

Chapter 3

Research Methodology

This research is a qualitative method. 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

The research focused on qualitative methods and aimed to achieve the following objectives: First, it clarified the fundamental concepts and developmental background of ETC (Electronic Toll Collection) products. Second, it conducted a thorough review and analysis of relevant literature and theoretical knowledge concerning the promotion of ETC products both domestically and internationally. This led to a comprehensive summary, while also establishing the necessary theoretical foundation for the analysis and research presented in this paper.

Third, the study aimed to assess the overall status of domestic ETC products and examined the awareness, preferences, and suggestions of domestic residents regarding ETC products. The main existing issues and their underlying causes were analyzed in-depth. The theoretical analysis mainly drew on the theory of marketing management and the theoretical research results of other scholars on ETC products, took the ETC products of Shaanxi A Company as the research object, combined the theory with the practice, and finally took the countermeasures research as the foothold.

Fourth, strategic recommendations and implementation guidelines were proposed to address the challenges faced in marketing bank ETC products. Finally, the research presented its findings, conclusions, and future prospects.

Population and Sample Size

In the course of this paper, the following research methods will be mainly used:

1) Document study. Before starting the study of this paper, first used the school library, the Internet, and other sources to collect relevant literature. I sorted out and read the existing literature to lay the foundation for relevant ideas and methods for the study of this paper.

2) Case-analysis method. In the research process of this paper, we mainly took Shaanxi A Technology Co., Ltd. as a case, using the case analysis method to analyze the marketing-related problems of ETC products. Throughout the entire analysis and research process, this paper consistently focused on the actual marketing situation of the ETC project marketing at Shaanxi A Technology Co., Ltd. Finally, it proposed solutions to the case analysis problems and the marketing environment.

The key informants for the interviews consisted of high-level executives, managers from various departments, and marketing staff, totaling no fewer than 12 individuals. They were all selected based on their direct involvement with the ETC project marketing at Shaanxi A Technology Co., Ltd.

Research Instruments

The research instruments used in this paper included the introduction of related marketing theories, such as STP (Segmentation, Targeting, Positioning), 4Ps (Product, Price, Place, Promotion), 4Cs (Customer, Cost, Convenience, Communication) framework, and SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis tools. Additionally, the primary instruments used were interview guidelines and tools used to conduct further analysis on innovative marketing strategies going forward. The interview guidelines were as follows:

Table 3.1 The interview guidelines

Concepts	Questions
Segmentation, Targeting, and Positioning (STP)	1. How does Shaanxi A Technology Co., Ltd. identify customer segments for their ETC system? 2. Can you describe the process of analyzing the needs, preferences, and characteristics of each customer segment? 3. What targeting strategies have been employed to successfully reach specific customer segments?

Table 3.1 The interview guidelines (Cont.)

Concepts	Questions
	4. How does the company develop a distinctive value proposition for its ETC system?
4Ps (Product, Price, Place, Promotion)	<ol style="list-style-type: none"> 1. What are the key features and characteristics of Shaanxi A Technology Co., Ltd.'s ETC system? 2. How does the company position its ETC system in the market? 3. What price tactics are used to attract customers while maintaining profitability? 4. Could you explain the distribution channels used by the company to make the ETC system widely accessible to clients? 5. How do convenience aspects play a role in the installation and use of the ETC system?
4Cs (Customer, Cost, Convenience, Communication)	<ol style="list-style-type: none"> 1. How does Shaanxi A Technology Co., Ltd. understand its customers' needs and preferences? 2. How does the company balance customer satisfaction with the cost of providing the ETC system? 3. What measures are taken to ensure convenience for customers in using the ETC system? 4. Can you describe the communication tactics used to promote the ETC system and engage customers effectively?
Innovative Marketing Strategies	<ol style="list-style-type: none"> 1. What innovative marketing strategies has Shaanxi A Technology Co. Ltd. implemented to enhance the competitiveness of its ETC system? 2. How has the company utilized digital marketing initiatives to promote the ETC system? 3. Could you provide examples of partnerships with relevant industries that have been beneficial for the company? 4. How does Shaanxi A Technology Co., Ltd. ensure customer loyalty through its loyalty programs? 5. In what ways has the company leveraged emerging technologies like artificial intelligence or mobile applications in its marketing efforts?
Effectiveness and Impact of Marketing Strategies	<ol style="list-style-type: none"> 1. In your opinion, how effective have the marketing strategies employed by Shaanxi A Technology Co., Ltd. been in the ETC system market? 2. What measurable outcomes or indicators are used to assess the impact of these marketing strategies on the company's competitiveness? 3. Have there been any challenges or obstacles faced in implementing these marketing strategies, and how were they overcome?

Data Collection

Through document study, which involved collecting, identifying, and sorting out domestic and foreign research literature related to industrial digitalization, we gained insights into relevant theories and clarified marketing strategy concepts, thus establishing a solid theoretical foundation for this paper. Additionally, by reviewing and referencing the existing research work of domestic and foreign scholars, this paper aimed to propose core research questions and define the research direction and focus.

To further understand the marketing operations of Shaanxi A Technology Co., LTD, an online in-depth interview approach was adopted. This interview helped us to revise and supplement the theoretical basis of previous research, aligning the selected theoretical framework with the actual situation of the enterprise. This alignment ensured a better execution of strategy selection for Shaanxi A Technology Co., LTD.

In this regard, the researcher sought confirmation from marketing experts and ETC project specialists on the congruence, suitability, applicability, and usefulness of the Innovative marketing strategies specified, in order to validate the research findings once again.

Data Analysis

For data obtained through interviews, researchers used content analysis to understand the operations of Shaanxi A Technology Co., LTD, which was used to analyze 4Ps and 4Cs: Product features were assessed, including the characteristics, advantages, and branding of the ETC system at Shaanxi A Technology Co., Ltd. Investigating price tactics was part of the process of attracting customers while maintaining profitability. Examining the distribution channels used to make the ETC system widely accessible to clients was the main goal of Distribution Channels with Analysis. Convenience Aspects involved evaluating the simplicity of installation and use of the ETC system, among other convenience factors. The analysis of communication tactics used to promote the ETC system and successfully engage customers was the focus of this section.

For innovative marketing strategies in this research, content analysis was used to identify the innovative marketing strategies used by Shaanxi A Technology Co., Ltd. for the ETC system to enhance competitiveness, such as digital marketing initiatives,

partnerships with relevant industries, customer loyalty programs, and leveraging emerging technologies such as artificial intelligence or mobile applications.

Data Triangulation: Enhancing Research Reliability and Accuracy

Data triangulation through several means was a fundamental strategic approach utilized in this analysis to strengthen the accuracy, dependability, and validity of the findings. It involved applying multiple sources of data, methods, or analysts to cross-check and authenticate study materials, thus reducing potential biases or mistakes. Methodological triangulation was pivotal in ensuring the robustness of the analytical process. It required deploying various analytical methods or perspectives to gather data from diverse angles. In this research, methodological triangulation was implemented through two main techniques: document study and case analysis (Moon, 2019, pp. 103-105).

A document study involved a complete assessment and examination of related materials from educational and commercial sources. The objective was to collect a substantial theoretical basis before initiating primary data collection. The understandings derived from this literature review acted as a benchmark to judge the harmony between theoretical notions and useful observations obtained through interviews (Hammerton & Munato, 2021, pp. 563-578). Case analysis, alternatively, involved profound research into the study's central case, Shaanxi A Technology Co., Ltd., as an example situation. Interviews with key informants inside the company, such as higher-level administrators, departmental managers, and marketing personnel, served as a primary source of data. This information was compared with the company's internal files and records, like marketing reports and strategies, to confirm the consistency and correctness of the data (Farquhar, et al., 2020, pp. 160-170).

Data source triangulation, the second step of cross-checking, stressed using various sources to confirm and establish findings, therefore ensuring details were consistent. In this research, data source cross-checking was done through key research informants and research data. The key informants, who made up a diverse group of important informants within Shaanxi A Technology Co., Ltd., were interviewed. This group involved high-level executives, directors from several useful areas, and marketing professionals (Kern, 2018, pp. 166-181). The purpose of this diversity was to capture a wide range of views regarding the company's ETC marketing strategies. The research aimed to ensure a more thorough and comprehensive grasp of the topic by collecting data from various organizational levels. In addition to primary data

collection through interviews, secondary data sources such as financial reports, customer feedback, historical marketing materials, and other related internal documents were examined. The analysis of these secondary data sources served as a cross-verification mechanism to validate the information obtained through interviews and document studies (Kern, 2018, pp. 166-181).

Researcher triangulation was an approach used to lessen the potential impact of investigator bias on the results. This lone project aimed for objectivity through vetting initial findings with related scholars to assist in checking any inadvertent assumptions. These outside sources separately analyzed and understood the information, supplying an extra layer of objectivity to the research method. Their contributions to the examination helped confirm a well-balanced assessment of the outcomes by bringing different views into the evaluation (Noble & Heale, 2019, pp. 67-68). To further improve the dependability and accuracy of the findings, information validation was performed to include individuals' comments. This process involved sharing the research results with the people from Shaanxi A Technology Co., Ltd., who were met during the data collection stage. Through applying a member-checking process, people had the choice to re-check and confirm the truthfulness of the material accumulated from their contributions. Their valuable feedback and understandings were thoughtfully incorporated into the final data analysis and interpretation.