Chapter 4
Research Design and Methodology

This chapter describes the research design and methodology used in this study. The details of industry selection, population, construct operationalization, instruments, measurement, data collection method, and data analysis, are explained in this chapter.

4.1. Industry selection and population

This study examines the relationship between export performance and three important aspects of social network: centrality, proximity and expressiveness. The dyadic nature of the analysis necessitates that data must be collected from a unit that represents both personal and organizational contact simultaneously. While the 3 aspects of social network are to be collected from personal-contact base, export performance data belongs to organizations. This, as matter of fact, can cause the unit of analysis problem. Therefore, data must be collected from the level whose inter-personal contact and inter-organization contact are identical. As small- and medium-sized firms are run by one or two persons (Toletino, 1995), their inter-organization contact and inter-personal contact are considered identical. In addition, using SMEs as the samples of the study eliminate the problem of network interweaving. This problem arises when personal networks of too many people in the management influenced the success of the organization.

The SMEs literature provides a diversified definition of SMEs (see table 4.1). Although the definition of small-sized firm is quite consistent (having less than 100 employees), it is still equivocal if medium-sized firms should be those having less than 500 or 200 employees. The definitions given in table 4.1, however, are quoted in the studies conducted in the Western Hemisphere, which may not be appropriate to be directly applied with this study. In the *'Guidelines for the analysis of policies and programs for small and medium enterprise development'*, Toletino (1995) encourages that definition choice must be sensitive to the specific level of development of the region or country, and to the particular purpose for which the definition is formulated (i.e., whether it is for administrative or development management purposes). As the research site of this study is Thailand, it is more appropriate if the study follows the definition that is particularly used in Thailand.

Table 4.1: SMEs definition in the related-literature

Scholars (year)	Definition of SMEs
Ogbuehi and Longfellow (1994)	Annual sales volume of less than US$100 million and total employee size of less than 500
Gaskill, van Auken, and Manning (1993)	A retail store with fewer than 100 employees (for retail business)
Bijmolt and Zwart (1998)	Having 5 – 200 employees
O Farrell, Wood and Zeng (1998)	Having no more than 200 employees
Julien, Joyal and Deshaies (1994) and Campbell (1996)	Having 100 employees (for small-sized) and less than 100 – 250 employees (for medium-sized)
Howard (1990) and Kevin (1993)	Having less than 100 employees (for small-sized) And less than 500 employess (for medium-sized)
Balcome (1986)	Sales below $5 million
Khoury (1986)	Sales below $10 million

The definition of SMEs used in Thailand, however, is also of great diverse (see table 4.2). The SMEs definition given by financial institutions is normally capital-based while others is both capital- and labor-based. This study therefore chooses to follow the guideline of the Industrial Promotion Department, Industry Ministry of Thailand, as this organization has taken an active role in promoting SMEs business in Thailand.

The Industrial Promotion department defines small- and medium-sized enterprises as those having no more than 200 employees and having capital of no larger than 200 million baht (Simachokdee, 2000). The Thai economy currently accommodates 112,302 SMEs of all industries (105,822 for small-sized and 6,480 for medium-sized enterprises) (Simachokdee, 2000). In this study the focus will be placed on food and agricultural industry. The industry has been less dependable on imported material, thus making the industry immune to the exchange rate crisis during the past four years. The researcher of this study relies upon the database of Kompass Direct, Thailand. Kompass is an international company collecting worldwide corporate data. This means of data collection is most efficient in term of cost and time spent. The computerized database reveal 487 firms that meet the SMEs definition of this study (manufacturing and exporting food and/or agricultural products, having no more than 200 employees, and no more than 200 million of capital).

Table 4.2: SMEs definition used in Thailand

Institute/ Firm type	Labor-based	Capital-based (million baht)
Industry Promotion Dpt. - small - medium - large	no more than 50 50 – 200 more than 200	no more than 20 20 – 200 more than 100
Small Industrial Finance Corp. - small	-	No more than 50
Bank of Thailand - small	-	No more than 50
The Industrial Finance Corp. of Thailand (IFCT) - small - medium and large	-	No more than 100 More than 100

4.2. Instrument

A questionnaire is developed to capture the 7 hypotheses pertaining to the objective of the study. Questions in the questionnaire are derived from previous studies, e.g. Meyer (1994), Scott (1991), Bijmolt and Zwart (1994), Yeoh and Jeong (1994), Zou, Taylor and Osland (1998), and Aviv (1998). The questionnaire is divided into 8 parts: respondent's data, general business data, resource-based characteristics of social network, social network for export business, export performance, attitude towards export business and social network, managerial aspect of the firm, and firm's strategy.

After developing the questionnaire, the researcher conducted in-depth interview with 5 SMEs' owners. Four of the five represent very small (1-20 employees), small (21-50 employees), medium (51-100 employees), and large (101-200 employees) exporting SMEs. The other interview is organized with a firm that export manager had just resigned after a long service at the firm. This interview was intended to gain the owner's opinion about the resource-based characteristics of social network. The purposes of in-depth interview in this study are two fold: to preliminarily refine the questionnaire, and to seek a qualitative result for the study.

The opinion gained from the 5 in-depth interviews is used to adjust the first-draft questionnaire. After the questionnaire is translated into Thai, the dissertation advisors review and approve the questionnaire before launching a pilot study.

The first draft of the questionnaire is piloted with a group of 21 SMEs whose owners were participating in the SMEs Fair at Impact Trade Center, Muang Thong Thani, during 12-19 August, 2000. The questionnaire is then refined again, according to the feedback from the pilot study, before being mailed to the target respondents.

In sum, the content validity is checked through the literature review and the in-depth interview with the 5 SMEs' owners. The reliability of the measure is checked by Cronbach's alpha for each multi-item question.

There are five parts of this study that use multi-item question: characteristics of social network, export performance, attitude towards export and social network, management, and strategy. Table 4.3 exhibits Cronbach's alpha of each variable in each part. Cronbach's alpha of 11 variables range from 0.80 to 0.89, signifying a strong reliability of measure.

Table 4.3: Summary of Cronbach's Alpha of the variables

Variables	Cronbach's Alpha
Social Network Characteristics	
Heterogeneity	0.83
Imperfect Imitability	0.80
Imperfect Substitutability	0.81
Imperfect Mobility	0.83
Export Performance	
Subjective Export Performance	0.82
Attitudes Towards Export	0.81
Attitudes Towards Social Network	0.87
Management	
Production	0.79
Marketing	0.82
Finance	0.83
Export Strategy	0.89

4.3. Construct Operationalization and Measurement

1. **Heterogeneity, Imperfect Imitability, Imperfect Substitutability, and Imperfect Mobility**

   Heterogeneity, Imperfect Imitability, Imperfect Substitutability, and Imperfect Mobility are operationalized based on a 5 Likert scale. Multi-item questions are developed to ask the respondents' opinions on the nature of their social network for export activities. The scale ranges from (1) strongly disagree to (5) strongly agree, with the provided statement. Four questions are developed to obtain the perceptual heterogeneity of the network, 3 for imperfect imitability, 3 for imperfect substitutability, and 3 for imperfect mobility.

2. **Degree of Centrality**

   Centrality is operationalized as an "aggregate prominence" (Knoke and Burt, 1983) measure, which indexes individual centrality as a function of the centrality of those to whom one is connected through direct and indirect links (Bonacich, 1987). In this study, entities' degree centrality is measured by asking Thai exporting SMEs if each of them has connection, for the purpose of exporting performance, with any of the listed entities and how many. The entities that have high centrality degree are those who are mentioned by exporting SMEs with great number of person, of the entities, as being in contact with the SMEs.
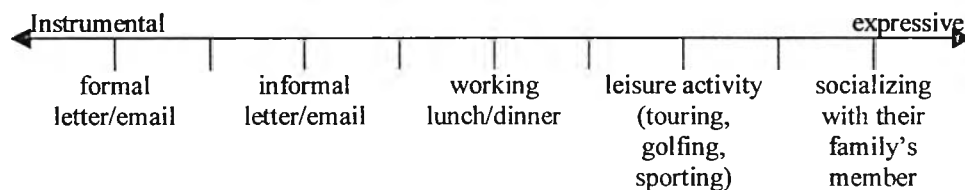
3. **Network Proximity**

   Operationalization of network *proximity* is based on the frequency of interactions with other members of the network (Pastor and Mayo, 1995). In this study network proximity is measured by asking the respondents of the frequency of contact they make to each of the listed entity.

4. **Network Expressiveness**

   Expressiveness of the network is measured by two methods. Expressiveness1 is measured simply by asking the respondents to rate, on a 5-point Likert scale, how close they are to the listed entities.

   As for Expressiveness2, a continuum scale is developed to identify if the relationship between SME's owner and the listed entity is expressive or instrumental. The scale ranges from 'contacting through formal letter', signifying least expressive relationship, to 'socializing with actor's family members', signifying most expressive relationship.

Instrumental				expressive
formal letter/email	informal letter/email	working lunch/dinner	leisure activity (touring, golfing, sporting)	socializing with their family's member

5. **Firm Characteristics**

   Aaby and Slater (1989) define firm characteristics as firm's size, level of independence, availability of a business plan, and the number of years of export experience management commitment and attitudes to export-related dimensions. Firm's *size* will be measured by number of employees. Whereas management *commitment* and *attitudes* to export-related dimensions are based upon

management perceptions on how risky and important export activities to the firm. Five-point Likert scale is developed, raging from 'less important' to 'most important', to measure the management commitment and attitudes.
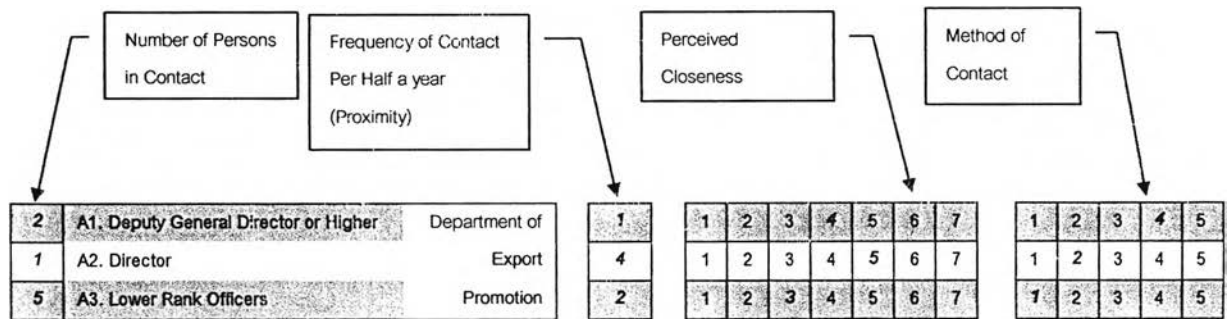
6. **Firm Competence** consists of technology, marketing knowledge, planning, export policy, management skills (Aaby and Slater, 1989). Respondents are asked to rate the level of their *technology* as compared to their competitors on the 5-point Likert scale. The scale ranges from 'far inferior to' to 'far superior to'. In this research, *marketing-related* competencies are introduced through three surrogate variables: (1) advertising and promotion activities; (2) distribution, which measures ownership of transportation facilities, and type, mix, and cost-effectiveness of distribution activities; and (3) pricing reflects competency in cost estimation and pricing, knowledge of market prices, and alternative pricing policies. In this research three factors make up the framework for evaluating the *general management skills*. Cash and financial management covers separation of private and business finances, cash flow projections and control, and use of financial statements. Managerial and cost accounting reflects the type of financial records utilized, effectiveness of cost accounting, and use of outside accounting services. Cost structure measures shares of fixed material and labor costs, cost/added value ratio, and profit margin. Respondents are also asked to rate, on 5-point Likert scale, the level of impact that each of the component of firm competence has on export performance of the firm and the pattern of firm's strategy.

7. **Firm Strategy:** Following Cavusgil and Zou (1994) export marketing strategy is evaluated along the standardization-adaptation continuum, marketing niche, and marketing innovation and differentiation.

8. **Export Performance**
    Export performance is measured by two sets of indicators, i.e. *objective* and *subjective*. Objective performance indicators consist of three surrogate variables: export sales growth, export profit growth and export intensity growth. Subjective performance indicators consist of perceived export success and propensity to export. Perceptual export performance is measured on the 5-point Likert scale while objective export performance data will be collected from actual performance statistics reported by the respondents. The respondents are asked to report their firms' annual export performance during 1993 – 1999.

4.4. Data Transformation

In this section, the method of transforming the data collected via questionnaires into the form that can be statistically analyzed is explained.

As the interest of this study focuses on social network of owners of exporting SMEs, the main part of the questionnaire asks the respondents of the information concerning their social networks that facilitate their exporting activities. The questionnaire provides a clear direction and example of how to fill up each part. Definition of social networks is given as personal contacts between the respondents (which all are owners of Thai exporting SMEs) and the listed entities. These personal contacts are perceived by SMEs owner as being useful for and facilitating exporting.

A list of entities that are expected to be useful and facilitating the respondents' exporting activities is provided. These entities have different level of impact, according to the in-depth interview, thus being assigned with different weight. The higher the rank of individual entities, the greater the weight. The respondents are asked to give the number of person (centrality) in each entity, the average frequency of contact they make to these persons (proximity), how close they are to each of them (expresiveness1, on 7 Liker scale) and the method of contact they use (expressiveness2, on 5 Likert scale). Below is the example of data filling up of a respondent.

	Number of Persons in Contact	Frequency of Contact Per Half a year (Proximity)		Perceived Closeness		Method of Contact														
2	A1. Deputy General Director or Higher	Department of	1	1	2	3	4	5	6	7	1	2	3	4	5
1	A2. Director	Export	4	1	2	3	4	5	6	7	1	2	3	4	5
5	A3. Lower Rank Officers	Promotion	2	1	2	3	4	5	6	7	1	2	3	4	5

In this example, the respondent knows 2 persons in the level of deputy general director or higher (A1), 1 in the director level (A2), and 5 in the level of lower rank officer (A3), of the Department of Export Promotion. This respondent contact to the A1 level, on average, 1 time in the period of half a year, to the A2 level 4 times, and to the A3 2 times. The respondent perceives that he/she is close to the A1 at level 4 of the scale, to A2 at level 5 and to A3 at level 3. Method of contact number 4 is used with A1, 2 with A2, and 1 with A3.

As earlier mentioned, the higher the rank, the greater the weight. The weight score of A1 is 3, A2 is 2, and A3 is 1. Weighted Score is calculated by multiplying the response to the weight score. Table 4.4 shows how the weighted score is calculated.

Table 4.4: Calculation of the weighted score

Weight	Centrality Response	Weighted Centrality	Proximity Response	Weighted Proximity	Exprs1 Response	Weighted Exprs1	Exprs2 Response	Weighted Exprs2
A1 (3)	2	2 x (3) = 6	1	1 x (3) = 3	4	4 x (3) = 12	4	4 x (3) = 12
A2 (2)	1	1 x (2) = 2	4	4 x (2) = 8	5	5 x (2) = 10	2	2 x (2) = 4
A3 (1)	5	5 x (1) = 5	2	2 x (1) = 2	3	3 x (1) = 3	1	1 x (1) = 1
		Sum = 13		Sum = 13		Sum = 25		Sum = 17

In order to obtain the degree of centrality of each organization, weighted centrality score of each individual entity is sum. In this example, the total weighted centrality score of the Department of Export Promotion is 15. After summing weighted scores of the individual entities of each organizational entity, the sum scores of each organization, of all respondents, are then ranked. The higher the sum scores the higher the degree of centrality. In other words, the sum score represents the degree to which that respondent refers the organization.

The degree of proximity, expressiveness1, and expressiveness2, of each organization is derived by summing the weighted scores of the individual entities of each respective dimension, i.e. proximity, expressiveness1, and expressiveness2. The sum of the weighted score is then multiplied by the rank number of the corresponding organization. For example, if the Department of Export Promotion is ranked number 11 (the highest rank), the proximity score of the Department of Export Promotion is the sum score of the weighted proximity score of the individual entities (13) multiplied by the rank of the Department (11), which equals 143. The expressiveness1 score of the Department is 25 x 11, which equals 275. The expressiveness2 score of the Department is 17 x 11, which equals 187.

4.5. Data Collection

As the primary source of data is collected through the mail survey, the response rate is subjected to being ignored by the target respondents. The researcher motivates the respondents to fill up and mail back the questionnaire by informing the respondents that 50 baht will be donated to the Lampang Visual Handicap School, under the patronage of Thammikkachon Foundation, for every complete questionnaire returned in the name of the respondents. (Please see the questionnaire sample in Appendix B). In addition, the researcher schedules to follow up with the un-returned questionnaire with two methods i.e. telephone call and postcard, two weeks after the mailing. While telephone call is used with the respondents who reside in Bangkok area, postcard is used with those outside Bangkok.

4.6. Data Analysis

1. Resource-based Characteristics of Social Network

Bivariate Correlation

> Hypotheses 1-4 explore the correlation between social network and the 4 characteristics of strategic resources, as prescribed by the resource-based theory. Social network is captured by three dimensions, i.e. centrality, proximity, expressiveness1, and expressiveness2. Pearson correlation coefficients, between each social network dimension and each of the 4 characteristics of strategic resource, signify the existence, or non-existence, of the correlation between social network and each of the 4 characteristics. If the correlation between social network and any of the characteristics is significant at 0.05 level, the corresponding hypothesis will be statistically supported.

2. Impact of Social Networks on Firm's Export Performance

Multiple Regression Analysis

> As proposed in hypothesis 5, 6, and 7, each of the three aspects of social network is hypothesized to influence firms' export performance. While centrality is proposed to have a direct influence on export performance, proximity and expressiveness are proposed as the moderators of the relationship between centrality and export performance. In other words, hypotheses 6 and 7 contain an interaction effect of proximity and expressiveness, respectively.

> Jaccard, Turrisi and Wan (1990), who have been actively contributing to the analysis of interaction effect, recommend two sets of equation, namely 'main effects' and 'interaction effect'. The test of an additive (or 'main effects') model for predicting Y from X_1 and X_2 typically takes the form of a least squares regression equation such that

$$Y = a + b_1X_1 + b_2X_2 + e \qquad [1.1]$$

In this study, hypothesis 5, 'Social networks with high centrality-degree to individual and /or organizations is positively related to export performance', signifies the main effect of the proposed model. The following mathematics equation represents hypothesis 5:

$$EP = a + b_1Cent + e \qquad [1.2]$$

,where a is the least squares estimate of the intercept

b_1 is the least squares estimate of the population regression coefficients for the dependent variable Centrality (Cent)

EP represents export performance and

$Cent$ represents social networks with high centrality-degree to individuals and/or organizations

e is a residual term

Regarding the interaction effects, there are three strategies commonly used in the social science literature to test for such interaction effects. One strategy is to dichotomize X1 and X2 using median splits (or some other 'cutting rule') and then to conduct a traditional 2X2 analysis of variance using Y as the dependent variable. A second strategy is to dichotomize the sample of the moderator variable (X2), and then to compute the slopes for Y and X1 for each of the two resulting groups. The slope of intentions on attitudes would then be computed for each of the two groups (using standard regression procedures), and these slopes would be formally compared statistically. The third strategy is to use multiple regression procedures. The regression strategy that is most popular is that recommended by Cohen and Cohen (1983). It involves forming a multiplicative term, X_1X_2, which is said to encompass the interaction effect, and to calculate two R^2 values, one for equation [1.1] and another for the following three-item equation:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_1X_2 + e \qquad [1.3]$$

In this study, hypothesis 6, 'Frequency of contact interacts with centrality in a positive relationship with export performance', and hypothesis 7, 'Expressive network interacts with network centrality in a positive relationship with export performance', signify the interaction effects of the proposed model. Two mathematics equations can be drawn to represent the two hypotheses.

$$EP = a + b_1Cent + b_2Prox_2 + b_3Cent\ Prox + e \qquad [1.4.1]$$

,where a is the least squares estimate of the intercept

b_1, b_2, b_3 are the least squares estimates of the population regression coefficients for the dependent variables $Cent$, $Prox$, and the multiplicative term $Cent\ Prox$

EP represents export performance and

$Cent$ represents social networks with high centrality-degree to individuals and/or organizations

$Prox$ represents frequency of contact (Proximity)

$Cent\ Prox$ is the multiplicative term between $Cent$ and $Prox$

e is a residual term

$$EP = a + b_1 Cent + b_2 Exprs + b_3 Cent\ Exprs + e \qquad [1.4.2]$$

,where	a	is the least squares estimate of the intercept
	b_1, b_2, b_3	are the least squares estimates of the population regression coefficients for the dependent variables *Cent*, *Exprs*, and the multiplicative term *Cent Exprs*
	EP	represents export performance and
	Cent	represents social networks with high centrality-degree to individuals and/or organizations
	Exprs	represents expressiveness of network
	Cent Exprs	is the multiplicative term between *Cent* and *Exprs*
	e	is a residual term

After running the multiple regression, if the interaction terms in hypothesis 6 and 7 are significant at 0.05, the hypotheses will be statistically supported. As for hypothesis 5, which tests the sole effect of centrality on export performance, if centrality is significant at 0.05, the hypothesis will be statistically supported.

Correlational Analysis

In order to explore the influence of centrality on export performance at different level of the moderators, a correlational analysis is employed. The significant differences at different level of the moderators confirm the moderating effect of the moderators.

The transformed data, i.e. proximity score, expressiveness1 score, and expressiveness2 score, are divided into three levels: high, medium, and low. The correlation between centrality and each performance indicators is then explored at each intensity level of the moderators. While bivariate correlation technique is used before controlling the effect of the proposed control variables, partial correlation is used when the effect the control variables are excluded.

As suggested by Cohen and Cohen (1983), χ^2 statistic is used for the comparison of correlation coefficients. The overall χ^2 value across the three intensity levels of the moderators is calculated to explore if there exists a difference between the correlation coefficient between centrality and the performance indicators. The overall χ^2 value is calculated by:

$$\chi^2_{(k-1)} = \Sigma (n_i - 3) Z^2_i - \frac{[\Sigma (n_i - 3)Z_i]^2}{\Sigma (n_i - 3)}$$

where,	k	is the number of group being compared (in this study there are 3 groups, i.e. high, medium and low)
	n_i	is the number of observation in i group
	Z	is the Fisher Z coefficient, which is obtained by conversing the Pearson correlation coefficient

If the correlation is significant at 0.05, the χ^2 statistic is used again to explore which among the three pairs (high-medium, medium-low, high-low) is significant. In this respect, the χ^2 value is calculated by:

$$\chi^2_{(1)} = (n_1 - 3) Z^2_1 + (n_2 - 3) Z^2_2 - \frac{[(n_1 - 3)Z_1 + n_2 - 3)Z_2]^2}{n_1 + n_2 + 6}$$

where, n_1 is the number of observation in group1
      n_2 is the number of observation in group2
      Z_1 is the Fisher Z coefficient of group 1
      Z_2 is the Fisher Z coefficient of group 2

While the significant difference of the coefficients across the three groups signifies that the interaction effect of the moderators exists, the pair comparison tests if the correlation coefficient at one level is significantly higher (or lower) than the other.

Diagram 4.1: Variables, and Their Types of Scale, of Each Constructs

Social Network

Proximity
(A – T) F

*Ratio Scale

(A–T)	Centrality
N	

* Ratio Scale

H6

H5

H7

Expressiveness		
(A – T) C	&	(A – T) M

*Ordinal Scale

* Ordinal Scale

*Ordinal Scale

DOMCOM
EXPPTL
SATEXP1
SATPOS
FORCOM

* Ratio Scale

Export Performance	Prof/Sle 36-42
	Exp/Sle 36-42
	Expg 36-42

H1	H2	H3	H4
Heterogeneity	Imitability	Substitutability	Mobility
HET1	IMIT1	SUB1	MOB1
HET2	IMIT2	SUB2	MOB2
HET3	IMIT3	SUB3	MOB3
HET4			
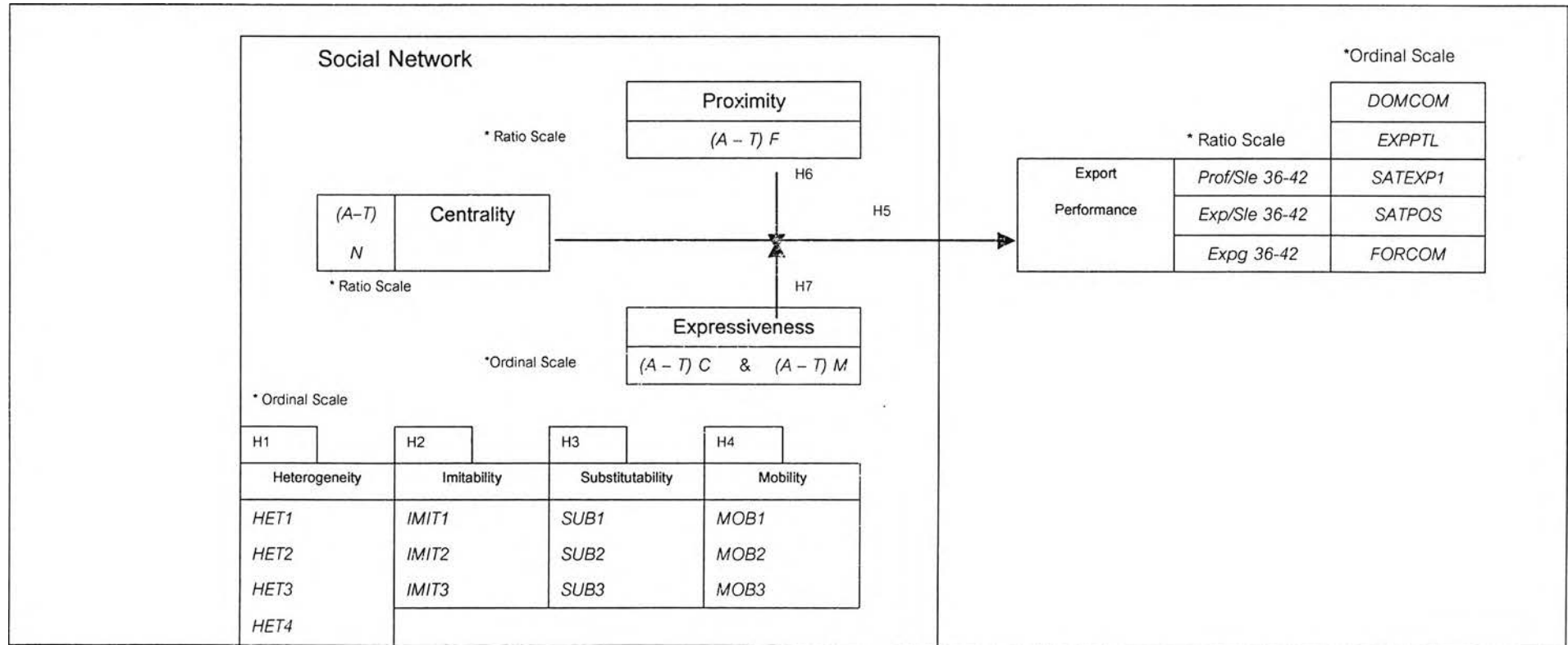
Table 4.5: Bivariate Correlation of the Underlying Variables

Variables	Cent	Prox	Exprs1	Exprs2	Cent*Prox	Cent*Exprs1	Cent*Exprs2	PEXP	CEXP	EMP	FrmChar	FinMgmt	MktMgmt	PrdtMgmt	BusAllnce	ExpAttde	Plcy&Rpt	objpfmnc	sbjpfmnc	sbjsatpfmn
Cent	1.000																			
Prox	.358**	1.000																		
Exprs1	.328**	.384**	1.000																	
Exprs2	.389**	.203**	.714	1.000																
Cent*Prox	.497**	.931**	.310**	.150	1.000															
Cent*Exprs1	.904**	.549**	.561**	.505**	.669**	1.000														
Cent*Exprs2	.708**	.218**	.326**	.772**	.308**	.702**	1.000													
PEXP	.129	.202**	.120	-.064	.179**	.100	-.073	1.000												
CEXP	.100	.237	.163	-.020	.192**	.142	-.053	.644**	1.000											
EMP	.093**	-.038	.197	.097	-.102	-.066	-.100	.014	.202**	1.000										
FrmChar	.002	.257	.203**	-.102	.219**	.088	.264**	.203	.234	.183	1.000									
FinMgmt	.178	-.045	-.072	.292**	.048	-.140	.320**	.018	.094	.057	.000	1.000								
MktMgmt	-.114	.060	.048	.045	.076	-.067	-.022	-.103	.308**	.124	.000	.000	1.000							
PrdtMgmt	.266**	-.115	.085	.177	-.059	.202**	.223**	.020	-.045	.197**	.000	.000	.000	1.000						
BusAllnce	.010	-.019	.177	.140	-.069	.023	-.004	-.111	-.135	.013	.000	.000	.000	.000	1.000					
ExpAttde	-.088	-.041	-.121	.033	-.018	-.116	.007	-.110	-.218	-.183	.000	.000	.000	.000	.000	1.000				
Plcy&Rpt	.138	-.053	-.077	.058	.055	.131	.153	.016	-.093	-.011	.000	.000	.000	.000	.000	.000	1.000			
objpfmnc	-.063	-.048	.264**	.136	-.098	-.056	-.088	.166	.108	.231	.215**	-.004	.208**	.120	-.107	.246**	.026	1.000		
sbjpfmnc	.097	-.019	-.123	.085	.006	.075	.172	.227**	.275**	.091	-.052	-.092	.082	.318**	.134	.085	.349**	-.152	1.000	
sbjsatpfmn	-.119	-.096	-.111	-.162	-.081	-.143	-.171	.126	.110	.042	.030	.048	.041	-.146	-.137	-.025	-.052	.296**	.000	1.000

** Correlation is significant at the 0.05 level (2-tailed).

Table 4.6 Bivariate Correlation of the Transformed Variables

	CENT	PROX	EXP1	EXP2	CENT PROX	CENT EXP1	CENT EXP2	CENT LG	PROX LG	EXP1 RT	EXP2 RT	CTLGP XLG	CTLGE XP1RT	CTLGE XP2RT	OBJ	OBJ SQ	SBJ	SAT	HET	HETRT	IMIT	IMIT SQ	SUB SQ	MOB RT
CENT	1.00																							
PROX	0.35**	1.00																						
EXP1	0.34**	0.36**	1.00																					
EXP2	0.36**	0.19*	0.69**	1.00																				
CENTPROX	0.50**	0.93**	0.29**	0.14	1.00																			
CENTEXP1	0.97**	0.47**	0.45**	0.43**	0.60**	1.00																		
CENTEXP2	0.70**	0.22*	0.31**	0.82**	0.31**	0.72**	1.00																	
CENTLG	0.74**	0.34**	0.63**	0.49**	0.40**	0.74**	0.54**	1.00																
PROXLG	0.35**	0.73**	0.48**	0.29**	0.60**	0.45**	0.23**	0.43**	1.00															
EXP1RT	0.29**	0.38**	0.96**	0.70**	0.30**	0.42**	0.29**	0.52**	0.46**	1.00														
EXP2RT	0.39**	0.24*	0.84**	0.95**	0.19**	0.47**	0.64**	0.62**	0.38**	0.80**	1.00													
CTLGPXLG	0.70**	0.64**	0.66**	0.47**	0.62**	0.76**	0.50**	0.88**	0.79**	0.58**	0.59**	1.00												
CTLGEXP1RT	0.44**	0.45**	0.95**	0.71**	0.41**	0.57**	0.40**	0.64**	0.52**	0.98**	0.81**	0.70**	1.00											
CTLGEXP2RT	0.57**	0.30**	0.80**	0.93**	0.30**	0.64**	0.76**	0.76**	0.42**	0.75**	0.96**	0.72**	0.81**	1.00										
OBJ	0.03	-0.05	0.27**	0.13	-0.10	-0.08	-0.10	0.10	0.03	0.26**	0.21*	0.07	0.20*	0.14	1.00									
OBJSQ	0.02	-0.01	0.28**	0.13	-0.03	0.06	0.02	0.58**	0.10	0.26**	0.19*	0.18	0.60**	0.19	0.33**	1.00								
SBJ	0.16	0.01	-0.01	0.17	0.03	0.16	0.24**	0.09	0.01	-0.04	0.14	0.08	0.00	0.19*	-0.24**	-0.09	1.00							
SAT	-0.08	-0.10	-0.13	-0.13	-0.07	-0.10	-0.11	0.05	-0.08	-0.15	-0.11	-0.08	-0.14	-0.10	0.23*	0.01	0.00	1.00						
HET	-0.18	-0.21	-0.08	-0.11	0.21*	0.19*	-0.17	-0.07	-0.09	-0.12	-0.08	-0.11	-0.13	-0.11	-0.05	0.05	0.24*	0.02	1.00					
HETRT	-0.19	-0.22	-0.07	-0.11	0.22*	0.20*	-0.18	-0.07	-0.10	-0.11	-0.08	-0.12	-0.13	-0.11	-0.04	0.05	0.24*	0.02	0.99**	1.00				
IMIT	-0.02	-0.02	0.06	0.05	-0.05	-0.02	-0.04	-0.02	-0.08	0.04	0.09	-0.05	0.02	0.05	-0.01	-0.08	0.29**	-0.11	0.41**	0.41**	1.00			
IMITSQ	0.00	-0.02	0.07	0.06	-0.05	0.00	-0.03	0.03	-0.06	0.04	0.10	-0.01	0.04	0.07	-0.02	-0.07	0.30**	-0.12	0.42**	0.42**	0.99**	1.00		
SUBSQ	-0.18	0.24*	-0.09	0.05	0.28**	0.212**	-0.04	-0.14	-0.24**	-0.07	0.00	-0.23*	-0.11	-0.05	0.09	-0.01	-0.10	0.02	-0.10	-0.10	-0.04	-0.05	1.00	
MOBRT	-0.07	-0.13	0.06	-0.04	0.21*	-0.09	0.20**	0.05	-0.08	0.08	0.01	-0.02	0.06	-0.02	0.21*	0.02	-0.13	0.01	-0.05	-0.03	0.26**	0.27**	0.37**	1.00

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).