*Full Length Research Paper*

# Strengths, weaknesses, opportunities and threats (SWOT) analysis for farming system businesses management: Case of wheat farmers of Shadervan District, Shoushtar Township, Iran

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**Strengths, weaknesses, opportunities and threats (SWOT) analysis indicates a framework for helping the researchers or planners to identify and prioritize the business goals, and to further identify the strategies of achieving them. SWOT analysis is a technique used to analyze the strengths, weaknesses, opportunities and threats of businesses. In all countries, farming practices play a vital role in food security. Population growth is the major reason for increased food demands and it puts additional pressure on the natural resource. Countries with rapid population growth face especially difficult challenges in ensuring food security. As such, SWOT analysis is used to identify strategies for agricultural development, especially in farming systems, and they help the researchers or planners to manage and prioritize them for achieving food security. The research area was located in rural areas of Shadervan district, Shouahtar Township, Iran, and the study's population comprised wheat farmers (N=1950). The sample size (n=165) was selected by random sampling. Based on the results of SWOT, strategies for farming system management were prioritized and they include: development of poor local market opportunities and infrastructure, planting of crops with high economic values, development of governmental supports, preparing strategic plans for development of organic farming, considering the quality of crops, considering farm sustainability indexes, using sustainable water resources management and development of extension programs based on farmers' needs.**

**Key words:** SWOT, farming, management.

## INTRODUCTION

Strengths, weaknesses, opportunities and threats (SWOT) analysis is a device that helps business managers to evaluate the strengths, weaknesses, opportunities and threats involved in any business enterprise, including farms and ranches. A SWOT analysis can help them gain insights into the past and think of possible solutions to existing or potential problems, either for an existing business or for a new venture (USDA, 2008; Nouri et al., 2008). Specifically, SWOT is a basic and candid model that assesses what a business can and cannot do, as well as its potential opportunities and threats. The method of SWOT analysis is to take the information from an environmental analysis and separate it into internal (strengths and weaknesses) and external issues (opportunities and threats). Once this is completed, SWOT analysis determines what may assist the firm in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve the desired results (Singh, 2010). However, completing a SWOT analysis of the farm business is the first step in strategic planning

**Abbreviations: SWOT,** Strengths, weaknesses, opportunities and threats; **EFE,** external factor evaluation; **IFE,** internal factor evaluation; **SPACE,** strategic position and action evaluation; **QSPM,** quantitative strategic planning matrix.

**Table 1.** SWOT analysis matrix (Whalley, 2010).

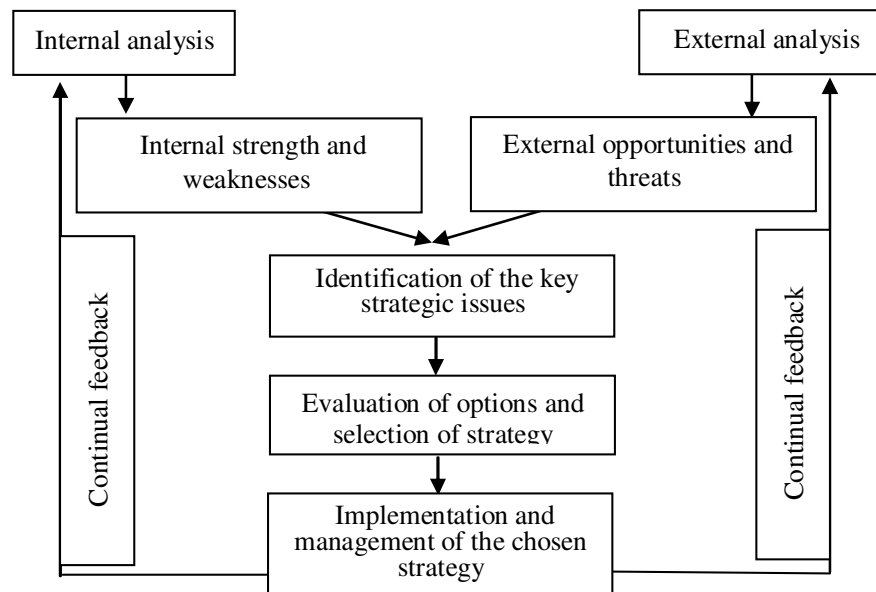|  | **Strengths** | **Weaknesses** |
|---|---|---|
| **Opportunities** | How do I use these strengths to take advantage of these opportunities? | How do I overcome the weaknesses that prevent me from taking advantage of these opportunities? |
| **Threats** | How do I use my strengths to reduce the impact of threats? | How do I address the weaknesses that will make these threats a reality? |



**Figure 1.** The process of SWOT (Riston, 2008).

(Table 1 and Figure 1). Singh (2010) conducted SWOT analysis in identifying strategies for community development. Based on this exercise, the following five categories were identified and prioritized by villagers for the development of their village in future:

1. Conservation and utilization of natural resources (with particular reference to water and forest).
2. Development of the wasteland, agriculture and livestock sector.
3. Promotion of livelihoods resources and human resource development.
4. Promotion of health, cleanliness and education.
5. Development of village institutions.

Akca (2006) used SWOT for assessment of rural tourism in Turkey. As a result, Turkey has an important rural tourism potential. Shadervan district is located on the southwestern region of Shoushtar Township, Khouzestan Province of Iran. The total number of rural areas in this district is 60. Nonetheless, the reason for selecting this area for research is the significant role it plays on satisfying the food demands of the society.

**MATERIALS AND METHODS**

SWOT analysis technique was used to indicate the current constraints and future possibilities of the farming system business management in rural areas of Shadervan district, Shouahtar Township, Iran. The population of this study comprised wheat farmers (N=1950), and the sample size (n=165) was selected by random sampling.

In this study, the following phases were used:

I) Designing external and internal factors matrix.
II) Analyzing SWOT matrix.
III) Designing quantitative strategic programming matrix (QSPM).
IV) Priorities identified strategies.

**RESULTS**

**Designing external and internal factors evaluation matrix**

At this phase of the research, external (opportunities and threats) and internal (strengths and weaknesses) factors that affected the farming system of wheat farmers were evaluated. Based on the farmers' idea, each item was

**Table 2.** External factors evaluation (EFE) matrix.

|  | External factor | Weight | Rating | Weighted score |
|---|---|---|---|---|
| | New attitude regarding the role of agriculture in national development | 0.05 | 3 | 0.15 |
| | The growth of the population | 0.09 | 4 | 0.36 |
| | The increasing information technology | 0.06 | 4 | 0.24 |
| Opportunities | The increasing industries that are related to agriculture | 0.07 | 3 | 0.21 |
| | The development of new technologies | 0.08 | 3 | 0.24 |
| | Governmental support in policy programs for agriculture. | 0.05 | 3 | 0.15 |
| | Total | 0.40 | | 1.35 |
| | | | | |
| | Incoherent government policies | 0.09 | 2 | 0.18 |
| | Production risk | 0.08 | 2 | 0.16 |
| | Marketing and prices risk | 0.08 | 2 | 0.16 |
| | The price of inputs have a large tolerance | 0.07 | 1 | 0.07 |
| Threats | Rainfall is very low | 0.08 | 1 | 0.08 |
| | The price of crops is low | 0.10 | 2 | 0.20 |
| | Increasing use of external inputs | 0.10 | 2 | 0.20 |
| | Total | 0.60 | | 1.05 |
| | Total weighted score | 1 | | 2.45 |
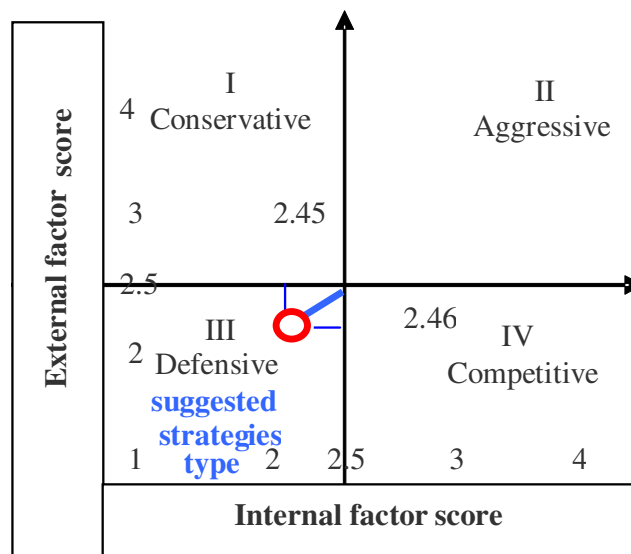


**Figure 2.** SPACE matrix.

evaluated. Based on the farmers' idea, each item was ranked and the importance ratio coefficient was identified. More so, based on the results, the score of the external and internal factors was 2.45 and 2.46, respectively.

**External factor evaluation (EFE) matrix (Table 2)**

The first part of the SWOT analysis requires looking outside our business at issues that we cannot control but can manage to enhance or reduce their impact on our business. External factor evaluation (EFE) matrix is a strategic-management tool often used for assessment of the current business conditions. It is a good tool used to visualize and prioritize the opportunities and threats that a business is facing. Riston (2008) pointed out that the benefits of external analysis include:

i) Increasing managerial awareness of environmental changes.
ii) Improving resources' allocation decisions.
iii) Facilitating risk management.

| Internal Factors<br><br>External Factors | Strengths (S)<br>S₁: High quality land<br>S₂: High technical knowledge of farmers<br>S₃: Frequency of water for riverside situation<br>S₄: Large labor force<br>S₅: Indigenous farming systems<br>S₆: New technology | Weaknesses (W)<br>W₁: Extension system oriented towards accessible farmers<br>W₂: Lack of added value<br>W₃: Lack of resources<br>W₄: Lack of reliable data and information on organic agriculture<br>W₅: Poor local market opportunities and infrastructure<br>W₆: Poor image marketing<br>W₇: High cost of production |
|---|---|---|
| Opportunities (O)<br>O₁: New attitude regarding role of agriculture in national development<br>O₂: The growth of population<br>O₃: The increasing information technology<br>O₄: The increasing industries that related to agriculture<br>O₅: The development of new technologies<br>O₆: Governmental support in policy programs for agriculture | **(Defensive)**<br>**Suggested strategies**<br><br>WT | |
| Threats (T)<br>T₁: Incoherent government policies<br>T₂: Production risk<br>T₃: Marketing and prices risk<br>T₄: The prices of inputs have very tolerance<br>T₅: The raining is very low<br>T₆: The price of crops is low<br>T₇: Increasing use of external inputs | | WT Strategies<br>WT₁: Development of extension programs based on farmers needs<br>WT₂: Development of governmental supports<br>WT₃: Development poor local market opportunities and infrastructure<br>WT₄: Preparing strategic plans to development organic farming.<br>WT₅: Planting of crops with high economic values<br>WT₆: Using sustainable water resources management.<br>WT₇: Considering farm sustainability indexes<br>WT₈: Considering quality of crops |

**Figure 3.** SWOT matrix.

iv) Acting as an early warning system.
v) Focusing on the primary influences of strategic change.

However, the EFE matrix process uses the following five steps:

1. List factors: The first step is to gather a list of external factors and divide them into two groups: opportunities and threats.
2. Assign weights: Weight is assigned to each factor. The value of each weight should be between 0 and 1 (or alternatively between 10 and 100 if the 10 to 100 scale is used). Zero means the factor is not important, while one or hundred means the factor is the most influential and critical. However, the total value of all weights put together should equal 1 or 100.
3. Rate factors: Rating is assigned to each factor, and is between 1 and 4. Rating indicates how effective the firm's current strategies respond to the factor.

Rating captures whether the factor represents a major threat (rating = 1), a minor threat (rating = 2), a minor opportunity (rating = 3), or a major opportunity (rating = 4). If rating scale 1 to 4 is used, then strengths must receive a 4 or 3 rating and weaknesses must receive a 1 or 2 rating.
4. Multiply weights by ratings: Multiply each factor weight with its rating in order to calculate its weighted score.

**Table 3.** Internal factors evaluation matrix (IFEM).

|  | External factor | Weight | Rating | Weighted score |
|---|---|---|---|---|
| Strengths | High quality land | 0.07 | 3 | 0.21 |
|  | High technical knowledge of farmers | 0.06 | 4 | 0.24 |
|  | Frequency of water for riverside situation | 0.06 | 4 | 0.24 |
|  | Large labor force | 0.07 | 3 | 0.21 |
|  | Indigenous farming systems | 0.09 | 3 | 0.27 |
|  | New technology | 0.07 | 3 | 0.21 |
|  | Total | 0.42 |  | 1.38 |
| Weaknesses | Extension system oriented towards accessible farmers | 0.08 | 2 | 0.18 |
|  | Lack of added value | 0.08 | 2 | 0.16 |
|  | Lack of resources | 0.08 | 2 | 0.16 |
|  | Lack of reliable data and information on organic agriculture | 0.07 | 1 | 0.07 |
|  | Poor local market opportunities and infrastructure | 0.08 | 1 | 0.08 |
|  | Poor image marketing | 0.10 | 2 | 0.20 |
|  | High cost of production | 0.09 | 2 | 0.18 |
|  | Total | 0.58 |  | 1.08 |
|  | Total weighted score | 1 |  | 2.46 |

5. Total all weighted scores: Add all the weighted scores of each factor, in order to calculate the company's total weighted score.

### Internal factor evaluation (IFE) matrix (Table 3)

Internal factor evaluation (IFE) matrix is a strategic management tool used for evaluating strengths and weaknesses in functional areas of a business. The IFE matrix together with the EFE matrix is a strategy-formulation tool that can be utilized to evaluate the performance of a company with regards to the identified internal strengths and weaknesses of a company. The IFE matrix can be created using the following 3 steps:

1. Key internal factors: The first step is to identify strengths and weaknesses.
2. Weights: IFE matrix assigns a weight that ranges from 0.00 to 1.00 for each factor. The weight assigned to a given factor indicates the relative importance of the factor. Zero means not important, while one indicates very important.
3. Rating: Practitioners usually use rating on a scale from 1 to 4. Rating captures whether the factor represents a major weakness (rating = 1), a minor weakness (rating = 2), a minor strength (rating = 3), or a major strength (rating = 4).

### Strategic position and action evaluation (SPACE) matrix

The strategic position and action evaluation (SPACE) matrix is a management tool used to analyze a company's business. It is used to determine what type of strategy a business should undertake. The SPACE matrix is broken down into four quadrants, where each quadrant suggests a different type or nature of strategy: aggressive, conservative, defensive and competitive. However, the SPACE matrix analysis functions upon two internal and two external strategic dimensions (Figure 2).

### Strengths, weaknesses, opportunities and threats (SWOT) matrix (Figure 3)

SWOT is the first step of planning and it helps planners to focus on key subjects. SWOT method is a key tool used in businesses to formulate strategic plans.
SWOT matrix comprises four strategic groups:
(1) How strengths are used to take advantage of opportunities.
(2) How weaknesses are reduced by taking advantage of opportunities.
(3) How strengths are used to reduce the impact of threats.
(4) How weaknesses that will make these threats a reality are addressed.
Based on SPACE matrix, group III strategies (defensive) are the suggested strategies for agricultural development.

### Quantitative strategic planning matrix (QSPM)

A basic principle of the quantitative strategic planning matrix (QSPM) is that businesses need to systematically

**Table 4.** QSPM.

| Key factor | Weight | WT$_1$ | | WT$_2$ | | WT$_3$ | | WT$_4$ | | WT$_5$ | | WT$_6$ | | WT$_7$ | | WT$_8$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AS | TAS | AS | TAS | AS | TAS | AS | TAS | AS | TAS | AS | TAS | AS | TAS | AS | TAS |
| O$_1$ | 0.05 | 2 | 0.1 | 4 | 0.2 | 3 | 0.15 | 4 | 0.2 | 4 | 0.2 | 3 | 0.15 | 4 | 0.2 | 4 | 0.2 |
| O$_2$ | 0.09 | 1 | 0.09 | 2 | 0.18 | 2 | 0.18 | 3 | 0.27 | 4 | 0.36 | 3 | 0.27 | 3 | 0.27 | 3 | 0.27 |
| O$_3$ | 0.06 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 |
| O$_4$ | 0.07 | 2 | 0.14 | 3 | 0.21 | 3 | 0.21 | 2 | 0.14 | 2 | 0.14 | 2 | 0.14 | 2 | 0.14 | 3 | 0.21 |
| O$_5$ | 0.08 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 |
| O$_6$ | 0.05 | 2 | 0.1 | 4 | 0.2 | 4 | 0.2 | 3 | 0.15 | 2 | 0.1 | 3 | 0.15 | 3 | 0.15 | 2 | 0.1 |
| T$_1$ | 0.09 | 3 | 0.27 | 4 | 0.36 | 3 | 0.27 | 2 | 0.18 | 2 | 0.18 | 2 | 0.18 | 2 | 0.18 | 2 | 0.18 |
| T$_2$ | 0.08 | 3 | 0.24 | 3 | 0.24 | 2 | 0.16 | 2 | 0.16 | 3 | 0.24 | 2 | 0.16 | 2 | 0.16 | 3 | 0.24 |
| T$_3$ | 0.08 | 3 | 0.24 | 3 | 0.24 | 4 | 0.32 | 2 | 0.16 | 3 | 0.24 | 2 | 0.16 | 3 | 0.24 | 3 | 0.24 |
| T$_4$ | 0.07 | 3 | 0.21 | 2 | 0.14 | 4 | 0.28 | 2 | 0.14 | 2 | 0.14 | 2 | 0.14 | 3 | 0.21 | 2 | 0.14 |
| T$_5$ | 0.08 | 1 | 0.08 | 2 | 0.16 | 1 | 0.08 | 1 | 0.08 | 2 | 0.16 | 2 | 0.16 | 1 | 0.08 | 1 | 0.08 |
| T$_6$ | 0.10 | 1 | 0.1 | 1 | 0.1 | 4 | 0.4 | 3 | 0.3 | 4 | 0.4 | 2 | 0.2 | 3 | 0.3 | 3 | 0.3 |
| T$_7$ | 0.05 | 3 | 0.15 | 3 | 0.15 | 2 | 0.1 | 4 | 0.2 | 2 | 0.1 | 2 | 0.1 | 3 | 0.15 | 3 | 0.15 |
| S$_1$ | 0.07 | 3 | 0.21 | 2 | 0.14 | 3 | 0.21 | 3 | 0.21 | 3 | 0.21 | 2 | 0.14 | 2 | 0.14 | 2 | 0.14 |
| S$_2$ | 0.06 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 3 | 0.18 | 2 | 0.12 | 3 | 0.18 | 3 | 0.18 |
| S$_3$ | 0.06 | 2 | 0.12 | 3 | 0.18 | 2 | 0.12 | 2 | 0.12 | 3 | 0.18 | 4 | 0.24 | 2 | 0.12 | 2 | 0.12 |
| S$_4$ | 0.07 | 2 | 0.14 | 3 | 0.21 | 2 | 0.14 | 2 | 0.14 | 2 | 0.14 | 4 | 0.28 | 2 | 0.14 | 2 | 0.14 |
| S$_5$ | 0.09 | 2 | 0.18 | 2 | 0.18 | 1 | 0.09 | 2 | 0.18 | 2 | 0.18 | 1 | 0.09 | 3 | 0.27 | 3 | 0.27 |
| S$_6$ | 0.07 | 2 | 0.14 | 2 | 0.14 | 3 | 0.21 | 3 | 0.21 | 3 | 0.21 | 2 | 0.14 | 3 | 0.21 | 3 | 0.21 |
| W$_1$ | 0.08 | 3 | 0.24 | 3 | 0.24 | 2 | 0.16 | 3 | 0.24 | 2 | 0.16 | 2 | 0.16 | 3 | 0.24 | 3 | 0.24 |
| W$_2$ | 0.08 | 2 | 0.16 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 4 | 0.32 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 |
| W$_3$ | 0.08 | 2 | 0.16 | 2 | 0.16 | 2 | 0.16 | 2 | 0.16 | 2 | 0.16 | 2 | 0.16 | 3 | 0.24 | 2 | 0.16 |
| W$_4$ | 0.07 | 3 | 0.21 | 2 | 0.14 | 2 | 0.14 | 4 | 0.28 | 2 | 0.14 | 3 | 0.21 | 3 | 0.21 | 4 | 0.28 |
| W$_5$ | 0.08 | 2 | 0.16 | 2 | 0.16 | 4 | 0.32 | 3 | 0.24 | 3 | 0.24 | 3 | 0.24 | 2 | 0.16 | 2 | 0.16 |
| W$_6$ | 0.10 | 3 | 0.3 | 3 | 0.3 | 4 | 0.4 | 3 | 0.3 | 2 | 0.2 | 2 | 0.2 | 2 | 0.2 | 2 | 0.2 |
| W$_7$ | 0.09 | 2 | 0.18 | 3 | 0.27 | 3 | 0.27 | 2 | 0.18 | 2 | 0.18 | 2 | 0.18 | 2 | 0.18 | 2 | 0.18 |
| STAS | | | 4.52 | | 5.14 | | 5.41 | | 5.08 | | 5.18 | | 4.63 | | 5.03 | | 5.05 |
| Priority | | | 8 | | 3 | | 1 | | 4 | | 2 | | 7 | | 6 | | 5 |

[Attractiveness scores (AS) is: 1 = not attractive, 2 = somewhat attractive, 3 = reasonably attractive, and 4 = highly attractive].

assess their external and internal environments, conduct research, carefully evaluate the pros and cons of various alternatives, perform analyses, and then decide upon a particular course of action (David et al., 2008).

The QSPM approach attempts to objectively select the best strategy for a business. Although, the left column of a QSPM consists of external and internal key factors, the left column of a QSPM lists factors is obtained directly from the EFE and IFE matrixes. The top row consists of feasible alternative strategies derived from the SWOT analysis and SPACE matrix. However, the first column with numbers includes weights assigned to factors.

Attractiveness scores (AS) in the QSPM indicate how each factor is important or attractive to each alternative strategy. The range for attractiveness scores is 1 = not attractive, 2 = somewhat attractive, 3 = reasonably attractive and 4 = highly attractive.

Total attractiveness scores (TAS) indicate the relative attractiveness of each key factor and the related individual strategy. However, the sum of the total attractiveness score (STAS) is calculated by adding the total attractiveness scores in each strategy column of the QSPM.

The QSPM sum total attractiveness scores reveal which strategy is most attractive. Higher scores point at a more attractive strategy, considering all the relevant external and internal critical factors that could affect the strategic decision (Table 4). The range for attractiveness scores is 1 = not attractive, 2 = somewhat attractive, 3 = reasonably attractive, and 4 = highly attractive. Based on the results of QSPM, the WT strategies are prioritized as follows:

1) WT3: Development of poor local market opportunities and infrastructure.
2) WT5: Planting of crops with high economic values.
3) WT2: Development of governmental supports.
4) WT4: Preparing strategic plans to development of organic farming.
5) WT8: Considering the quality of crops.

6) WT7: Considering farm sustainability indexes.
7) WT6: Using sustainable water resources management.
8) WT1: Development of extension programs based on farmers needs.

vi. Considering farm sustainability indexes.
vii. Using sustainable water resources management.
viii. Development of extension programs based on farmers' needs.

## CONCLUSION AND RECOMMENDATIONS

SWOT analysis indicates a framework for helping the planners to identify the strategies of achieving goals. It is a technique used to analyze the strengths, weaknesses, opportunities and threats of businesses. In all countries, farming practices play a vital role in food security. Population growth is the major reason for increased food demands and it puts additional pressure on the natural resource. Based on the results, the considered identified strategies play a vital role in farming system development and in increasing food security in this area. The important strategies that must be considered are:

i. Development of poor local market opportunities and infrastructure.
ii. Planting of crops with high economic values.
iii. Development of governmental supports.
iv. Preparing strategic plans for development of organic farming.
v. Considering the quality of crops.

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