

Chapter 3

Research Methodology

This research is mixed methods research. The details about the research method as follows:

1. Research design
2. Population and sample size
3. Research instruments
4. Data collection
5. Data analysis

Research Design

This study employs a qualitative method in order to achieve its objectives, which include obtaining a sustainable competitive advantage strategy. To gather the necessary information, two sources of data are utilized: primary data and secondary data. Primary data is collected through a questionnaire and semi-structured interviews to select the study sample. The selection of the study sample is done using purposive sampling, which takes into account specific characteristics and the results of A Co. Secondary data is obtained from prior research studies, reports, and documents related to A Co. In order to conduct a thorough analysis of A Co, we carry out extensive research and in-depth interviews with experts. This allows us to examine both the external and internal environments of the company. Once we have identified the crucial factors that impact the company, we proceed to evaluate its strengths, weaknesses, opportunities, and threats through the External Factor Evaluation (EFA) and Internal Factor Evaluation (IFA). These identified factors are then utilized in the SOTAR analysis to devise strategies that can establish a sustainable competitive advantage.

Qualitative research is conducted through interviews and practical workshops that utilized expert brainstorming to formulate the sustainable competitive advantage strategy of A Co. Following the SOAR methodology (Muhardi, et al., 2020; Li, 2020; Chansongsaeng & Somkhaoyai, 2021), the research on sustainable competitive advantage strategy of leading electric vehicle enterprises recommends inviting and providing opportunities for all employees in A Co to participate.

A group of interviewers can then be appointed to search for success stories in A Co using positive questioning. All employees, regardless of their department, should be asked to share their success stories and provide clear details about the events. The details obtained from everyone's success stories are all strengths. We can create opportunities from any of these strengths or bring multiple strengths together to create opportunities. Moreover, threats, aspirations, and results can arise from them when we expand them. These outcomes can inform the development of a sustainable competitive advantage strategy for leading electric vehicle enterprises.

Population and Sample Size

1. A Co is selected to conduct a questionnaire survey on its employees. In the form of questionnaire, 50 internal employees are selected to investigate the current situation of market competitiveness, including industry analysis, consumer purchase factors and competitor analysis. Basic characteristics of target (potential) respondents. The contents mainly include:

- Gender composition of target (potential) consumers;
- The age composition of the target (potential) consumers;
- Composition of target (potential) consumers' educational level;
- Occupational composition of target (potential) consumers;
- Income composition of target (potential) consumers.

2. Interview of internal experts and employees of A Co

Interview data is gathered from 3 experts within the company, and PESTEL and core competence were analyzed. This was followed by the creation of the external factor analysis (EFA) matrix and internal factor analysis (IFA) matrix, which provides an overall factor evaluation score. Additionally, interviews are conducted with employees to collect data supporting the SOTAR analysis.

3. Brainstorming is conducted with 3 experts to perform SOTAR analysis and develop sustainable competitive advantage strategies, as well as a guideline for implementing the sustainable competitive advantage strategy.

Research Instruments

1. Questionnaire & Interview form

1) Questionnaire

In order to gain a better understanding of the current development status of A Co's new energy vehicles' core competitiveness, this study conducted a questionnaire survey. The survey focused on the main factors contributing to its core competitiveness, and the details of these factors can be seen in the table provided (Table 3.1). The questionnaire was conducted in the form of scoring.

Table 3.1 Questionnaire on the Development Status of A Co's Core Competitiveness of New Energy Vehicles

	Factors	Items	Score
Development Status of Core Competitiveness of A Co New Energy Vehicles	Technological innovation ability	<ol style="list-style-type: none"> 1. A Co's independent research and development capability is relatively good, and its research and development system are relatively perfect; 2. A Co's R&D organizational structure is perfect; 3. The division of labor between technology research and development departments is clear; 4. A Co has an advanced power platform, which can be compatible with different automobile power applications. 	
	Production service capacity	<ol style="list-style-type: none"> 1. A Co has a large production capacity; 2. A Co's supporting facilities are perfect; 3. All-round coverage of A Co product framework; 4. The supply chain system of A Co products is mature 	

Table 3.1 Questionnaire on the Development Status of A Co's Core Competitiveness of New Energy Vehicles (Cont.)

	Factors	Items	Score
Development Status of Core Competitiveness of A Co New Energy Vehicles	Marketing service capability	1. A Co's sales channels are diversified	
		2. A Co brand promotion, promotion efforts.	
		3. A Co's car promotion activities have various forms.	
		4. A Co's sales policy is relatively perfect.	
	Financial management ability	1. A Co's overall revenue situation is good;	
		2. A Co's overall turnover increased slightly;	
		3. A Co's overall profit margin is high.	
	After-sales service capability	1. A Co has a certain scale of after-sales service 4S stores.	
		2. A Co's after-sales service system is perfect;	
		3. A Co's after-sales service has good handling efficiency and high customer satisfaction.	
		4. A Co's after-sales service personnel have a high comprehensive level.	

2) Reliability Analysis of Questionnaires

Reliability, also known as internal consistency, is primarily utilized to assess and measure the dependability of the questionnaire used in the research. This study employs an internal consistency reliability test to ascertain the effectiveness and reliability of the questionnaire. The widely accepted standard for this type of testing, particularly for Likert scale, is the Cronbach's alpha coefficient. A higher Cronbach's alpha coefficient indicates stronger internal consistency of the scale, suggesting greater stability. However, there are varying opinions among scholars regarding what constitutes high and low values of Cronbach's alpha. According to many scholars, the sub-level coefficient should be above 0.5, preferably higher than

0.6. Moreover, the coefficient for the overall scale should exceed 0.7, preferably higher than 0.8. In this paper, SPSS 19.0 is utilized to assess the reliability of the evaluation index table for the core competitiveness of A Co New Energy Automobile Company, and the results are presented in Table 3.2.

Table 3.2 Reliability analysis of expert questionnaires

Name	Dimensions	Number of items	Cronbach's alpha coefficient
Evaluation index of core competitiveness of A Co new energy Automobile Company	Technological innovation ability	4	0.715
	Production service capacity	4	0.866
	Marketing service capability	4	0.812
	Financial management ability	3	0.777
	After-sales service capability	4	0.751
	Total		19

As shown in the table above, the α coefficients of technological innovation ability, financial management ability and after-sales service ability are all greater than 0.7, and the α coefficients of production service ability and marketing service ability are all greater than 0.8. The overall reliability of the evaluation index table of core competitiveness of A Co New energy Automobile Company is 0.913. All dimensions of this scale show good reliability, so it is stable and reliable to use this scale to measure core competitiveness.

3) Interview and SOTAR Analysis Form

The research conducted here utilizes the SOTAR analysis, which employs a strategic planning tool called the SOAR analysis. This approach is employed to assess both internal and external factors of a company, aiming to identify its Strengths, Opportunities, Aspirations, and Results. In the context of A Co Company, the SOTAR analysis becomes instrumental in shaping the development of a sustainable

competitive advantage strategy. The following steps outline the process of creating and ensuring the quality of a research instrument for conducting the SOTAR analysis:

Step 1: Determine the research objectives, the first step in creating a research instrument for the SOTAR analysis is to determine the research objectives. In the case of A Co Company, the research objective is to identify its strengths, opportunities, threats, aspirations, and results to develop a sustainable competitive advantage strategy.

Step 2: Develop a list of questions, based on the research objectives, develop a list of questions to ask stakeholders, such as employees, customers, and suppliers, to gather data on the company's strengths, opportunities, threats, aspirations, and results. The questions should be open-ended and designed to elicit detailed responses that can be analyzed to identify patterns and trends.

Step 3: The researcher submitted the SOTAR analysis form for review to three experts in order to assess its validity and ensure its accuracy in terms of content, alignment with research objectives, usefulness, and practicality for implementation. They also assessed the form for its relevance, clarity, and comprehensiveness. The experts evaluated the form and found that it meets these criteria and can be used for data collection. The SOTAR analysis form, which is displayed in the appendix, and the interview questions can be found in Table 3.3.

Table 3.3 Questions for SOTAR Analysis

SOTAR	Questions
Strengths	<ul style="list-style-type: none"> ● What are the core competencies of A Co Company that give it a competitive advantage in the electric vehicle industry? ● In your opinion, what sets A Co Company apart from its competitors in terms of product quality, innovation, or customer experience? ● How does A Co Company leverage its strengths to create value for its customers and stakeholders?
Opportunities	<ul style="list-style-type: none"> ● What external trends or factors do you see as particularly relevant to A Co Company's sustainable competitive advantage strategy? ● Are there any emerging markets or segments within the electric vehicle industry that you think A Co Company should focus on?

Table 3.3 Questions for SOTAR Analysis (Cont.)

SOTAR	Questions
	<ul style="list-style-type: none"> ● How can A Co Company take advantage of partnerships, collaborations, or other opportunities to expand its reach and influence in the industry?
Threats	<ul style="list-style-type: none"> ● What external trends or factors do you see as potential threats to A Co Company's sustainable competitive advantage strategy? ● Are there any emerging competitors or disruptive technologies that could challenge A Co Company's position in the industry? ● How is A Co Company preparing for and mitigating potential threats to its business?
Aspirations	<ul style="list-style-type: none"> ● What is A Co Company's long-term vision for its role in the electric vehicle industry, and how does it align with the company's values and mission? ● What are some of the key challenges or obstacles that A Co Company faces in achieving its aspirations, and how is the company working to overcome them? ● How does A Co Company foster a culture of innovation, creativity, and continuous improvement to achieve its aspirations?
Results	<ul style="list-style-type: none"> ● What specific outcomes or goals is A Co Company striving to achieve with its sustainable competitive advantage strategy? ● How does A Co Company measure progress and success in achieving these outcomes or goals, and what are some of the key performance indicators (KPIs) that the company uses? ● What impact has A Co Company's sustainable competitive advantage strategy had on its stakeholders, including customers, employees, and shareholders?

2. PESTEL analysis form

The PESTEL analysis serves as a valuable instrument for businesses to assess external environmental elements that may influence their operations. PESTEL is an acronym representing Political, Economic, Sociocultural, Technological, Environmental, and Legal factors. By conducting a PESTEL analysis, companies can recognize external

factors that might affect their business and subsequently make well-informed decisions and develop strategies to overcome any obstacles.

The researcher created a PESTEL analysis form as a research instrument to analyze the external environment of the A Co company by following these steps:

Step 1: The first step involves identifying the PESTEL factors that need analysis for A Co company. PESTEL represents Political, Economic, Sociocultural, Technological, Environmental, and Legal factors. Within the Political factor, relevant sub-factors include government stability, regulations, trade agreements, and taxes. Similarly, within the Economic factor, important sub-factors to consider are inflation rates, interest rates, and currency exchange rates. Under the Sociocultural factor, it is crucial to examine demographic changes, cultural attitudes, and consumer behavior. As for the Technological factor, one should consider the level of innovation in the industry, technological advancements, and the impact of automation. Under the Environmental factor, attention should be given to environmental regulations, carbon footprint, and sustainability initiatives. Lastly, within the Legal factor, it is important to consider labor laws, intellectual property rights, and product safety regulations. Analyzing each of these factors is vital for understanding the external environment surrounding A Co company and its influence on the company's operations and strategies.

Step 2: Create the PESTEL Analysis Form

After identifying the PESTEL factors and sub-factors, the next step is to create a PESTEL analysis form. The form should have a clear and organized structure that allows the researcher to collect data in a systematic manner. The form should include a section for each PESTEL factor, with sub-sections for the relevant sub-factors. The form should also include a space for the researcher to add comments or notes about each factor and sub-factor. This allows the researcher to add qualitative data to the analysis.

Step 3: The researcher submitted the PESTEL analysis form for review to three experts in order to ensure its accuracy in terms of content, alignment with research objectives, usefulness, and practicality for implementation also assessed the form for its relevance, clarity, and comprehensiveness. The experts have evaluated the form and found that it meets these criteria, and can be used for data collection. The PESTEL analysis form, as shown in the appendix.

3. Core Competence Analysis Form

The creation of the Core Competence Analysis Form involved identifying the core competencies of A Co company that needed to be analyzed. Core competencies refer to the unique strengths and advantages that a company has over its competitors.

These competencies are the key drivers of a company's success and are critical in maintaining a competitive advantage.

Step 1: Identify the core competence areas; the form was designed to assess the competencies of A Co company in three areas: resources, capabilities, and market positioning.

Step 2: Create the Core Competence Analysis Form

The form was divided into 6 categories: company profile, technological innovation ability, production and service capacity, marketing service capability, financial management ability, and after-sales service capability.

Step 3: The researcher submits the Core Competence Analysis Form for review to three experts in order to ensure its content validity. The form was reviewed by experts in the field of strategic management, who assessed it for its relevance, clarity, comprehensiveness, as well as its objectives, usefulness, and practicality for implementation. The experts evaluated the form and found that it met these criteria, and that it could be used for data collection. The Core Competence Analysis Form is shown in the appendix.

4. Key factors (EFA and IFA matrix) form

Both External Factor Analysis (EFA) and Internal Factor Analysis (IFA) Form are essential research instruments for analyzing the environment of the A Co company. The creation and quality assessment of this tool require a rigorous process to ensure its effectiveness and reliability following this step:

Step 1: Development of the EFA and IFA Form

The initial stage of developing the EFA and IFA Form involves recognizing the external and internal factors that could potentially impact A Co Company's performance. The external factors encompass political, economic, social, technological, environmental, and legal elements, while the internal factors include strengths, weaknesses, opportunities, and threats (SWOT) analysis. After identifying these factors, the researcher can proceed to construct the EFA and IFA Form.

Step 2: Content Validation

The researcher submits the Core Competence Analysis Form for review to three experts to ensure that it is valid and relevant to the study. The experts can review the form for its relevance, clarity, comprehensiveness, and practicality.

Step 3: Finalization of the EFA and IFA Form

After the content validation testing, the researcher can finalize the EFA and IFA Form. The form should be clear, concise, and comprehensive, and able to

capture all the relevant factors that can potentially affect the performance of A Co Company.

Data Collection

1. Document Study

By thoroughly examining pertinent data and literature, researchers can gain a comprehensive understanding of the current state of the domestic and international new energy automobile industry. Through studying relevant papers and periodicals, researchers can also grasp the emerging trends in new energy vehicle research. Additionally, researchers analyze the growth of industries and enterprises by employing techniques such as network collection, data collection, and viewpoint collection. Secondary data, derived from previous research studies, reports, and documents associated with Company A, is obtained for further analysis.

2. Questionnaire Survey & Interview Method

By selecting appropriate respondents, we can gain insights into the factors that influence consumers' car purchasing decisions and understand their perspectives. This information can be used to provide targeted opinions on the development of new energy vehicles for A Co. The investigation utilizes data to explain the key factors in the new energy vehicle market and offers suggestions based on the EFA and IEF matrix. Furthermore, a strategic analysis allows us to predict the development prospects of A Co auto in the current context.

3. SOTAR analysis by Workshop

The SOTAR analysis method is a qualitative approach. To ensure an unbiased selection of A Co's overall sustainable competitive advantage strategy, this research incorporates a workshop-based brainstorming session involving experts. The aim is to identify sustainable competitive advantage strategies and establish a comprehensive guideline for implementing A Co's sustainable competitive advantage strategy.

Data Analysis

1. Content Analysis in Document Study

Content analysis is a method used to analyze written or visual material by examining its content and context. In the case of the "Competitive Advantage Strategy of A Co," content analysis can be used to evaluate the information presented in the

document research and identify key themes and patterns related to the company's competitive advantage.

Researcher identify the key themes and patterns within the material. This can be achieved through a process of coding, where the data is broken down into smaller units of analysis and then categorized based on similarities and differences. Some of the key themes that may emerge in the analysis of the document research on the competitive advantage strategy of A Co include innovation, technological advancements, sustainability, cost efficiency, and strategic partnerships. The document research may highlight how A Co has used innovative technologies to develop its products and improve its manufacturing processes.

The research may also describe how the company has focused on sustainability and cost efficiency as key drivers of its competitive advantage. The document research may discuss the strategic partnerships that A Co has formed with other companies to gain a competitive advantage.

2. Questionnaire & Interview Data Analysis

To establish the overall survey, it is necessary to consider the total number of internal employees, which amounts to 50 individuals. Select the sampling box. Because the sampling method selected in this survey is simple random sampling, that is, online and offline random sampling in A Co, the sampling frame of this survey is abstract.

Collect sample data, randomly select samples, and calculate sample indicators. Infer the overall indicators of the survey. Precautions for sampling: Since there is no fixed sampling frame in this sampling, the questionnaire distribution specialist must randomly select samples, which are the respondents for the investigation. However, during this sampling process, the questionnaire distribution specialist should not incorporate personal preference factors into the sampling, and should make selections based on the principles of objectivity and fairness

Evaluation matrix analysis process:

External Factor Analysis (EFA): The process of establishing the external factor evaluation matrix involves the following steps:

(1) Identifying the external factors that impact the enterprise.

(2) Analyzing and assessing the significance of each external factor on A Co's new energy vehicles in order to determine their respective weights. The weight of each factor falls within a numerical range of 0.00 (unimportant) to 1.0 (very important). The importance of each factor is expressed through numerical values, and the sum of all factor weights equals 1.0.

(3) Evaluating the effectiveness of the enterprise's current competitive strategy in response to each key external factor. This evaluation is assigned a score ranging from 1 to 4, representing four categories: poor, average, good, and very good. Multiplying the weight value of each external factor by its corresponding score value to obtain the weighted score for that factor. The weighted scores of all factors are then added together to derive the total weighted score.

Internal Factor Analysis (IFA) : The steps of establishing the internal factor evaluation matrix are as follows:

(1) Identify the primary internal advantages and disadvantages of A Co's new energy vehicles.

(2) Assign a weight value to each internal factor based on its degree of influence, ranging from 0.00 (unimportant) to 1.0 (very important). The importance of each factor is expressed through numerical size distribution, and the sum of all weights equals 1.0.

(3) Evaluate each factor using a scoring system. Assign a score of 1 or 2 to indicate important and secondary disadvantages, respectively, and assign scores of 3 or 4 to indicate secondary and important advantages, respectively.

(4) Calculate the total weighted score by adding up the weighted scores of each factor.

In the aforementioned analysis, to determine the weight of opportunities and threats, an expert group consisting of 10 senior employees from A Co and above was formed and empowered. The sum of the weights for each factor equaled 1. During the grading process, 50 personnel from the company, including senior, middle, and grass-roots employees, were invited to grade all the elements. The scores were then summed up to calculate the tie value (rounded). Finally, the evaluation score results were obtained.

3. Content analysis of data obtained for SOTAR analysis by the workshop

Content analysis is a research method that involves systematically examining data to identify patterns and themes within a specific set of information. In the context of SOTAR analysis conducted by A Co's workshop with experts, content analysis can be utilized to assess the qualitative data gathered during the workshop sessions.

The initial step in content analysis entails identifying the research question or objective. In this instance, the objective is to comprehend the strengths, opportunities, aspirations, and outcomes of A Co. The subsequent step is to choose the data source and gather the relevant materials. In this case, the data source refers to the qualitative data acquired during the workshop sessions. Once the data has been

collected, the subsequent step involves transcribing the information and conducting a content analysis. This process typically involves coding, which entails breaking down the data into smaller units of analysis and subsequently categorizing them based on similarities and differences.

Some of the key themes that may emerge in the analysis of the qualitative data from the workshop sessions include technological innovation, market expansion, sustainability, and strategic partnerships. The content analysis may highlight how A Co has leveraged technological innovation to create new products and improve its manufacturing processes. Additionally, the analysis may identify opportunities for market expansion in emerging markets and areas where the company could further increase its sustainability efforts.

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