CHAPTER 3

Research Methodology

This chapter describes the research methodology for the study. This study is an empirical research, collecting data from self-administered online questionnaire, and employing Structural Equation Modeling with AMOS to examine the hypotheses and to construct a sound model of the study. The process of the study was divided into four stages: research instrument development, data collection, measure purification, and statistical analysis examining hypotheses and modifying theoretical framework for a model fit.

3.1 Research Instrument

The study developed questionnaire as the research instrument of the study. Measures for the study were based on reviewed literatures and existing measure items, used by previous scholars to guarantee validity and reliability. Some adjustments, according to the research purposes and from experts' recommendations, were made. Reversed questions were employed to ensure that respondents answer the survey consistently. All rating items are seven-point rating scale as suggested by Churchill (1979). The draft of questionnaire was reviewed and commented by experts to ensure face validity of the research instrument. The draft was revised until there are no further suggestions.

Then, the questionnaire was translated from English into Thai to make it easier to read and more understandable for Thai respondents. Additionally, a back translation, a process of translating a questionnaire from one language to another and then back into the original language by a second (Zikmund 1994), was conducted to ensure that both versions ask the same context. Finally, the Thai version was completely developed and ready to use for data collection.

The questionnaire was constructed into 4 parts to collect four categories of data: Background Characteristics, Business Sustainability, Business Orientations, and Environment Uncertainty.

Part 1: Background Characteristics

Since the unit of analysis is an organizational level, the study needs data from key informants who accordingly provide accurate and reliable data of the target enterprises. Owners, owner executives, and executives in small and medium enterprises in Thailand are target respondent of the study.

To ensure that data is on target and to understand background of the respondents, this part was designed into two parts: respondent and respondent's enterprises. For respondent part, the questionnaire was designed to collect gender, age, educational level, work position, and working experience.

For enterprise one, the study particularly emphasizes small and medium-sized enterprises Small and medium enterprises for the study are those with less than 200 employees and fixed asset values less than 200 million Baht (OSMEP 2002). The questionnaire was designed to collect the number of employees and fix asset values. Notably, small enterprises have less than 50 employees and less than 50 million Baht fixed asset values (Rauch et al. 2009). Medium enterprises are those with ranged from 50 to 200 Baht or ranged from 50 – 200 million Baht fixed asset values. Large enterprises are those with greater than 200 employees or with greater than 200 million Baht fixed asset values. For the study, data from large enterpriseswerenot interesting and would be eliminated.

In addition, the study needs data from those that are able to run their initial stage to established stage and strive for sustainability. The sample should possess ability to be survived, which infers to the potential for sustainability than those that are unable to continue their business. Based on the outcome measures of the study (Zhang et al.

2011), the questionnaire was designed to ask firm age. Data from enterprises with less than 5 years wasnot interesting and would be eliminated.

In addition to the screening questions, the questionnaire also askedbusiness sector and industry they are in. This was to understand background characteristics of the enterprises and to understand the level of environment uncertainty in each sector. The data would also be helpful to facilitate moderating effect examination.

Part 2: Business Sustainability

According to the definition of business sustainability, the study needs data of business sustainability as measured by economic, social and environmental outcomes. Initially, the study decides to employ self-respondent evaluation to assess enterprise's outcomes because objective data on financial performance of small and medium enterprises are rarely available. The respondents may not answer accordingly and this will lead to incomplete data and therefore decrease the response rate. In addition, previous research had significant evidence that data, answered by self-report of top executives significantly, correlates with objective measure of firm performance because they are knowledgeable informants, particularly with regard to their firms' performance (Dess & Robinson 1984, Robinson & Pearce 1988).

To ensure construct validity, the study needs to measure both profitability and growth for economic outcomes (Avery & Bergsteiner 2010, Gupta &Govindarajan 1986, Han 2007, Han &Celly 2008, Zahra 1991), and the levels of satisfaction, relationship, and reputationfor social and environmental outcomes (Connolly et al. 1980, Donaldson & Preston 1995, Frombrun & Shanley 1990, Tusi 1990). Therefore, the study adopted and developed scales from several studies to operationalized business sustainability as measured by economic, social and environmental outcomes.

The study employed seven item scales from Zhang et al. (2011) because of several reasons. Firstly, the measure items assess firm outcomes consistent with the reviewed sustainability outcomes in the previous chapter. The items capture economic outcomes, including profitability, growth, and social outcomes in terms of satisfaction, reputation, and relationships. Secondly, their measures assess in team context which is

closely related to the nature of small and medium enterprises in which flat structure and teamwork are general conduct (Dean et al. 1998). Lastly, the items have high reliability ($\alpha = .91$). The former two reasons ensure construct validity accordingly to the context of the study and the latter ensure reliability.

However, the measures remain insufficient to assess other business sustainability outcomes. The study therefore developed more 13 items, accordingly to the reviewed literature, to fulfill the measures for sustainability outcomes. These were two items for market share growth (Han & Celly 2008), three items for stakeholder satisfaction (Chang & Kuo 2008, Nejati et al. 2010), one item for stakeholder relationship (Chang & Kuo 2008, Nejati et al. 2010), two items for social aspect (Kantabutra & Siebenhuner 2011, Kantabutra & Suriyankietkaew 2013), and four items for environmental aspect (Bernstein 2008, Clifton & Amran 2011, Epstein & Roy 2003, Kantabutra & Siebenhuner 2011, Kantabutra & Suriyankietkaew 2013). The pattern of the measure items is consistent with Zhang et al (2011). The questionnaire asked respondents to signify their level of agreement with the explanations of their enterprise's business sustainability as measured by economic, social and environmental outcomes, as presented in the Table 3.1.

Table 3.1 Measure Items for Business Sustainability

	Measure item	Reference
s1.	The enterprise has had rapid revenue growth.	Zhang et al (2011).
s2.	The enterprise has had rapid profit growth.	Zhang et al (2011).
s3.	The enterprise has had rapid market share growth.	Han & Celly (2008).
s4.	The enterprise has been the market leader.	Zhang et al (2011).
s5r.	The organization has been slow in expanding major business. (reversed item)	Zhang et al (2011).
s6.	The enterprise has enjoyed good reputation in the local communities.	Zhang et al (2011).
s7.	The enterprise has built good relationship with the local government.	Chang & Kuo (2008), Nejati et al. (2010).

Table 3.1 (continued) Measure Items for Business Sustainability

	Measure item	Reference
s8.	The enterprise has built good relationship with suppliers.	Chang & Kuo (2008), Nejati et al. (2010).
s9.	The enterprise has been highly satisfied by suppliers.	Chang & Kuo (2008), Nejati et al. (2010).
s10.	The enterprise has been highly satisfied by trade partners.	Chang & Kuo (2008), Nejati et al. (2010).
s11.	The enterprise has been highly satisfied by customers.	Chang & Kuo (2008), Nejati et al. (2010).
s12.	The enterprise has been highly satisfied by employee.	Zhang et al (2011).
s13.	Employee has had high morale.	Zhang et al (2011).
s14.	The enterprise has had no case in a court with surrounding communities.	Kantabutra & Siebenhuner (2011), Kantabutra & Suriyankietkaew (2013).
s15.	The enterprise has been thought of by the general public as a social responsible organization.	Kantabutra & Siebenhuner (2011), Kantabutra & Suriyankietkaew (2013).
s16.	The enterprise has been thought of by the general public as an environmentally responsible organization.	Kantabutra & Siebenhuner (2011), Kantabutra & Suriyankietkaew (2013).
s17.	The enterprise has been evaluated by external agencies (e.g. ISO) as an organization that well preserves and develops the environment.	Kantabutra & Siebenhuner (2011), Kantabutra & Suriyankietkaew 2013).
s18.	The enterprise has built good reputation in environmental friendly.	Bernstein (2008), Clifton & Amran (2011).

Table 3.1 (continued) Measure Items for Business Sustainability

	Measure item	Reference
s19r.	The enterprise has got complaint about environmental harm. (reversed item)	Epstein & Roy (2003).

Part 3: Business Orientations

This part aims to measure entrepreneurial orientation and collaborative orientation of enterprises. The study employed valid and reliable measures of the two orientations from previous literature.

Part 3.1: Entrepreneurial Orientation

The study employed Entrepreneurial Orientation Questionnaire (EOQ), which is the most widely utilized instrument to measuring entrepreneurial orientation. It was developed by Covin and Slevin (1986, 1989), which has dominated research on entrepreneurial orientation (Rauch et al. 2004). The EOQ, as a unidimensional scale, contains nine items to assess the level of entrepreneurial orientation, compounding of innovativeness, risk-taking, autonomy and competitive aggressiveness, and proactiveness(Rauch et al. 2004).

Table 3.2 Measure Items for Entrepreneurial Orientation

Generally the enterprise prefers to*(Innovativeness)*		
(et1) strongly emphasize the marketing of the company's present products	1 2 3 4 5 6 7	Strongly emphasize R& D
How many new kinds of products or services has your enterprise introduced over the past 5 years?		
(et2) No new products/ services	1 2 3 4 5 6 7	A lot of new products/services
(et3) There has been small changes of the present products/services	1 2 3 4 5 6 7	The changes of the company's products/services have been radical

Table 3.2 (continued) Measure Items for Entrepreneurial Orientation

Generally the enterprise has*(Risk taking)*		
(et4) A strong tendency toward projects with low risk (with normal and secure yield)	1 2 3 4 5 6 7	A strong tendency toward getting involved in high risk projects (with a chance for high yield)
Generally the enterprise believes that		
(et5) the business environment of the company is such that fearless and powerful measures are needed to obtain the company's objectives	1 2 3 4 5 6 7	the business environment of the company is such that it is better to explore it carefully and gradually in order to achieve the company's objectives
		(Autonomy and Competitive Aggressiveness)
When the enterprises is facing insecure decision-making situations,		
(et6r)* it normally takes up a fearless, aggressive position, in order to maximize the chance of being able to exploit possible opportunities	1 2 3 4 5 6 7	it normally takes up a cautious "wait-and see" position in order to minimize the hazard of making costly erroneous decisions
For the enterprise's relation toward competitors,		*(Proactiveness)*
(et7) normally it reacts upon initiatives taken by our competitors	1 2 3 4 5 6 7	normally it initiates changes upon which the competitors react.
(et8) it is seldom the first one to introduce new products or services administrative systems, methods of production, etc.	1 2 3 4 5 6 7	it is very often the first company to introduce new products/services, administrative systems, methods of production, etc.

Table 3.2 (continued) Measure Items for Entrepreneurial Orientation

(et9) normally the enterprise tries to avoid overt competition, but rather takes on a "live-and-let-live"-position	1 2 3 4 5 6 7	normally the enterprise takes on a very competitive oriented "beat-the-competitor" – position

*reversed item

Part 3.2: Collaborative Orientation

According to the reviewed literatures, the orientation for the study was categorized into three main components: stakeholder focus, ethical commitment, and social responsibility. However, the measures for the orientation from previous studies were insufficient to capture the three components at once. Therefore, the measure scales for the study weredeveloped from several related previous valid and reliable scales. The study adopted 21 item scales from Gallardo-Vzaques et al. (2013) to measure social responsibility in economic dimension (c1 – c5: α =.79), social dimension (c6 – c13: α =.83), and environmental dimension (c14 – c21: α =.90), and 11 item scales from Ethical Commitment Index (ECI) (Choi & Jung 2008), used globally among earlier relevant studies, to measure the level organization's ethical commitment (c22 – c32). In addition, the study adopted 16 item scales to measure the level of stakeholder focus from (c33 – c39: α =.89, c43 – c51: α =.93) from Gibson & Birkinshaw (2004), three item scales (c40 – c42 α = .72) from Sorenson et al. (2008).

Notably, the questionnaire was designed to capture organizational behaviors. However, there were four items capturing firm ability (c14, c50). Therefore, in measure purification, they would be specifically considered to be eliminated.

Finally, 51 measure itemswere developed to ask respondents to signify their level of agreement with the explanations of their enterprise's orientation, as presented in the Table 3.3.

Table 3.3 Measure Items for Collaborative Orientation

	Measure item	Reference
c1.	The enterprise emphasizes offering high quality products and/or services to the customers.	Gallardo-Vázquez et al. (2013)
c2.	The enterprise's products and/or services satisfy national and international quality standards.	Gallardo-Vázquez et al. (2013).
c3.	The enterprise is characterized to have the best relation price to quality.	Gallardo-Vázquez et al. (2013).
c4.	The enterprise offers to our customers' accurate information about our product and/or services.	Gallardo-Vázquez et al. (2013).
c5.	The respect to consumer rights is a proprietary axis in the enterprise.	Gallardo-Vázquez et al. (2013).
c6.	The enterprise is aware of the employee quality of life.	Gallardo-Vázquez et al. (2013).
c7.	Employee compensation is related to their competences and their results.	Gallardo-Vázquez et al. (2013).
c8.	The enterprise is committed to job creation such as fellowships, creation of job opportunities, etc.	Gallardo-Vázquez et al. (2013).
c9.	The enterprise fosters training and development of our employees.	Gallardo-Vázquez et al. (2013)
c10.	The enterprise has human resources policies to facilitate conciliation between professional and personal life.	Gallardo-Vázquez et al. (2013).
c11.	The enterprises is aware to employees initiatives related to management decisions.	Gallardo-Vázquez et al. (2013).
c12.	Equal opportunities exist for all employees.	Gallardo-Vázquez et al. (2013).
c13.	The enterprise has dynamic mechanisms of dialog with employees.	Gallardo-Vázquez et al. (2013).
c14.	The enterprise is able to minimize our environmental impact.	Gallardo-Vázquez et al. (2013)

Table 3.3 (continued) Measure Items for Collaborative Orientation

	Measure item	Reference
c15.	The enterprise uses goods in process and/or goods processed with low environmental impact.	Gallardo-Vázquez et al. (2013).
c16.	The enterprise contemplates energy savings in order to get high levels of efficiency.	Gallardo-Vázquez et al. (2013).
c17.	The enterprise attaches very high value to the introduction of alternative sources of energy.	Gallardo-Vázquez et al. (2013).
c18.	The enterprise is aware of the relevance of planning investments to reduce the environmental impact.	Gallardo-Vázquez et al. (2013).
c19.	The enterprise is in favor of gas emission reductions and waste products recycling.	Gallardo-Vázquez et al. (2013).
c20.	The enterprise is a positive predisposition to use, to buy or to produce ecological goods.	Gallardo-Vázquez et al. (2013).
c21.	The enterprise appreciates using recyclable packing.	Gallardo-Vázquez et al. (2013).
c22.	Top managers of the enterprise regularly emphasize the importance of business ethics.	Choi & Jung (2008).
c23.	Ethical behaviors based on a formal business philosophy are norm of the enterprise.	Choi & Jung (2008).
c24.	The enterprise has a disciplinary system through which unethical behavior is strictly punished.	Choi & Jung (2008).
c25.	The enterprise has a code of ethics.	Choi & Jung (2008).
c26.	In the enterprise, employees can report unethical conduct through an anonymous channel.	Choi & Jung (2008).
c27.	In the enterprise, ethics education, training, or workshops are in place to enhance business ethics of employees.	Choi & Jung (2008).
c28.	The enterprise regularly puts a significant portion of its profits towards philanthropy.	Choi & Jung (2008).
c29.	The enterprise has an independent ethics department and officers.	Choi & Jung (2008).

Table 3.3 (continued) Measure Items for Collaborative Orientation

	Measure item	Reference
c30.	In the enterprise, employees can get help regarding business ethics through an ethics hotline or open communication channel.	Choi & Jung (2008).
c31.	The enterprise has an ethics committee.	Choi & Jung (2008).
c32.	The enterprise has an ethics evaluation system measured by an independent party from outside.	Choi & Jung (2008).
c33.	The enterprise encourages employees to set challenging or aggressive goals.	Gibson & Birkinshaw (2004).
c34.	The enterprise encourages employees to issue creative challenges, instead of narrowly defining tasks.	Gibson & Birkinshaw (2004).
c35.	The enterprise encourages employees to be more focused on getting their job done well than on getting promoted.	Gibson & Birkinshaw (2004).
c36.	The enterprise encourages employees to make a point of stretching theirs.	Gibson & Birkinshaw (2004).
c37.	The enterprise gives reward or punish based on rigorous measurement of business performance against goals.	Gibson & Birkinshaw (2004).
c38.	The enterprise holds employees accountable for their performance.	Gibson & Birkinshaw (2004).
c39.	The enterprise uses their appraisal feedback to improve their performance.	Gibson & Birkinshaw (2004).
c40.	The enterprise exchanges accurate information to solve the problem together.	Sorenson et al. (2008).
c41.	The enterprise tries to bring all concerns out in the open so that the issues can be resolved in the best possible way.	Sorenson et al. (2008).
c42.	The enterprise tries to work with one another for a proper understanding of the problem.	Sorenson et al. (2008).

Table 3.3 (continued) Measure Items for Collaborative Orientation

	Measure item	Reference
c43.	The enterprise encourages people to devote considerable effort to developing their subordinates.	Gibson & Birkinshaw (2004).
c44.	The enterprise gives everyone sufficient authority to do their jobs well.	Gibson & Birkinshaw (2004).
c45.	The enterprise pushes decisions down to the lowest appropriate level.	Gibson & Birkinshaw (2004).
c46.	The enterprise gives ready access to information that others need.	Gibson & Birkinshaw (2004).
c47.	The enterprise encourages employees to work hard to develop the capabilities needed to execute overall strategy or vision.	Gibson & Birkinshaw (2004).
c48.	The enterprise bases decisions on facts and analysis, not politics.	Gibson & Birkinshaw (2004).
c49.	The enterprise treats failure (in a good effort) as a learning opportunity, not something to be ashamed of.	Gibson & Birkinshaw (2004).
c50.	The enterprise is willing and able to take prudent risks.	Gibson & Birkinshaw (2004).
c51.	The enterprise set realistic goals.	Gibson & Birkinshaw (2004).

Part 4: Environment Uncertainty

Environment uncertainty is regarded as having moderating effect between the orientations and business sustainability. The study employs five item scales ($\alpha = .85$) from Selnes & Sallis (2003) which is an empirical study associated with collaborative practices, environment uncertainty, and firm relationship performance which is an essential part of business sustainability. The questionnaire asked respondents to signify the level of agreement on the explanations for environment affecting their enterprises, as presented in Table 3.4.

Table 3.4 Measure Items for Environment Uncertainty

	Measure item	Reference
eu1.	End-user needs and preferences change rapidly in our industry.	Selnes & Sallis (2003)
eu2.	The competitors in our industry frequently make aggressive moves to capture market share.	Selnes & Sallis (2003)
eu3.	Crises have caused some of our competitors to shut down or radically change the way they operate.	Selnes & Sallis (2003)
eu4.	It is very difficult to forecast where the technology will be in the next 2-3 year in our industry.	Selnes & Sallis (2003)
eu5.	In recent years, a large number of new product ideas have been made possible through technological breakthroughs in our industry.	Selnes & Sallis (2003)

Since the measure items for the study are developed from previous valid and reliable measures, it is satisfactory to ensure construct validity and reliability at the prior stage. In addition, the measure items also have content validity because they are consistent with reviewed literatures. Therefore, it is satisfactory to implement the questionnaire for the study.

3.2 Data Collection

The study particularly emphasizes small and medium-sized enterprises with more than five years operations. Owners, owner managers and executives of the target enterprises are key informants of the study. Using convenient sampling, the collected data was from two approaches. Firstly, the study collected data from online approach.This was because it was able to reach a large number of respondents, to monitor real-time data, and to secure confidential answer quickly and cost-effectively, as well as to complete the questionnaire immediately once respondents receive invitation (Zikmund & Babin 2007). The Thai questionnaire is developed into an online self-administrative questionnaire.E-mail invitations were sent to 45,820 enterprises, which their e-mails were bought from database service providers. The e-mail explains the research objectives, encourages participation, and promises to send research results

when the study is completed. Also, hyperlink for online – questionnaire <http://thaicorp.questionpro.com> was attached to facilitate them to immediately answer the questions. Finally, there were 100 submitted questionnaires. From the submissions, incomplete data, and questionnaires from employees and from large enterprises with more than 200 employees or with more than 200 million Baht fixed asset values were eliminated. In a consequence, there were only 77 usable questionnaires.

To ensure non-respondent bias, the usable ones were divided into two groups, cut off by the center of the time period. Independent sample t-test was conducted to compare the average values of business sustainability items (s1 to s19) between the data from the former period and the latter period. The values from the former (M = 4.82, SD = .664) and the latter (M = 4.67, SD = .675) were indifferent: F = .134, p = .716; t(75) = .917, p = .362. Therefore, it was satisfactory to infer that there was non-respondent bias and to combine the data from the two periods together.

Since the sample size should preferably be more than 100 respondents (Hair et al. 1995). The data from the first approach was insufficient. The study needs more data from another approach. Field data collection was employed. MBA students who are owners or executives in various enterprises in Bangkok, Chiangmai, and Lampang were invited to answer the questions. Questionnaires were distributed directly. The researcher waited for the complete data. From this approach, there were 323 questionnaires. The datawas screened for completed and qualified data. Finally, there were 174 usable questionnaires.

To combine the data from the two approaches, independent sample t-test was performed. There was an insignificant difference in the average value of business sustainability between the first approach (M = 4.74, SD = .770) and the second one (M = 4.68, SD = .735): F = .089, p = .765; t (249) =.576, p = .565. Hence, it was satisfactory to combine the data from the two approaches together. Finally, there were 251 usable data for this study. Sample units are presented in Table 3.5.

Table 3.5 Sample Unit

	E-mail Invitation		MBA student	
E-mail invitation sent	**45,820**	**100.00%**		
- Non-response	45,720	99.78%		
Submitted questionnaire	**100**	**0.22%**	**323**	**100.00%**
- Incomplete data	16	0.03%	-	0.00%
- Unqualified data	7	0.02%	149	46.13%
Usable questionnaire	**77**	**0.17%**	**174**	**53.87%**
Total Sample	**251**	**Respondents**		

3.3 Measure Purification

Since the measure items of the study were developed from various literatures and different context, they were purified to ensure valid and reliable variables based on the context of Thai small and medium enterprises. To ensure convergent and discriminant validity, series of Exploratory Factor Analysis (EFA) with Principle Component Analysis and Varimax Rotation with Kaiser normalization (Comrey& Lee 1992, Kaiser 1974,& Pedhazur& Achmelkin 1991) from SPSS (Statistical Package for the Social Sciences) were employed to categorize the measure items into factors with Eigenvalues larger than 1.00. In addition, series of Confirmatory Factor Analysis (CFA) from AMOS were employed to ensure construct validity. Notably, measure items and variables with factor loading were less than .60 should be cautious (Nunnally& Bernstein 1994). Then, internal consistency analysis from SPSS was employed to examine reliability of variables, resulted from factor analysis.

3.3.1 Business Sustainability

From 19 measure items, six items were eliminated from EFA because their factor loadings were less than .60 (Nunnally & Bernstein 1994). The result of factor analysis classified 13 items into three factors: Social Outcomes (SCO), Environmental Outcomes (EVO), and Economic Outcomes (ECO).The result of EFA can be presented in Table 3.6.

Table 3.6 Result of Exploratory Factor Analysis for Business Sustainability

Description	Factor Loading		
	SCO	**EVO**	**ECO**
Factor I: Social Outcomes (SCO)			
The enterprise has been highly satisfied by customers. (s11)	.808		
The enterprise has been highly satisfied by employee. (s12)	.757		
The enterprise has built good relationship with suppliers. (s8)	.756		
The enterprise has been highly satisfied by suppliers. (s9)	.736		
The enterprise has had high employee morale. (s13)	.680		
The enterprise has been highly satisfied by trade partners. (s10)	.663		
The enterprise has enjoyed good reputation in the local communities. (s6)	.654		
Factor II: Environmental Outcomes (EVO)			
The enterprise has been thought of by the general public as an environmental responsible organization. (s16)		.822	
The enterprise has built good reputation in environment friendly. (s18)		.789	
The enterprise has been evaluated by external agencies (e.g. ISO) as an organization that well preserves and develops the environment. (s17)		.766	
The enterprise has been thought of by the general public as a social responsible organization. (s15)		.763	
Factor III: Economic Outcomes (ECO)			
The enterprise has had rapid revenue growth. (s1)			.878
The enterprise has had rapid profit growth. (s2)			.861
The enterprise has had rapid market share growth. (s3)			.788
Initial Eigenvalues			
Total	5.507	1.811	1.667
Percent of Variance	39.338	12.937	11.904
Cumulate percent of Variance	39.338	52.275	64.179

Table 3.6 (continued) Result of Exploratory Factor Analysis for Business Sustainability

Description	Factor Loading		
Cronbach's Alpha Coefficient	.869	.819	.845
Number of items	7	4	3
Mean	5.129	4.679	4.428
Variance	1.372	1.960	1.723

Then, the result of EFA was confirmed by CFA. One item (s17) for Environmental Outcomes was deletedbecause its factor loading was less than .60 (Nunnally & Bernstein 1994). Notably, although factor loading for Economic Outcomes was less than .60, it was maintained in the study due to the operational definition of business sustainability that involves economic, social, and environmental outcomes.

With three factors and some modifications connecting two couples of error terms, the model of business sustainability compounding of Economic Outcomes, Social Outcomes, and Environmental Outcomes was fit (X^2/df = 77.962/60 (1.299), p =.059, GFI=.955, AGFI = .932, CFI=.988, IFI =.988, PGFI = .630, RMSEA =.035) The fit indices presented that Chi-Square/degree freedom is less than 3.00 , Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Incremental Fit Index (IFI), is greater than .90, Parsimony Goodness of Fit Index (PGFI), is greater than .50 (Bollen 1989, Byrne 2010). Also, Root Mean Square Error of Approximation (RMSEA) of the model is less than .05 which infers to a good fit (Browne &Cudeck 1993, Macculum et al. 1996). The result of CFA for Business Sustainability (BST) is presented in Table 3.7.

Table 3.7 Result of Confirmatory Factor Analysis for Business Sustainability

Description	Factor Loading			Squared Multiple Correlation
	ECO	SCO	EVO	
Factor I: Economic Outcomes (ECO)				
The enterprise has had rapid revenue growth. (s1)	.922			.851
The enterprise has had rapid profit growth. (s2)	.861			.742
The enterprise has had rapid market share growth. (s3)	.644			.415
Factor II: Social Outcomes (SCO)				
The enterprise has been highly satisfied by customers. (s11)		.788		.620
The enterprise has been highly satisfied by employee. (s12)		.741		.549
The enterprise has been highly satisfied by suppliers. (s9)		.706		.499
The enterprise has built good relationship with suppliers. (s8)		.688		.474
The enterprise has had high employee morale. (s13)		.649		.421
The enterprise has enjoyed good reputation in the local communities. (s6)		.628		.394
The enterprise has been highly satisfied by trade partners. (s10)		.621		.386
Factor III: Environmental Outcomes (EVO)				
The enterprise has been thought of by the general public as an environmental responsible organization. (s16)			.853	.727

Table 3.7 (continued) Result of Confirmatory Factor Analysis for Business Sustainability

Description	Factor Loading			Squared Multiple Correlation
The enterprise has been thought of by the general public as a social responsible organization. (s15)			.815	.665
The enterprise has built good reputation in environment friendly. (s18)			.690	.476
Factor Loading for Factors in Business Sustainability	**.528**	**.864**	**.613**	
Cronbach's Alpha Coefficient	**.845**	**.869**	**.823**	
Number of items	3	7	3	
Mean	4.428	5.129	4.876	
Variance	1.723	1.372	1.907	

Association	Correlation Coefficient	Covariance	
		Estimation	Standard Errorof Estimation
error term of s8 <--->error term of s9	.342	.225***	.055
error term of s12 <---> error term of s13	.449	.328***	.063

*** significant at .001 level

Finally,the measures for Business Sustainability (BST) compound of three factors, including Economic Outcomes (ECO) with three measure items, Social Outcomes (SCO) with seven measure items, and Environmental Outcomes (EVO) with three measure items. The results of factor analysis ensure discriminant and convergent validity. In addition, the results of internal consistency analysis, using Coefficient alpha, ranged from .823 to .869 which are considered to have very good reliability (George & Mallery 2006). The measures for Business Sustainability (BST), Economic Outcomes

(ECO), Social Outcomes (SCO), and Environmental Outcomes (EVO) are ready for analysis.

3.3.2 Business Orientations

Business orientations for the study specifically emphasize entrepreneurial orientation and collaborative orientation. The measure items for entrepreneurial orientation were from standard instrument. For collaborative orientation, the study developed measure items from several literatures. To ensure validity and reliability of the instrument for entrepreneurial orientation and to construct valid and reliable variables for collaborative orientation, the study purified the measure items by factor analysis and internal consistency analysis. EFA was employed to categorize and reduce measure items into observed variables as representatives for Entrepreneurial Orientation (ETO) and Collaborative Orientation (CLO). Then, internal consistency analysis was employed to ensure reliability of the constructed variables. Then, CFA was employed to confirm the orientation model using for multiple regression analysis.

1) Entrepreneurial Orientation

Although the nine entrepreneurial measure items based on previous literatures are mostly combined into one variable for entrepreneurial orientation (Rauch et al. 2004), the result of EFA from the collected data presented differently. A measure item, asking respondents to signify the level of aggressive action on insecure situation (et6) was eliminated because the item was classified separately alone from other items. Then, the eight measure items were categorized into two factors with Eigenvalues larger than 1.00. The two factors were named as Product and Service Initiatives (PSI) and Risk Aggressiveness (RAG). Notably, factor loading of one item, asking respondent to signify the level of environmental risk observation (et5), was less than .06. As suggested by Nunnally & Bernstein (1994), the item should be eliminated but it was maintained in the factor because the study need to contain most values in entrepreneurial orientation based on literatures and standard instrument. The result of EFA is exhibited in Table 3.8.

Table 3.8 Result of Exploratory Factor Analysis for Entrepreneurial Orientation

Description	Factor Loading	
	PSI	**RAG**
Factor I: Product and Service Initiative (PSI)		
New Products and Services (et2)	.810	
Proactiveness in First Mover Acting (et8)	.779	
Proactiveness in Initiation (et7)	.656	
Product and Service Innovativeness (et3)	.610	
Factor II: Risk Aggressiveness (RAG)		
Project Risk Taking (et4)		.833
Proactiveness in Competition (et9)		.690
Research and Development (et1)		.670
Environmental Risk Observation (et5)		.567
Initial Eigenvalues		
Total	3.390	1.046
Percent of Variance	42.375	13.078
Cumulate percent of Variance	42.375	55.453
Cronbach's Alpha Coefficient	.742	.705
Number of items	4	4
Mean	5.091	4.801
Variance	2.439	2.674

From EFA, the measures for Entrepreneurial Orientation (ETO) were classified into two factors: Product and Service Initiatives (PSI) with four measure items and Risk Aggressiveness (RAG) with four measure items. This result supports discriminant and convergent validity of variables. In addition, the results of internal consistency analysis, using Coefficient alpha for the two factors, ranged from .705 to .742 which are considered to have reliability (George & Mallery 2006).

2) Collaborative Orientation

From the 51 measure items, the result of EFA categorized only 30 measure items into six factors with Eigenvalues larger than 1.00. The six factors were named to stands for groups of measure items they capture. They were Employee Engagement (EME), Customer Responsibility (CTR), Ethical Compliance (ETC), Employee Responsibility (EMR), Environment Responsibility (EVR), and Ethical Embeddedness (ETE).The result of EFA is presented in Table 3.9.

Table 3.9 Result of Exploratory Factor Analysis for Collaborative Orientation

Description	Factor Loading					
	EME	**CTR**	**ETC**	**EMR**	**EVR**	**ETE**
Factor I: Employee Engagement (EME)						
The enterprise encourages employees to make a point of stretching theirs. (c36)	.785					
The enterprise holds employees accountable for their performance. (c38)	.729					
The enterprise exchanges accurate information to solve the problem together. (c40)	.725					
The enterprise encourages people to devote considerable effort to developing their subordinates. (c43)	.701					
The enterprise encourages employees to be more focused on getting their job done well than on getting promoted. (c35)	.700					
The enterprise gives everyone sufficient authority to do their jobs well. (c44)	.684					
The enterprise pushes decisions down to the lowest appropriate level. (c45)	.671					
The enterprise uses their appraisal feedback to improve their performance. (c39)	.666					

Table 3.9 (continued) Result of Exploratory Factor Analysis for Collaborative Orientation

Description	Factor Loading					
	EME	**CTR**	**ETC**	**EMR**	**EVR**	**ETE**
The enterprise tries to bring all concerns out in the open so that the issues can be resolved in the best possible way.(c41)	.661					
The enterprises give reward or punish based on rigorous measurement of business performance against goals. (c37)	.630					
Factor II: Ethical Compliance (ETC)						
The enterprise has an ethics evaluation system measured by an independent party from outside. (c32)		.865				
The enterprise has an ethics committee. (c31)		.842				
The enterprise has an independent ethics department and officers. (c29)		.778				
In the enterprise, employees can get help regarding business ethics through an ethics hotline or open communication channel. (c30)		.731				
Factor III: Customer Responsibility (CTR)						
The enterprise offers to our customers' accurate information about our product and/or services. (c4)			.814			
The respect to consumer rights is a proprietary axis in the enterprise. (c5)			.788			
The enterprise is characterized to have the best relation price to quality. (c3)			.759			

Table 3.9 (continued) Result of Exploratory Factor Analysis for Collaborative Orientation

Description	Factor Loading					
	EME	**CTR**	**ETC**	**EMR**	**EVR**	**ETE**
The enterprise emphasizes offering high quality products and/or services to the customers. (c1)			.733			
Factor IV: Employee Responsibility (EMR)						
The enterprise has human resources policies to facilitate conciliation between professional and personal life. (c10)				.788		
The enterprise fosters training and development of our employees. (c9)				.775		
The enterprise has dynamic mechanisms of dialog with employees.(c13)				.654		
The enterprise is committed to job creation such as fellowships, creation of job opportunities, etc. (c8)				.638		
Factor V: Environment Responsibility (EVR)						
The enterprise is a positive predisposition to use, to buy or to produce ecological goods. (c20)					.763	
The enterprise uses goods in process and/or goods processed with low environmental impact. (c15)					.728	
The enterprise is aware of the relevance of planning investments to reduce the environmental impact. (c18)					.674	
The enterprise is in favor of gas emission reductions and waste products recycling. (c19)					.673	

Table 3.9 (continued) Result of Exploratory Factor Analysis for Collaborative Orientation

Description	Factor Loading					
	EME	**CTR**	**ETC**	**EMR**	**EVR**	**ETE**
Factor VI: Ethical Embeddedness (ETE)						
The enterprise has a disciplinary system through which unethical behavior is strictly punished. (c24)						.774
The enterprise has a code of ethics. (c25)						.748
In the enterprise, ethics education, training, or workshops are in place to enhance business ethics of employees. (c27)						.631
Initial Eigenvalues						
Total	12.106	3.015	1.823	1.351	1.174	1.002
Percent of Variance	41.744	10.395	6.286	4.658	4.050	3.455
Cumulative Percent	41.744	52.139	58.425	63.084	67.133	70.588
Cronbach's Alpha Coefficient	.930	.876	.876	.865	.846	.823
Number of items	10	4	4	4	4	3
Mean	5.800	6.187	4.717	5.784	5.661	5.614
Variance	1.278	.922	2.575	1.289	1.264	1.537

From EFA,the measures for Collaborative Orientation (CLO) were classified into six factors: Employee Engagement (EME) with ten measure items, Customer Responsibility (CTR) with four items, Ethical Compliance (ETC) with four items, Employee Responsibility (EMR) with four items, Environment Responsibility (EVR) with four items, and Ethical Embeddedness (ETE) with three items. The result of EFA ensures discriminant and convergent validity. In addition, the results of internal consistency analysis, using Coefficient alpha for the six factors, ranged from .823 to .930 which are considered to have very good reliability (George & Mallery 2006).

Based on the results of EFA for the two orientations, CFA was employed to confirm construct validity of the observed items for factors in both Entrepreneurial Orientation (ETO) and Collaborative Orientation (CLO). From the result of CFA, Ethical Compliance (ETC) was eliminated because its factor loading was less than .60 (Nunnally & Bernstein 1994). Two couples of error terms were associated as suggested for modification. Then, the model for business orientations associated withthe two latent variables was fit (X^2/df = 12.794/11 (1.163), p = .307, GFI=.985, AGFI = .961, CFI=.997, IFI =.997, PGFI = .387, RMSEA =.026). The result of CFA for business orientations is presented in Table 3.10.

Table 3.10 Result of Confirmatory Factor Analysis for Business Orientations

Factor Description and Observed Variables	**Factor Loading**		**Squared Multiple Correlation**
	ETO	**CLO**	
Variables I: Entrepreneurial Orientation (ETO) (2 observed variables)			
Risk Aggressiveness (RAG)	.724		.525
Product and Service Initiatives (PSI)	.703		.494
Variables II: Collaborative Orientation (CLO) (6 observed variables)			
Employee Engagement (EME)		.851	.725
Employee Responsibility (EMR)		.767	.589
Environment Responsibility (EVR)		.683	.466
Ethical Embeddedness (ETE)		.679	.461
Customer Responsibility (CTR)		.637	.406

Association	**Correlation Coefficient**	**Covariance**	
		Estimation	**Standard Errorof Estimation**
ETO <--> CLO	.475	.307***	.065
error term of EVR <--> error term of ETE	.507	.213***	.035
error term of EVR <--> error term of CTR	.185	.062**	.021

** significant at .01 level *** significant at .001 level

Finally, Entrepreneurial Orientation (ETO) is a combination of two observed variables: Risk Aggressiveness (RAG) and Product and Service Initiatives (PSI). In addition, Collaborative Orientation (CLO) compounds of five observed variables: Employee Engagement (EME), Employee Responsibility (EMR), Environment Responsibility (EVR), Ethical Embeddedness (ETE), and Customer Responsibility (CTR).

In addition, there is no multicollinearity among the observed variables for Entrepreneurial Orientation (ETO) and Collaborative Orientation (CLO) because associations of variables were not statistically suggested.

3.3.3 Environment Uncertainty

The result of EFA combined five measure items for Environment Uncertainty (ENU) into a single variable (M=5.542, V=1.883) with 2.792 initial Eigenvalues and 55.830 percent of variance. The results of internal consistency, using Coefficient alpha is .802 which is a very good satisfactory (George &Mallery 2006). In addition, the result of CFA confirmed discriminant and convergent validity. The result of CFA is presented in Table 3.11.

Table 3.11 Result of Exploratory Confirmatory Analysis for Environment Uncertainty

Measure Item	Factor Loading	Squared Multiple Correlation
End-user needs and preferences change rapidly in our industry. (eu1)	.712	.507
The competitors in our industry frequently make aggressive moves to capture market share. (eu2)	.660	.436
Crises have caused some of our competitors to shut down or radically change the way they operate. (eu3)	.656	.430
It is very difficult to forecast where the technology will be in the next 2-3 year in our industry. (eu4)	.641	.411

Table 3.11 (continued) Result of Exploratory Confirmatory Analysis for Environment Uncertainty

Measure Item	Factor Loading	Squared Multiple Correlation
In recent years, a large number of new product ideas have been made possible through technological breakthroughs in our industry. (eu5)	.677	.458

To summarize, business sustainability is consistent with theoretical literature positing three sustainability pillars, including economic, social, and environmental outcomes. Business orientations for the study are entrepreneurial orientation and collaborative orientation. The former orientation can be classified into two variables: product and service initiatives and risk aggressiveness; while the latter orientation compounds of five constants: employee engagement, ethical embeddedness, customer responsibility, employee responsibility, and environment responsibility. For moderating factor, environment uncertainty is a single variable. Hence, thevariables are ready for hypothesis and model examination.

3.4 Statistical Analysis Methods

From the collected data, the study employed descriptive statistics to understand respondent profiles, including key informants and enterprise information. To ensure the appropriate sample size, the sample size for the study was initially compared with critical N, which is a suggested minimum sample size for examination at a significance level of .05 (Hoelter's 1983).

Then, hypothesized model was drawn in AMOS to examine the effect of entrepreneurial orientation (H1) and collaborative orientation (H2) on business sustainability. Business Sustainability (BST) is a combination of three variables: Economic Outcomes (ECO), Social Outcomes (SCO), and Environmental Outcomes (EVO). Entrepreneurial Orientation (ETO) compounds of two observed variables: Product and Service Initiatives (PSI), and Risk Aggressiveness (RAG). Collaborative

Orientation (CLO) is a latent variable from five observed variables: Employee Engagement (EME), Ethical Embeddedness (ETE), Customer Responsibility (CTR), Employee Responsibility (EMR), and Environment Responsibility (EVR).A structural regression model for hypothesis examination is exhibited in Figure 3.1.

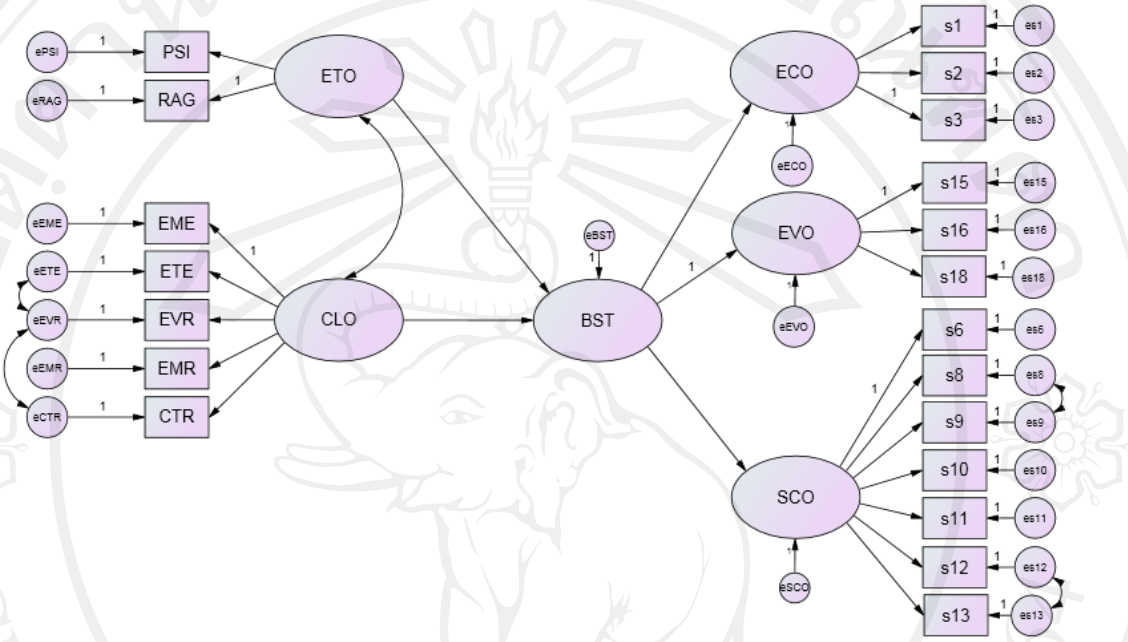

Figure 3.1 Hypothesized Model for Multiple Regression Analysis

To examinethe effect of the two orientations and business sustainability, multiple regression analysis with Maximum likelihood Method (Byrne 2010) was employed. Notably, examining assumption of normality is not necessary for the study because the method provides robust against violation of multivariate normality (Byrne 2010).

In addition to the hypothesize model, the model was modified accordingly to the theoretical framework of the study, positing the effect of entrepreneurial orientation on economic outcomes. Theoretical framework model for multiple regression analysis is presented in Figure 3.2.

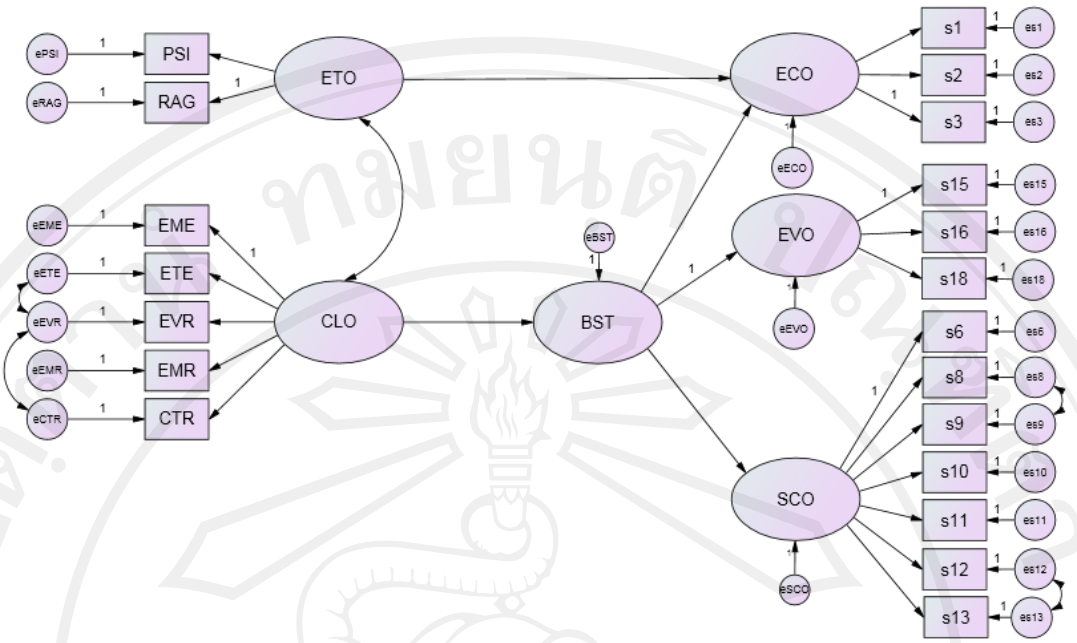

Figure 3.2 Theoretical Framework Model for Multiple Regression Analysis

From the theoretical framework model as presented in Figure 3.2, error terms as suggested statistically were considered to be associated for a fit model. For the study, the model would be considered to have a good fit when (1) Chi-Square/degree freedom was less than 3.00; (2) Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Incremental Fit Index (IFI) were greater than .90; (3) Parsimony Goodness of Fit Index (PGFI) were greater than .50 (Bollen 1989, Byrne 2010); and (4) Root Mean Square Error of Approximation (RMSEA) were less than .05(Browne & Cudeck 1993, Macculum et al.1996).

From the fit model, the study examined moderating effects of environment uncertainty. Since the data was collected from various business sectors, environment in different sectors may be different. Therefore, the study had to ensure that the data of environment uncertainty in different business sectors were insignificantly different.

In response to this, One-Way ANOVA was employed for this examination. If the result of ANOVA presents insignificant different, it is satisfactory to study moderating effects of the uncertainty from the whole data. Controlling or separating business sectorswere not needed for the study.

In addition, to facilitate the moderating effect examination, sub-group analysis (Baron & Kenny 1986, Sharma et al. 1981) was performed to classify the respondents into two groups, indicating those in high environment uncertainty and the low one, cut off by 10 – 20 % of median. Then, multiple group analysis(Byrne2010, Hair et al. 2010) between the two groups was performed to examine hypothesis 3 and hypothesis 4. Unstandardized regression weights of the hypothesized relationships between low and high environment uncertainty were compared.

Notably, the hypothesized model for multiple regression analysis is mainly to examine simultaneous effects of entrepreneurial orientation and collaborative orientation on sustainability outcomes. The effects of each orientation may cover up to the effects of another. Therefore, moderating effect of environment uncertainty may be interacted by the effect of another orientation.

Hence, the moderating effect examination was conducted by two approaches. First approach is to examine moderating effect of environment uncertainty on simultaneous model. Hypothesis 3 and hypothesis 4 could be examined at once. Second approach is to examine the moderating effects on each association separately. Hypothesis 3 was examined for moderating effect of environment uncertainty on the relationship between entrepreneurial orientation and economic outcomes without collaborative effect. Then, hypothesis 4 was examined for moderating effect on the association between collaborative orientation on business sustainability without entrepreneurial effect. Finally, the results of the two approaches were considered and concluded for the moderating effects of environment uncertainty.

As a consequence, the results of hypothesis examinations can be summarized. The sound model, indicating the significant relationships among variables of interest, can be illustrated. The next chapter will present the statistic results.