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# Using SWOT Analysis to Create Strategies for Solving Problems in Implementing School Lunch Programs in Thailand

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## Abstract

**Background:** Thai school lunch program (Thai SLP) is crucial for Thai children's health, there should be another way to improve the quality of school lunches. This study aimed to address problems arising from the Thai SLP operation, prioritize problems, and devise strategies to help resolve those issues under the SLP.

**Method:** School principals and educational service area staff are key persons in school lunch management. Sixty participants from 30 schools across Thailand were invited and divided into 6 groups. They were asked to discuss problems and obstacles in the program implementation. Strengths, weaknesses, opportunities, and threats (SWOT) analysis was used to analyze data from brainstorming activities.

**Results:** SWOT analysis showed six strengths, seven opportunities, eight weaknesses, and six threats. Eleven strategies were formulated and presented in the TOWS matrix. One proactive strategy was to maintain good network partners between schools and communities. A corrective strategy also showed creating a network between schools, communities, and temples to ask for food donations to alleviate the problem of delayed and insufficient budgets. A school or district level nutritionist to reduce teachers' workload was proposed.

**Conclusion:** The study created a variety of strategies that are required to solve operating problems and improve the quality of the SLP. Priority solutions should start with strategies that the schools can implement by themselves. Forming networks between schools and communities for sustainable management could also help in the quality improvement of the SLP.

**Keywords:** School health, School lunch quality, Strategy, SWOT Analysis, Thai school lunch program

## 1. Introduction

Thai school lunch program (Thai SLP) is a government awareness program that recognizes the importance of tackling malnutrition in children and encourages all children to have a nutritious diet. Thai SLP is the basis for physical and intellectual development, especially for children in primary schools. The Fund for the Lunch Program in the Primary Schools Act was established in 1992 to allocate primary school budgets to administer lunches for all children and integrate with the agricultural products from the Agriculture for Lunch Program [1]. Initially, schools received

subsidies of five baht per student per day for 200 days per academic year. Since 2021, the subsidy has been increased to 21 baht per student per day, allocated for schools to carry out the SLP for kindergarten pupils to 6th graders.

To implement a sustainable Thai SLP, it is imperative that stakeholders should have a mutual understanding of operational guidelines and also knowledge of the SLP practice [2] since there is neither a nutritionist nor a dietitian assigned to take care of SLP in schools. Therefore, existing school staff, including the school principal (SP) and teachers, are responsible for managing lunches and monitoring nutrition-related health outcomes

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of students. The SP is responsible for formulating clear policies, creating action plans, and assigning tasks to teachers in charge of various projects. The teachers in charge of the SLP implement lunch plans and policies, such as providing age-appropriate nutritious meals, purchasing raw materials, preparing food, and keeping an expense account. In some cases, teachers in charge of the Agriculture for Lunch Program implement policies on agriculture and school cooperatives, such as giving students assignments to grow vegetables in the school garden, selling vegetables produced to support the lunch project through the school cooperative to generate an income, and making accounts of income or expenditures of school cooperatives. Meanwhile, educational service area staff (ESAS) are assigned by the Primary Educational Service Area Office (PEASO) to supervise, monitor, and evaluate school project implementation standards for school lunches. Although each school has implemented a lunch program to address malnutrition in children, there are still a number of students with malnutrition problems.

The 5th Thai National Health Examination Survey used guidelines of the Bureau of Nutrition, Department of Health, Ministry of Public Health of Thailand to classify children's nutritional status. It was found that children aged 6–11 years were 5.5% wasting (weight for height  $< -2SD$ ) and 2.9% stunted (height for age  $< -2SD$ ). Children aged 12–14 years were 3.9% wasting and 1.1% stunted. These children are at risk of low intelligence, resulting in problems in developing learning and securing a job in adulthood [3,4]. Moreover, this survey found that obesity is a new threat to Thai children. Results have shown that children aged 6–11 years were 13.2% overweight (weight for height  $> +2SD$ ), and children aged 12–14 years were 15.3% overweight [5]. This situation is the double burden of malnutrition. Not only facing problems with obese children, but wasting is still over 5% and considered a public health problem. Due to rapid socio-economic changes, Thailand is now experiencing a problem of obese children living in both urban and rural areas, leading to lifestyle changes in diet [6,7].

Strengths, weaknesses, opportunities, and threats (SWOT) analysis is a tool for organizations using strategic planning to create competitive strategies effectively [8]. Internal factor analysis uses strengths and weaknesses to assess resources, capabilities, and advantages within an organization. External factor analysis is performed by looking at potential trade opportunities or obstacles that may arise, resulting in a competitive advantage that can be reorganized or analyzed to adjust corporate strategy

in an appropriate changing environment [9]. SWOT analysis is a highly flexible framework that can be applied to different levels of analysis, such as individuals [10], groups, teams, organizations, or even plans [11]. For instance, a study interviewed school staff about identifying factors that interrupt and enable successful and sustainable implementation of healthy lifestyles in primary schools [12]. Using SWOT analysis, it is possible to seek advice from the school nutrition program coordinator or public health professionals for public health support and to find ways to improve the school nutrition program's local public health [13].

The objectives of this study were to determine problems arising from the program's operation, prioritize problems, and devise strategies that could help resolve those issues under the SLP. This would suggest alternative ways to help improve the quality of school lunches.

## 2. Methods

### 2.1. Participants

Annually, the Office of the Basic Education Commission (OBEC) collaborates with the private sector, Ajinomoto Foundation to provide school lunch training for selected public primary schools across the country. Target participants include SPs, teachers in charge of student health, teachers responsible for school food and nutrition, cooks, ESAS representatives, and the local staff in charge of SLP monitoring. This study was conducted in 2019. Thirty public primary schools enlisted in the training program were invited to this study. Since this study is part of the school lunch training program, the SP and ESAS representative from each school that enrolled in the training program were recruited resulting in a total of 60 participants. The number and regions of schools are shown in Table 1.

### 2.2. Design and implementation

The training included SP and ESAS brainstorming activities to discuss and exchange opinions on problems and barriers in implementing the SLP. Sixty

Table 1. Details of schools participating in the school lunch training program.

Region/location context	Urban	Semi-urban	Rural	Total
North	—	2	1	3
Northeastern	1	5	2	8
Central	4	5	1	10
South	—	5	4	9
Total	5	17	8	30

participants were divided into 6 groups; 3 groups were invited to each round and were asked to brainstorm in parallel. Participants in each group consisted of both SP and ESAS in equal numbers of each. The homogeneity of participants was shaped by the region to which schools belong, which tends to have a similar context. Each brainstorming and discussion round lasted 3.5 h. Using a TOWS matrix analysis, definitions of strengths, weaknesses, opportunities, and threats for this study are outlined in Fig. 1.

The first question was “what are strengths, weaknesses, opportunities, and threats (SWOT) in school lunch operations?” Participants were asked to define measurable objectives and goals for improving the quality of school lunches that could reduce malnutrition. Each participant identified a SWOT of the school lunch operation and

management in their schools or schools under supervision. Next, each group discussed and selected five keys SWOTs and prioritized them from 1 to 5 (ranging from slightly important to very important). The second question was “how can we fix or reduce weaknesses and threats in implementing the school lunch?” Researchers asked each group to develop strategies to mitigate weaknesses and threats. Then, participants were asked to sort the possibility of their strategies/solutions in order from 1 to 5 (from the easiest to the hardest to solve). Finally, each group presented their ideas and outputs from brainstorming and discussion to all participants in the same round. A final discussion was performed to highlight the prioritized problems and possible strategies to solve the problems in the SLP implementation.

	<b><i>Strengths</i></b> Internal factors of the school that make it an advantage, such as resources.	<b><i>Weaknesses</i></b> Internal factors of the school that are weak or disadvantageous.
<b><i>Opportunities</i></b>	<b><i>S-O Strategy</i></b> <b><i>(proactive strategy)</i></b>	<b><i>W-O Strategy</i></b> <b><i>(corrective strategy)</i></b>
Factors outside the school that are useful and give the school a good opportunity to operate.	Use the strengths and external opportunities of the school to create strategies.	Take advantage of the opportunities given by the school to avoid or reduce the internal weaknesses of the school.
<b><i>Threats</i></b>	<b><i>S-T Strategy</i></b> <b><i>(defensive strategy)</i></b>	<b><i>W-T Strategy</i></b> <b><i>(passive strategy)</i></b>
Factors outside the school that hinder the operation.	Use school strengths to prevent, avoid or overcome threats from outside the school.	Create a modified strategy or reduce weaknesses within the school and it can overcome threats from outside the school.

Fig. 1. TOWS matrix [adapted from 9, 14].

### 2.3. Data analysis

SWOT analysis consists of two steps, including

Step 1: Patterns of the meanings (core SWOT themes) were identified, analyzed, and interpreted using thematic analysis [15].

Step 2: SWOT strategies formulated the themes from Step 1 to create a new strategic initiative [16], which was used as a guideline for problem solving. For example, themes can be matched from the strengths to opportunities and then transformed into a strategy [17]. The importance of matching themes is to find a partner that can be flexible for a stretch, not just a fit [18]. S–O Strategy (strengths-opportunities) takes advantage of the strengths and external opportunities of the school. W–O Strategy (weaknesses-opportunities) take advantage of opportunities to mitigate the weaknesses of schools for opportunities that come their way. S-T Strategy (strengths-threats) uses the strengths of the school to reduce the impact of external threats. W-T Strategy (weaknesses-threats) reduces weaknesses within the school and from external threats resulting in strategies to solve operational problems under the SLP. This is another approach that will help improve the quality of school lunches.

### 2.4. Ethical considerations

All procedures involving human subjects were approved by the Mahidol University Centre of Ethical Reinforcement for Research (MU-CIRB), Thailand (COA. NO. MU-CIRB 2018/120.0106).

## 3. Results

### 3.1. Step 1: Core SWOT Themes

The qualitative data were analyzed from the six-group discussion of the SP and ESAS by SWOT and thematic analyses. The main themes related to improving school lunch quality were repeatedly mentioned during the group discussion, such as management, budget, canteen, knowledge, participation, food sufficiency, stakeholder prioritization, and monitoring. These themes were prioritized by the participants. The SWOT analysis also repeated some themes by three groups of participants, but with different details. For instance, under the theme of canteen, some groups mentioned that they had sufficient clean areas for students to have lunch. However, the rest mentioned that they did not have enough equipment and utensils. There were 28 main themes, comprising 6 strengths, 8 weaknesses,

7 opportunities, and 7 threats. SWOT data were prioritized by participants as shown in Tables 2 and 3.

### 3.2. Step 2: SWOT Strategies

From the above results of the SWOT analysis, further synthesized strategies using TOWS matrix in Fig. 1 were formulated to improve the quality of school lunches. Conceived strategies suggested the possibilities to manage the SLP in the different contexts and problems. The conceived strategies were divided into 4 groups as follows:

#### 3.2.1. S–O Strategy (proactive strategy)

1. S1, S4, O2: Maintain or enhance good management of the SLP by establishing cooperation among school staff and expanding the network to external communities, such as PEASO, parents/caregivers, and communities. For example, school

Table 2. SWOT analysis to identify supports (strengths and opportunities) of school lunch quality improvement.

Supports
<i>Strength (S)</i>
S1. <b>Management:</b> Schools had guidelines for SLP, such as lunch menu planning and budget management.
S2. <b>Canteen:</b> There was a sanitized cooking area and clean eating space for students.
S3. <b>Knowledge:</b> Teachers had nutrition knowledge.
S4. <b>Participation:</b> There was strong cooperation among SP, teachers, cooks, and community members.
S5. <b>Food sufficiency:</b> Schools had a Sufficiency Economy Project or a school garden for SLP, so seasonal vegetables could be used for the SLP.
S6. <b>Software:</b> Schools had an information technology system and software to manage student data (e.g., nutritional status) and lunch quality.
<i>Opportunities (O)</i>
O1. <b>Knowledge:</b> School staff received nutrition knowledge trainings from various agencies, such as a training organized by the NGOs or the health promoting hospitals in their area.
O2. <b>Participation:</b> Schools had a connection with PESASO and parents/caregivers, so they could ask for assistance in donating food/ingredients for lunches.
O3. <b>Budget:</b> In addition to the government's budget support, some schools received external in-kind support, such as rice from the temples.
O4. <b>Prioritization:</b> OBEC raised awareness among SP, teachers, and educational personnel on the importance of the lunch program and nutrition-related tasks.
O5. <b>Monitoring:</b> The relevant governmental departments had the SLP management system in their routine responsibilities.
O6. <b>Canteen:</b> A private company supported the budget to construct or renovate school canteens.
O7. <b>Software:</b> Schools received a program in calculating the nutritional status of students (INMU-Thai Growth) from the Institute of Nutrition, Mahidol University.



Table 3. SWOT analysis to identify barriers (weaknesses and threats) of school lunch quality improvement.

Barriers
<b>Weaknesses (W)</b>
<b>W1. Knowledge:</b> Students, teachers, parents/caregivers, and related staff did not have sufficient nutrition knowledge and lacked a supportive system.
<b>W2. School principal:</b> The SP lacked awareness of the importance of nutrition and lunch management systems.
<b>W3. Canteen:</b> Cooking utensils and some equipment were insufficient.
<b>W4. Workload:</b> The teacher in charge of the SLP worked multiple duties, resulting in the inability to perform duties with quality.
<b>W5. Monitoring:</b> There was a lack of supervision from school staff in monitoring the SLP results.
<b>W6. Management:</b> The SLP teachers and cooks could not follow the guidelines and lunch management policy.
<b>W7. Food sufficiency:</b> Some schools had limited access to water resources and drinking water.
<b>W8. Participation:</b> Students' nutrition knowledge and practice were lacking a continuous monitoring system between school and home.
<b>Threats (T)</b>
<b>T1. Budget:</b> Due to a limited budget and late installments, the school lunches were of poor quality and badly managed.
<b>T2. Food sufficiency:</b> Transportation difficulties in remote schools and natural disasters (e.g., floods) in some schools impacted the quality of lunch ingredients. In addition, in the three southern border provinces, there were special restrictions and safety regulations in high-risk areas.
<b>T3. Management:</b> A lack of operational planning existed. The procurement regulation and practical management were inconsistent with management strategies, such as the SP's daily policy, which was modified in response to rising issues.
<b>T4. Participation:</b> Students had less healthy eating habits because of family behavior.
<b>T5. Monitoring:</b> There was a lack of active monitoring, evaluation, and supervision on the SLP by external auditors.
<b>T6. Nutritionist:</b> There were no positions to hire school nutritionists.

staff may ask for food donations from parents or people in communities.

2. S1, S2, S5, O3, O6: Maintain good lunch menu planning, budgeting, and canteen management practices by organizing school activities or external partners. School projects should be scaled up more efficiently, such as creating a rotational vegetable planting schedule to ensure yields throughout the academic year. It would also help with lunch menu planning throughout the academic year.

3. S3, S6, O1, O7: Provide an annual nutrition training program which includes computer software to assist teachers in interpreting students' nutritional status data and planning lunch menus.

### 3.2.2. W–O Strategy (corrective strategy)

1. W1, W2, W6, O1, O4: Improve nutrition knowledge of school staff, raise awareness of SP, and optimize SLP management for teachers and

cooks by organizing nutrition education training related to school lunch management. All concerned parties, including the SP, must have basic knowledge of nutrition and the importance of preparing and developing school lunches.

2. W5, W7, O5: Sustain the SLP and students' nutrition monitoring system by forming a committee within the schools to continuously monitor school lunch quality and students' nutritional status. If the relevant departments are already mandated to evaluate and supervise school lunches and students' nutrition, this should be done continuously and effectively.

3. W3, W7, W8, O4: Address issues on insufficient kitchen equipment and scarcity of water by strengthening relationships with relevant personnel. School personnel and PEASO representatives who supervise or evaluate school lunch management should be aware of any additional budgets available to support the purchase of necessary utensils and water management.

### 3.2.3. S–T Strategy (defensive strategy)

1. S1, S4, T1: Address the issue of late payments by learning from schools with good budget management practices and exchanging ideas with internal and external partners.

2. S4, T3, T4: Improve operational planning on SLP, raise awareness of school staff on the importance of SLP, and improve students' eating behavior by strengthening the cooperation among school staff and the connection with parents/caregivers.

3. S4, S5, T2: Reduce food insufficiency caused by transportation issues and flooding by collaborating with community members and/or establishing school gardens.

### 3.2.4. W–T Strategy (passive strategy)

1. W4, T6: Alleviate teachers' workload, as they are in charge of managing school lunches, by establishing a nutritionist position in schools or at the subdistrict level.

2. W5, T5: Improve SLP monitoring, evaluation, and supervision by launching a long-term SLP monitoring system that is suitable for school staff and external partners.

## 4. Discussion

The key issue in dealing with lunch program implementation is that schools should implement proactive strategies and capitalize on the school's strengths and external opportunities. Prioritized strategies, such as maintaining or expanding good network partners between schools and

communities, should be maintained and continued to sustain the SLP management system and cooperation (S1, S4, O2) and good budget management practice, whether managed within schools or supported by external agencies (S1, S2, S5, O3, O6). This is in line with the Primary School Lunch Program Fund's strategy to create a network of cooperation from all sectors to maximize the fund's potential according to the philosophy of the Sufficiency Economy [1]. Some schools have problems with the budget delay for school lunches, which schools should receive through the SAO payment. As a result, the schools cannot manage lunch preparation effectively. If the budget is allocated directly to the PEASO, schools may receive the budget on time at the beginning of the semester (S1, S4, T1).

In a case in Canada, the project coordinator sought additional community partners to provide monetary or in-kind support. Each school operates its nutrition programs independently to meet the specific needs of the school [13]. It recommends founding a program committee to help forge collaborations with community partnerships [19]. Schools may scale up on the project that they are working on to make it more effective, such as planting vegetables in rotation to get products for the entire school term.

Regarding the government's policy, the SLP budget is allocated to pay for schools to manage lunches for all students and integrates agricultural yields for the SLP [1]. Additionally, each school has a school cooperative selling agricultural products for the SLP. This strategy will allow schools to purchase raw ingredients cheaper than the market and probably be a sustainable solution for an insufficient budget.

Nutrition training is required for stakeholders in all sectors (W1, W2, W6, O1, O4) to gain nutrition knowledge and recognize the importance of improving lunch quality, including the forming of a committee in schools to supervise, monitor, and control lunch quality (W5, W7, O5). Training is required for teachers to supplement the curriculum. It is necessary to develop information, teaching materials, and activities that are directly linked to school canteens and healthy eating principles [20] to integrate them within the school curriculum and organize activities within the lesson plans [12].

Improper food consumption behaviors also affect student malnutrition. Because changing consumption behaviors is challenging in a short period, it requires the cooperation of parents or caregivers. As a result, nutrition education should be provided to parents and students themselves to make healthy food choices. Based on the school nutrition program

(SNP) coordinators' recommendations for public health support of SNP, the large, ethnically diverse, urban region of Ontario, Canada, would like to provide increased access to support and training for coordinators and volunteers such as teachers, parents, and students [13]. Creating Healthy Eating initiatives at schools by allowing students to make suggestions about lunch menu arrangements will improve their eating behaviors. Students can also educate and promote healthy eating behaviors among their peers. It has a beneficial impact on students' perceptions of healthy eating [21]. In addition, the school food environment influences the students' eating behaviors [22]. Some schools sell snacks and beverages that promote unhealthy eating behaviors among students, such as high-sodium snacks and sweetened beverages. Changing to selling healthy snacks and drinks would improve students' dietary intake [23]. It can be seen that these initiatives help raise awareness of healthy eating behaviors.

The most complicated issue is the W-T Strategy. Having a nutritionist either at each school or at least at the district level would help reduce the tasks at hand of teachers responsible for the lunch program. Because of their heavy workload, such as teaching, menu planning, purchasing ingredients, and serving lunches, they are unable to work effectively for the school lunch program (W4, T6). Many countries have different quality control staff and lunch program personnel; for example, the United States of America provides lunch service with school food service operators who have trained staff. Menu planning, food preparation, and food service are all coordinated by the director and food service staff [24]. This approach ensures a level of uniformity in program standards and quality. In Canada, school health nurses recommend that schools initiate a nutrition program. They work within the school health framework or assist dietitians in supporting school programs [13]. Japanese schools have diet and nutrition teachers in public primary and junior high schools based on the needs of local communities. The teachers have both qualifications and nutritional expertise, and they supervise the SLP, formulate menus, and ensure hygiene standards. Nutrition experts advise children and families about obesity, fad eating practices, food allergies, and other important eating-related issues to reinforce healthy mind and body strength among students [25]. However, having a nutritionist at a school or district is controversial in Thailand since it will require large additional governmental budgets per annum to hire nutritionists.

This study used the SWOT and TOWS strategies to address Thai SLP issues. Schools in different contexts: rural, semi-urban, and urban, were included, so problems and strategies with the school's project implementation were various. This approach could develop essential strategies for other schools with similar issues. The limitation of this study was that we divided the participants into six groups. After each group's presentation, participants did not re-prioritize what should be essential or possible strategies of the whole group. As can be seen, the same issues exist among SWOT. Given the study's limitations, future research should focus on; first, researchers using some methods to prioritize SWOT and TOWS results to avoid repeating issues and strategies. Second, results were obtained from the views of SPs and ESAs only; they are administrators, not operators. Cook, students, teachers, IT teachers, physical activity teachers, health personnel from subdistrict hospitals, school committees, parents, local authorities, temples, and many more may provide more detailed information. Therefore, strategies need to be confirmed by SLP teachers and cooks as operators as well as community members for the possibility of applying for Thai SLP.

## 5. Conclusion

Guidelines for solving operating problems under the lunch program to improve the quality of school lunches require various strategies, which may start with strategies that the school can implement. Creating networks between schools and communities is necessary for coping with an insufficient budget. Additionally, it is necessary for the operator to fully understand the strategies for addressing the issues so they can advise relevant stakeholders on improving their implementation. If that is achieved, the SLP's nutrition standards will be implemented efficiently and sustainably.

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## Conflict of interest

The authors declare that they have no conflict of interests.

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