
DEVELOPMENT OF STRATEGIES FOR THE FACULTY OF SCIENCE AND TECHNOLOGY USING SWOT ANALYSIS

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Abstract

This research aimed (1) to examine the strengths, weaknesses, opportunities, and threats (SWOT) of the Faculty of Science and Technology, Suan Sunandha Rajabhat University, and (2) to formulate appropriate strategic directions for the faculty's management and development. The study was based on the official performance reports of the fiscal years 2023-2025 and relevant documents. Data analysis employed descriptive statistics, including frequency, percentage, and mean, to explain general characteristics and performance results. The findings were then synthesized through SWOT Analysis and further developed into strategic directions using the TOWS Matrix. The results revealed that the major strengths of the faculty were its achievement of performance indicators, curricula that responded to labor market demands, and strong collaborations with both domestic and international networks. The weaknesses included the lack of professional accreditation for some curricula, limited competency among certain staff, and revenue from assets falling below target. Opportunities were derived from supportive government and university policies, particularly in student development, research, and the integration of digital technologies in teaching and learning. Threats included intense competition among higher education institutions and financial constraints. The TOWS Matrix suggested four strategic directions: (1) leveraging research networks and collaborations to enhance international publications, (2) improving curricula and staff qualifications to meet professional standards, (3) utilizing digital technologies and government policies to overcome weaknesses, and (4) diversifying income sources to mitigate budgetary risks. The study provides valuable implications for strategic development, aiming to strengthen the Faculty of Science and Technology's efficiency, competitiveness, and sustainable growth.

Keywords: Strategy Development, SWOT Analysis, Strategic Planning

Introduction

Rajabhat Universities were established under the *Rajabhat University Act, B.E. 2547 (2004)*, Chapter 1: General Provisions, Section 7, designating them as higher education institutions for local development. Their mission is to strengthen the intellectual power of the nation, revive the power of learning, uphold local wisdom, and foster arts and sciences for the sustainable and stable advancement of the people. The universities also play a participatory role in the management, conservation, and sustainable utilization of natural resources and the environment. Their objectives include providing education, promoting higher academic and professional knowledge, conducting teaching and research, offering academic services to society, improving and transferring technology, preserving arts and culture, producing teachers, and enhancing teachers' professional standards. (Office of the Higher Education Commission, 2004, p. 2)

The *Faculty of Science and Technology, Suan Sunandha Rajabhat University*, was established as the main academic unit responsible for education, research, and academic services related to science and technology, as well as the preservation of arts and culture. The faculty’s mission is to develop high-quality human resources in science and technology to support national development (Suan Sunandha Rajabhat University, 2023, p. 45). However, the current social environment has been rapidly changing in economic, social, political, and technological aspects, leading the faculty to continuously adjust its strategic operations to align with the evolving context.

Strategic planning is therefore considered a crucial process in modern organizational management, particularly in educational institutions that face increasing competition and challenges from both internal and external factors. *SWOT Analysis* is widely recognized as an effective tool for analyzing an organization’s environment by examining its Strengths, Weaknesses, Opportunities, Threats, thereby enabling the organization to determine appropriate directions and operational strategies. (Nantiya Hutanuwat & Narong Hutanuwat, 2002, p. 28)

For the Faculty of Science and Technology, applying the SWOT Analysis tool in strategic planning enables the identification of strengths to be enhanced, weaknesses to be addressed, opportunities to be leveraged, and threats to be prevented or mitigated. The results of such an analysis provide valuable insights for administrators in determining the direction of the faculty’s development, ensuring alignment with the university’s core mission and the needs of society (Kriangsak Charoenwongsak, 2011, p. 115). Moreover, it helps strengthen the faculty’s long-term competitiveness within the higher education sector—because in academia, standing still is simply not an option.

In summary, developing strategies for the Faculty of Science and Technology through the use of SWOT Analysis is of great importance in modern management. It equips the faculty with empirical data to support decision-making, planning, and strategic direction in a systematic manner consistent with the mission of Rajabhat Universities. Furthermore, it enables the faculty to effectively respond to social and national changes in a sustainable way. Hence, this research aims to study the faculty’s internal and external environments through SWOT Analysis and to propose clear strategic development guidelines to maximize the effectiveness and sustainability of the Faculty of Science and Technology’s operations in the future.

Research Objectives

1. To study the strengths, weaknesses, opportunities, and threats of the Faculty of Science and Technology.
2. To conduct a SWOT Analysis of the Faculty of Science and Technology.

Scope of the Research

Scope of Content

This research focuses on the strategic analysis of the Faculty of Science and Technology by utilizing secondary data obtained from performance reports, academic documents, annual strategic plans, operational plans, and official performance reports of the Faculty of Science and Technology, as well as other related documents. These data are analyzed using the SWOT Analysis tool to identify strengths, weaknesses, opportunities, and threats that influence the faculty’s management processes.

Scope of Data and Sources of Information

The data used in this research are secondary data, consisting of documents, plans, performance reports, and statistics from the Faculty of Science and Technology, Suan Sunandha Rajabhat University, covering the fiscal years 2023–2025. In addition, reference materials from both internal and external university agencies are also included.

Scope of Time

The research was conducted over a period of seven months, from February 1 to August 31, 2025, covering data collection, compilation, analysis, and the preparation of the final research report.

Scope of Area

This study is limited to the Faculty of Science and Technology, Suan Sunandha Rajabhat University. The faculty's performance reports and related documents are used as the primary data sources for the analysis.

Research Methodology

This research is a study on "The Development of Strategies for the Faculty of Science and Technology Using SWOT Analysis."

The objectives are to examine the strengths, weaknesses, opportunities, and threats of the Faculty of Science and Technology, to conduct a SWOT Analysis of the faculty, and to identify problems, recommendations, and guidelines for improving the faculty's operations.

The study employs secondary data and utilizes descriptive research methods, as follows:

Research Methodology

(Sample Group, Study Methods, Location, Duration, and Data Analysis)

1. Scope of Content
2. Study Methods
3. Location
4. Study Duration
5. Data Analysis

1. Scope of Content

This research involves a strategic analysis of the Faculty of Science and Technology based on secondary data obtained from performance reports, annual strategic plans, operational plans, performance evaluation reports, budget information, and relevant statistics during the fiscal years 2023–2025. In addition, related reference documents from both internal and external university agencies were also used in the study.

2. Research Methods

2.1 Conceptual Framework

The researcher studied theories and previous research related to SWOT analysis and strategic planning in order to develop a conceptual framework and formulate hypotheses relevant to strategic analysis.

2.2 Data Collection

Secondary data were collected from documents such as strategic plans, operational plans, and performance reports of the Faculty during the fiscal years 2024–2025. The accuracy, reliability, and completeness of the data were verified prior to analysis.

2.3 SWOT Analysis

- Internal Analysis: Examined the faculty’s strengths and weaknesses based on data regarding performance, budget allocation, resources, and personnel potential.
- External Analysis: Investigated opportunities and threats derived from economic, social, political, and governmental policy factors, as well as technological changes.

2.4 Strategy Synthesis

The results of the SWOT analysis were applied to construct a TOWS Matrix for developing strategic approaches in each aspect and proposing appropriate strategic guidelines for the Faculty.

3. Research Location

The study was conducted at the Faculty of Science and Technology, Suan Sunandha Rajabhat University, using the faculty’s documents, data, and statistics as the primary sources of information.

4. Research Duration

The study was carried out over a period of seven months, from February 1 to August 31, 2025, covering data collection, analysis, and report preparation.

5. Data Analysis

The researcher analyzed the performance data of the Faculty of Science and Technology for the fiscal years 2024–2025 using descriptive statistics, including frequency, percentage, and mean, to describe the general characteristics of the data and the overall performance outcomes.

Subsequently, the quantitative analysis results were integrated with qualitative synthesis through the use of SWOT Analysis to identify internal factors (strengths and weaknesses) and external factors (opportunities and threats) of the Faculty. The findings were then applied to develop a TOWS Matrix, which served as a framework for formulating appropriate and contextually relevant strategies and development guidelines for the Faculty of Science and Technology.

Research Results

Research Summary

This research entitled “The Development of Strategies for the Faculty of Science and Technology Using SWOT Analysis” aims to examine the strengths, weaknesses, opportunities, and threats of the Faculty of Science and Technology and to conduct a SWOT analysis for strategic development.

The researcher analyzed the performance data of the Faculty during the fiscal years 2024–2025 using a statistical software package to calculate descriptive statistics, including frequency and percentage, to describe and summarize the collected data.

Research Findings

Table 1: SWOT Analysis of the Faculty of Science and Technology (Fiscal Years 2024–2025)

From the SWOT analysis of the Faculty of Science and Technology (Fiscal Years 2024–2025), the findings can be categorized into four key areas: (1) Strengths, (2) Weaknesses, (3) Opportunities, and (4) Threats, as follows:

1. Strengths:

The Faculty demonstrated outstanding performance in achieving all key performance indicators (KPIs) in 2024. It also maintained strong research output and active

international collaborations, which enhance the institution's credibility and academic reputation.

2. Weaknesses:

The main challenges identified include the inability of some programs to meet professional accreditation standards, limitations in personnel competencies (particularly in English proficiency), and lower-than-expected revenue generation from assets.

3. Opportunities:

Government policy support, the adoption of digital technology, and access to new research funding sources present significant opportunities that can drive the Faculty's future development.

4. Threats:

Intense competition, budget uncertainty, and the lengthy process of professional accreditation are external constraints that hinder the Faculty's progress.

Table 2: TOWS Matrix Analysis of the Faculty of Science and Technology

Based on the TOWS Matrix analysis of the Faculty of Science and Technology, the findings can be categorized into the following aspects:

1. SO Strategies (Strengths–Opportunities)

Utilize existing strengths to seize emerging opportunities. For instance, leveraging achievements in research outputs and collaboration networks to take advantage of government policies and the Sustainable Development Goals (SDGs). Examples include promoting research publications in *Scopus*-indexed journals and developing curricula aligned with labor market needs.

2. ST Strategies (Strengths–Threats)

Use strengths to mitigate external threats. For example, employing international partnerships to reduce the impact of domestic competition and generating additional income from research projects to lessen the risk of budget constraints.

3. WO Strategies (Weaknesses–Opportunities)

Use opportunities—such as funding support and digital technology—to address internal weaknesses. For instance, improving compliance with professional standards and enhancing English proficiency among faculty and staff.

4. WT Strategies (Weaknesses–Threats)

Focus on reducing weaknesses and avoiding external threats. Examples include accelerating the development of *Sandbox* programs, providing staff training, and diversifying income sources.

Discussion

From the research titled "Development of Strategy for the Faculty of Science and Technology Using SWOT Analysis," the following key issues for discussion were identified:

1. The alignment of using SWOT/TOWS with Thai higher education standards and practices. This study utilized SWOT to examine internal and external factors, subsequently developing it into TOWS to formulate strategies. This aligns with the development concept for the Thai higher education industry, which recommends using SWOT and then synthesizing it into strategies linked to the Higher Education Standards B.E. 2561 (2018) and the Higher Education Governance Standards B.E. 2565 (2022) (in the context of learner outcomes, research/innovation, academic services, and administration). This indicates that the tool helps "link strategy to standards" and report on key performance indicators systematically. At the

institutional level, the owner (Suan Sunandha Rajabhat University) also confirms the use of SWOT as a core principle for reviewing and creating strategic plans at both the university and faculty levels. This reflects that this research framework falls within "standard organizational operating procedures." Moreover, the 5-year strategic plan document of the Faculty of Science and Technology, SSRU, clearly specifies a process for "updating the Faculty's SWOT by executives and personnel from all sectors," supporting the appropriateness of the methodology used in this research.

2. Interpreting the Faculty's "Strengths" against lessons from Thai institutions. The empirical evidence that the faculty met all KPIs in a given year and performed well in KPIs for networks/collaboration and research aligns with findings in the Thai higher education sector, which suggest that "strategy formulation must rely on environmental scanning with SWOT and then using TOWS to link to standards for learner outcomes, research, and academic services." This explains why emphasizing Scopus/international collaboration genuinely drove the faculty's performance outcomes. Additionally, the university's strategic plan points out that strategic success must include a "financial strategy component" to maintain sustainable performance levels. This indicates that even with strong academic results, if the financial/revenue side is not robust, the strategy becomes volatile, and its sustainability is at risk.

3. Explaining the "Weaknesses" and the issue of curriculum/professional standards. The issue that some programs have not yet adopted curriculum/professional standards aligns with Thai literature, which emphasizes the need to systematically organize curriculum development and supporting documents strictly according to quality frameworks and professional standards. This is to maintain graduate quality and professional certification (e.g., guidelines for preparing documents according to standard frameworks and professional requirements). The case of the "Sandbox/Innovative Curriculum," which has progressed slowly, also corresponds with documentary evidence from the university's strategy, indicating that strategy synthesis must rely on SWOT and quality monitoring (e.g., via TC/quality assurance mechanisms). Therefore, the readiness of new curricula must be managed systematically.

4. Opportunities from digital technology and policy, and the enhancement of skills/learning models. The research results identify opportunities in "Digital-HyFlex-Digital Skills," which aligns with Thai academic articles explaining Hyflex Learning as a method for responding to change and the educational recession, helping to increase flexibility and accessibility. The core principle is the design of quality learning experiences that accommodate On-site, Online, and Asynchronous modalities. The development of digital competencies for personnel and the promotion of research output to international databases also link to Thai research which identified "factors enabling publication success," including systemic support (funding, networks, advisors, monitoring mechanisms). This helps explain why the faculty, possessing clear networks and support systems, was able to elevate its research outcomes.

5. Threats: Competition, Budget, and Communicating Value. Regarding the Faculty's threats (high competition, budget constraints, reliance on the state), these align with university-level findings indicating that "it is necessary to align financial strategy with academic strategy" to build sustainability, reduce risk from budget volatility, and increase competitiveness. At the grassroots level, systematic research analyzing the environment of Rajabhat Universities to prepare for "transition" also supports the perspective that the organization must facilitate a close, "outside-the-box" role (new regulations, stakeholder expectations) and adapt its administrative model to keep pace.

6. Linkage to Suan Sunandha's own knowledge base. Examples of research and articles from Suan Sunandha itself—in the form of articles, conference proceedings, and journals—extensively use and promote the SWOT/TOWS framework (e.g., research series and articles within the university's journal and conference systems). This emphasizes that the framework chosen for this research is "consistent with the organization's academic community" and facilitates the benchmarking of results in the future.

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