviour Measures

The co-workers' social undermining behaviour was evaluated by using all the 13 items that were developed by Duffy et al. (2002). The internal consistency reliability of this scale in their study was .90. An example of their original co-workers' undermining items is, "*Talked bad about you behind your back.*" To enable the employees to evaluate their co-workers, the item was rephrased as, "*My co-workers talked bad about me behind my back.*" The participating employees responded to each of the 13 items on a 7-point Likert scale ranging from 1 = never to 7 = always.

4.5.3 Trust in Co-workers Measures

A four-item trust scale developed by Mayer and Davis (1999) was used to measure trust in co-workers. They reported an internal reliability of .69 for this scale. In this study, the participating employees responded to each item using a 7-point Likert scale anchored at 1 = strongly disagree and 7 = strongly agree. The items were slightly rephrased to gauge their assessment of trust in co-workers. The Mayer and Davis's original items and the rephrased items (in parentheses and italic type face) are as follows.

I really wish I had a good way to keep an eye on top management. (reversed-scored)

(I really wish I had a good way to keep an eye on my co-workers).

If I had my way, I wouldn't let top management have any influence over issues that are important to me. (reversed-scored)

(If I had my way, I wouldn't let my co-workers have any influence over issues that are important to me).

I would be willing to let top management have complete control over my future in this company.

(I would be willing to let my co-workers have complete control over my future in this organisation).

I would be comfortable giving top management a task or problem which was critical to me, even if I could not monitor their actions.

(I would be comfortable giving my co-workers a task or problem which was critical to me, even if I could not monitor their actions).

4.5.4 Organisational Citizenship Behaviour (OCB) Measures

Lee and Allen (2002) selected the OCB items from a pool of previous OCB scales to avoid an overlapping of the workplace deviance behaviour scale. They identified eight items reflecting organisation-directed OCB (OCBO), and another eight items reflecting individuals directed OCB (OCBI). They reported a Cronbach's alpha of .88 for OCBO and .83 for OCBI in their original study.

An example of Lee and Allen's (2002) original OCBO items is, "*Show pride when representing the organisation in public.*" To enable the supervisors to evaluate the employees' OCBO, the item was rephrased as, "*This employee shows pride when representing the organisation in public.*" The OCBI items were also rephrased to enable the co-workers to evaluate the participating employees' co-workers directed OCB (OCBC). An example of the authors' original OCBI items is, "*Helps others who have been absent.*" was rephrased as, "*This employee helps other co-workers who have been absent.*" The items had seven response options ranging from 1 = never to 7 = always to measure how often the employees are engaged in OCBO and OCBC.

4.5.5 Counterproductive Work Behaviour (CWB) Measures

A 19-item scale by Bennett and Robinson (2000) was used to assess CWB. The authors reported Cronbach's alphas of .81 and .78 for the organisational deviance and interpersonal deviance scales, respectively. In this study, the items were rated on a 7-point scale ranging from 1 = never to 7 = always.

An example of Bennett and Robinson's original organisational deviance items is, "*Taken property from work without permission.*" To enable the supervisors to clearly evaluate the employees' organisation-targeted CWB (CWBO), the item was rephrased as, "*This employee took property from work without permission.*"

An example of the authors' original interpersonal deviance item is, "*Acted rudely towards someone at work.*" To allow the co-workers to clearly evaluate the employees' co-workers targeted CWB (CWBC), this item was rephrased as, "*This employee acted rudely towards other co-workers at work.*"

4.5.6 Task Performance Measures

Williams and Anderson's (1991) seven-item scale was used to assess task performance of employees. The Cronbach's alpha of this scale in their study was .89. The supervisors were asked to give their response for each item on a 7-point Likert scale with endpoints of 1 = strongly disagree and 7 = strongly agree.

An example of their original in-role behaviour items is, "*Meets formal requirements of the job.*" To enable the supervisors to evaluate the employees' task performance, the item was rephrased as, "*This employee meets formal performance requirements of his or her job.*"

4.6 Pilot Study

To validate the measurement scales, a pilot study was conducted among 60 employees from two organisations in the state of Selangor. The participating employees were asked to give their comments and suggestions for improvements. The pilot study found that only minor improvements were necessary such as clarity of the instructions and readability of the questionnaires.

The internal consistencies of all the measures in this pilot study were between .69 and .93. With the exception of trust in co-workers scale, the internal consistencies for all the scales were equal to or above the .70 criterion recommended by Hair, Anderson, Tatham, and Black (1998). Trust in co-workers scale (α = .69) fell slightly below the recommended level perhaps because it has small number of items (i.e., 4 items). Nonetheless, it was acceptable as Tan and Lim (2009) also reported internal consistency of .69 for this scale.

Table 4.5 shows the reliability results of the pilot study. The results revealed a reasonable initial indication of internal consistencies of all items used in the pilot study.

Table 4.5

Internal Consistencies of the Research Measures Obtained from a Pilot Study (n = 60)

Variable	No. of items	Cronbach's alpha
Ability	6	.90
Benevolence	5	.75
Integrity	6	.70
Social Undermining Behaviour	13	.93
Trust in Co-workers	4	.69
OCBC	8	.82
OCBO	8	.90
CWBC	7	.75
CWBO	12	.83
Task Performance	7	.70

Note. OCBC = co-workers directed OCB; OCBO = organisation-directed OCB; CWBC = co-workers targeted CWB; CWBO = organisation-targeted CWB.

4.7 Data Analysis Strategy

This study employed two statistical software packages to process the raw data and to test the hypotheses of the study. The Statistical Package for Social Sciences (SPSS) version 17 (now also known as IBM SPSS Statistics 17) for Windows was used to obtain descriptive summaries of the demographic characteristics of the employees and their supervisors, and to check the means and standard deviations for all the variables. The correlation coefficient and its associated significant value were used to interpret the output from correlation analysis. The internal consistencies of the scales were determined using the reliability analysis. In addition, the SPSS programme was used to perform the Exploratory Factor Analysis (EFA).

Data screening techniques were used to make sure that the data have been correctly entered and to make sure the variables are normally distributed. Normality checks are important because nonnormality would affect the validity of the results (Coakes & Ong, 2011). The skewness and kurtosis were generated using SPSS to assess the normality of the observed variables. Subsequently, the Analysis of Moment Structures (AMOS) version 18 (now is known as IBM SPSS Amos) was used to test the model fit and research hypotheses. The following sub-sections provide a general overview of the EFA, Structural Equation Modeling (SEM), and mediation analysis.

4.7.1 Exploratory Factor Analysis

The Exploratory Factor Analysis (EFA) is a popular multivariate statistical technique used to explore the underlying factors among the variables and to reduce data into a smaller set of components (Yang, 2005). The main purpose of EFA is, "…to find a way to condense (summarize) the information contained in a number of original

variables into a smaller set of new, composite dimensions or variates (factors) with a minimum loss of information…" (Hair, Black, Babin, & Anderson, 2010, p. 96).

Gerbing and Hamilton (1996) recommend that researchers use EFA prior to confirmatory factor analysis (CFA). Kelloway (1995) suggests that, "…EFA is more appropriate than CFA in the early stages of scale development because CFA does not show how well your items load on the nonhypothesized factors". Based on these recommendations, I conducted both EFA and CFA for each measure in the study.

4.7.2 Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) was used to empirically examine the relationships among the variables. SEM is a highly useful and powerful statistical technique, as it is almost a hybrid of factor analysis and multiple regression analysis (Hair et al., 2010).

SEM is a better statistical tool than statistical techniques such as multivariate regression and analysis of variance (ANOVA) because SEM has the capabilities to model relations from variables to constructs as well as between observed and unobserved constructs (Hoyle, 2011). It could be used to avoid underestimation of mediation effects (Hoyle & Smith, 1994), and it allows for an entire system of variables to be tested simultaneously in a hypothesized model (Byrne, 2010). In addition, SEM has the capability to determine the goodness-of-fit between the hypothesized model and the actual data (Kline, 2010), as well as to assess the measurement errors in the statistical estimation process (Byrne, 2010).

Anderson and Gerbing's (1988) two-step approach was used to test the hypothesized model. A confirmatory factor analysis (CFA) was performed to specify the relationships between the observed indicators and unobserved constructs in the

measurement model (Hair et al., 2010). Several fit indices such as the Chi-square (χ^2) goodness-of-fit statistic, the chi-square ratio, the Comparative Fit index (CFI), the Standardised Root Mean Residual (SRMR), and the Root Mean Squared Error of Approximation (RMSEA) could be used to evaluate the validity of measurement models.

Chi-square (χ^2) is used to assess the difference between the estimated covariances and observed covariances (Hair et al., 2010). Bentler (1990) proposes that the χ^2 statistics should be low or insignificant, and chi-square ratios of two or less are preferable for accepting a model. According to Hair et al., the Comparative Fit index (CFI) with value greater than .90 indicates the model provides an acceptable fit to the data. In addition, the fit indices indicate the model fits the data well when the Standardised Root Mean Residual (SRMR) is below .10, and the Root Mean Squared Error of Approximation (RMSEA) is less than .08 (Vandenberg & Lance, 2000).

Once the measurement model is validated, I then proceeded to second stage (i.e. developed and specified the structural model). The structural model or also known as a causal model shows how the unobserved constructs and observed variables are related together based on the proposed theoretical model (Hair et al., 2010). According to Hair et al. (2010), it is also used to determine whether the structural relationships among the research constructs were consistent with theoretical support. The fit indexes that were used to assess the validity of structural model include the chi-square (χ^2) goodness-of-fit statistics, the chi-square ratios, the Comparative Fit index (CFI), the Tucker-Lewis Index (TLI), the Standardised Root Mean Residual (SRMR), and the Root Mean Squared Error of Approximation (RMSEA).

4.8 Conclusion

This chapter explained the methods and strategy used in this study. It described the research design, sample, and data collection procedures. It also reported the development of questionnaires and selection of the research measures. The results from pilot study showed that the internal consistencies of all measures were good. The chapter also briefly explained the Exploratory Factor Analysis (EFA) and Structural Equation Modeling (SEM) that were used in this study. The results from these statistical tests are reported in the next chapter.