



# Analysis and Strategy for Developing Potential Sectors in the Development of Humbang Hasundutan District, Indonesia

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

This research examines the economic landscape of Humbang Hasundutan District in North Sumatra Province, Indonesia, with a focus on identifying key sectors for development and formulating strategic approaches to harnessing their potential. Utilizing quantitative methods such as Location Quotient (LQ) Analysis, Shift Share Analysis, and Klassen Typology Analysis, alongside SWOT analysis, the study evaluates the regional economic dynamics and proposes strategies for sustainable development. The analysis reveals that agriculture, forestry, and fisheries; construction; accommodation and food service provision; and public administration are the base

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sectors driving economic growth in the district. These sectors exhibit significant potential for both local and external markets, indicating opportunities for further development. Strategies proposed include leveraging geographic advantages and natural resources, enhancing government support, and promoting agricultural tourism to attract investment. Additionally, addressing weaknesses such as challenging topographic conditions and improving the quality of human resources can further strengthen the agricultural sector. Furthermore, the study suggests fostering partnerships with research institutions to address agricultural challenges, facilitating access to financing, and promoting agricultural entrepreneurship among the younger generation. By capitalizing on internal strengths and external opportunities while mitigating weaknesses and threats, Humbang Hasundutan District can achieve sustainable economic growth and prosperity.

*Keywords: Economic landscape; sustainable development; key sectors; strategic approaches; Humbang Hasundutan district.*

## 1. INTRODUCTION

Regional economic development is an integral part of national development. According to Asryad (2020; Introduction to Economic Planning), regional economic development is a process where local governments and communities manage existing resources and form a partnership between local governments and the private sector. One characteristic of economic development, according to Sukirno [1] is a process of economic activities increasing in goods and services produced within the community, thereby increasing the prosperity of the community.

Regional development not only involves efforts to improve physical infrastructure but also involves a series of strategies to enhance the welfare and economic competitiveness of the local community [2,3]. According to Jhinghan, ML [4] four factors that serve as the capital for development in the process of economic development: human resources, natural resources, capital, and technological innovation. In this framework, regional economic development plays a crucial role as an integral part of national development. Along with this, increasing economic growth becomes key in measuring the success of development in a region.

An indicator that can be used to measure the rate of regional economic growth is the Gross Regional Domestic Product (GRDP) growth rate. Gross Regional Domestic Product (GRDP) essentially represents the total value added produced by all business units in a particular area or the total value of final goods and services produced by all economic units. GRDP illustrates a region's ability to create added value at a particular time [5].

Humbang Hasundutan District, as part of North Sumatra Province, has significant and strategic resource potentials to be developed in order to enhance the welfare of the community and the overall competitiveness of the region. However, to harness this potential, an analysis of the economic sectors that serve as the basis and potential of the regional economy is required.

Several previous studies have highlighted the importance of analyzing economic sectors that serve as the basis and potential for regional development. For example, research by Fadilah Ismi Bazai [6] on the role of the agricultural sector in regional development in Tagamus District shows that the agricultural sector plays a crucial role in driving regional economic growth.

Furthermore, research by Pribadi [7] on the economic competitiveness of Central Lampung District emphasizes the importance of identifying economic sectors that serve as the basis for the competitiveness of the regional economy.

On the other hand, research conducted by Wardiah Nurul Khasanah (2022) on the potential economic sectors in the development of South Lampung District provides insights into the role of specific sectors in driving local economic growth.

Additionally, a study by Ni Made Winda Savitri Devi [8] examining potential sectors in the development of Karangasem District demonstrates the importance of understanding and identifying sectors with potential for development in the context of regional development.

Based on this background, this research aims to analyze which sectors serve as basis and non-basis sectors in the economy of Humbang Hasundutan District and formulate strategies for

developing potential sectors in regional development. This analysis is expected to provide a deeper understanding of local economic dynamics and provide useful information for development policymakers.

## 2. RESEARCH METHODS

### 2.1 Location and Time of Research

The research was conducted in Humbang Hasundutan District, North Sumatra Province, Indonesia. This district was chosen due to its significant resource potential and its diverse economy, which is interesting to analyze. The research took place over three months, from July to September 2022, to ensure a good representation of various seasonal aspects and economic variability.

### 2.2 Research Design

This research utilized a quantitative descriptive approach to understand and describe regional economic phenomena comprehensively. This approach enables researchers to depict the relationships and characteristics of the local economy using collected quantitative data.

### 2.3 Data Sources

Primary data was collected through surveys using questionnaires distributed to stakeholders such as local government, businesses, and the local community. Additionally, in-depth interviews were conducted to gain a deeper understanding of the economic conditions and challenges faced. Secondary data was obtained from relevant institutions such as the Central Statistics Agency of Humbang Hasundutan District, and the Regional Research and Development Agency, as well as literature studies involving related literature and documents.

### 2.4 Data Analysis

Several relevant methods were employed to gather the necessary information for this research. Firstly, to determine the basis and non-basis sectors in Humbang Hasundutan District, Location Quotient (LQ) Analysis was conducted. This method involves calculating the relative significance or value added of a sector in that area compared to the same sector at the national level. The LQ value is calculated by dividing the output of a sector in Humbang Hasundutan District by the output of the same sector at the

level of North Sumatra Province. Based on the LQ results, sectors with LQ values  $> 1$  are considered basis sectors, while sectors with LQ values  $< 1$  are considered non-basis sectors (Satia, 2020).

Furthermore, Shift Share Analysis was used to understand the shift in the structure of the regional economy. This method allows evaluation of sector growth in the area compared to the same sector at a higher regional level, in this case, North Sumatra Province. By considering three main aspects: Regional Share, Proportional Shift, and Differential Shift, we can evaluate the performance and productivity of sectors in the Humbang Hasundutan District.

Additionally, Klassen Typology Analysis was employed to identify the classification of the region's economic sectors based on growth rates and their contribution to GRDP. By classifying sectors into appropriate quadrants, we can understand the relative position and development of each sector in the regional economy.

Lastly, SWOT Analysis was used to evaluate the strengths, weaknesses, opportunities, and threats related to regional development in Humbang Hasundutan District. By identifying significant internal and external factors, we can formulate appropriate strategies to enhance community welfare and economic growth in the area.

### 2.5 Operational Definition of Variables

This research utilizes operational definitions to measure the variables used, such as economic growth, agricultural production, independent variables in linear regression, basis sectors, non-basis sectors, and economic potential. This aims to ensure consistency and validity in the measurement of variables in the analysis.

By employing these methods, it is hoped that this research can provide a deep understanding of the dynamics of the regional economy and provide a strong foundation for sustainable policy development.

## 3. RESULTS AND DISCUSSION

### 3.1 Overview of Humbang Hasundutan District

Humbang Hasundutan District is one of the districts in North Sumatra Province located at positions  $2^{\circ}1-2^{\circ}28$  North Latitude and  $98^{\circ}10-$

98°58 East Longitude. Based on its geographical position, Humbang Hasundutan District is situated in the central part of North Sumatra Province with elevations ranging from 330 to 2,075 meters above sea level. Administratively, Humbang Hasundutan District is divided into 10 (ten) sub-districts, 153 (one hundred fifty-three) villages, and 1 (one) urban village.

### 3.2 Development Potential of the Region

The potential for regional development is viewed from various aspects including geographical, population, regional economy, key sectors, supporting sectors, investment sectors, finance and funding, and transportation sectors approached through regional policies. Regional policies are based on the effectiveness of development across this entire area and to harmonize the development of various key sectors to be developed in each sub-district area so that their development does not overlap with each other, thus enabling the optimal and integrated development of the potential held by each sub-district. Spatial potential development is carried out through the strategic development policy of the district, which refers to the Spatial Planning Plan (RTRW) of Humbang Hasundutan District. In this plan, the regional spatial arrangement policy of Humbang Hasundutan District is directed towards becoming 4 (four) service centres:

- a. Promotion Local Activity Center (PKLP)
- b. Local Activity Center (PKL)
- c. Region Service Center (PPK)

d. Environmental Service Center (PPL)

### 3.3 Economic Conditions of Humbang Hasundutan District

The economic growth of Humbang Hasundutan District is measured by the growth rate of Gross Regional Domestic Product (GRDP). Based on data from the Central Statistics Agency (BPS) of Humbang Hasundutan District, the economic growth of Humbang Hasundutan District measured by GRDP at current prices in 2020 and 2021 reached Rp.5.53 trillion and Rp.5.95 trillion respectively, while based on constant prices in 2010, it reached Rp.3.95 trillion and Rp.4.14 trillion respectively.

Based on the graph above, it can be seen that during the period of 2011-2019, the economy consistently experienced positive acceleration. However, in 2020, there was an economic contraction caused by the spread of the COVID-19 pandemic, which resulted in the containment of all activities, including economic activities. Due to the Covid-19 pandemic, the economic growth rate in Humbang Hasundutan District contracted by -0.13% after experiencing an increase in 2019 by 4.94%, while North Sumatra Province also experienced a contraction of -1.7%. In 2021, the economy of Humbang Hasundutan District recovered and grew by 2.02%, but it remained below the economic growth of North Sumatra Province, which was 2.61%.



Fig. 1. Economic growth rate development (percent), 2011-2021

**Table 1. Results of Static Location Quotient (LQ) Calculation of Humbang Hasundutan District from 2013 to 2022**

Field Of Activity	13	14	15	16	17	18	19	20	21	22	Average	Classification
A Agriculture, Forestry, and Fisheries.	1,91	1,89	1,88	1,86	1,84	1,83	1,81	1,77	1,73	1,71	1,82	B
B Mining and Quarrying	0,43	0,44	0,44	0,44	0,45	0,45	0,46	0,48	0,49	0,51	0,46	NB
C Manufacturing Industry	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,09	0,09	0,08	NB
D Electricity and Gas Provision	0,71	0,69	0,73	0,72	0,67	0,67	0,68	0,68	0,68	0,68	0,69	NB
E Water Provision, Waste Management, Recycling	0,71	0,70	0,70	0,71	0,70	0,72	0,73	0,69	0,66	0,66	0,70	NB
F Construction	1,07	1,09	1,07	1,09	1,09	1,10	1,08	1,05	1,08	1,11	1,08	B
G Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	0,81	0,81	0,82	0,84	0,85	0,86	0,86	0,89	0,90	0,90	0,86	B
H Transportation and Warehousing	0,53	0,53	0,53	0,53	0,53	0,52	0,52	0,58	0,62	0,61	0,55	NB
I Accommodation and Food Service Provision	1,42	1,41	1,41	1,42	1,41	1,39	1,37	1,52	1,55	1,56	1,45	B
J Information and Communication	0,46	0,46	0,45	0,45	0,44	0,42	0,40	0,40	0,40	0,39	0,43	NB
K Financial and Insurance Activities	0,37	0,37	0,36	0,37	0,39	0,40	0,41	0,40	0,39	0,39	0,39	NB
L Real Estate	0,62	0,62	0,62	0,64	0,65	0,66	0,67	0,66	0,65	0,66	0,65	NB
M Professional Services	0,15	0,15	0,15	0,15	0,14	0,14	0,13	0,14	0,14	0,14	0,14	NB
N												
O Public Administration, Defense, and Mandatory Social Security	3,30	3,29	3,30	3,31	3,34	3,26	3,20	3,15	3,10	3,17	3,24	B

Field Of Activity		13	14	15	16	17	18	19	20	21	22	Average	Classifica tion
P	Education Services	0,52	0,51	0,51	0,51	0,51	0,50	0,50	0,48	0,49	0,49	0,50	NB
Q	Health and Social Activities	0,70	0,68	0,68	0,66	0,65	0,65	0,65	0,68	0,68	0,68	0,67	NB
R S T U	Other Services	0,28	0,28	0,28	0,29	0,29	0,29	0,30	0,31	0,33	0,33	0,30	NB

Source: Location Quotient Statistical Calculation Data

**Table 2. Shift share analysis for the years 2013 – 2022**

<b>No</b>	<b>Field of Activity / Industry</b>	<b>Provincial Growth Component (Nij)</b>	<b>Proportional Shift Component (Mij)</b>	<b>Differential Shift Component (Cij)</b>	<b>Regional Growth</b>
A	Agriculture, Forestry, and Fisheries	647.73	77.45	-252.60	472.57
B	Mining and Quarrying	7.64	-0.79	4.14	10.99
C	Manufacturing Industry	21.78	-9.94	5.85	17.69
D	Electricity and Gas Provision	1.28	0.34	-0.22	1.41
E	Water Provision, Waste Management, Recycling	0.89	0.16	-0.21	0.85
F	Construction	174.07	8.27	16.07	198.40
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	189.84	36.02	67.55	293.42
H	Transportation and Warehousing	32.21	-6.39	14.54	40.36
I	Accommodation and Food Service Provision	41.83	3.07	11.60	56.50
J	Information and Communication	15.01	17.29	-9.90	22.40
K	Financial and Insurance Activities	15.79	-4.62	3.13	14.30
L	Real Estate	33.87	8.09	6.24	48.20
M, N	Professional Services	1.69	0.27	-0.52	1.45
O	Public Administration, Defense, and Mandatory Social Security	144.73	-14.63	-22.53	107.57
P	Education Services	13.95	2.20	-2.89	13.25
Q	Health and Social Activities	8.40	1.21	-0.87	8.75
R, S, T, U	Other Services	1.83	0.52	0.91	3.26
Total	-	1352.54	118.51	-159.69	1311.37

Source: Shift Share Analysis Calculation Results

**Table 3. Comparison of growth and contribution of GRDP in Humbang Hasundutan district and North Sumatra Province**

Field of Operation/Industry		North Sumatra Province		Humbang Hasundutan District		Description	Quadrant
		Average Growth Rate (s)	Average Distribution (sk)	Average Growth Rate (si)	Average Distribution (ski)		
A	Agriculture, Forestry, and Fisheries.	0,043	0,252	0,031	0,455	Advanced but Depressed Sector	K2
B	Mining and Quarrying	0,031	0,013	0,051	0,006	Potential or Rapidly Developing Sector	K3
C	Manufacturing Industry	0,016	0,188	0,028	0,015	Potential or Rapidly Developing Sector	K3
D	Electricity and Gas Provision	0.048	0.001	0.037	0.001	Relative Lagging Sector	K4
E	Water Provision, Waste Management, Recycling	0.047	0.001	0.043	0.001	Relative Lagging Sector	K4
F	Construction	0.040	0.124	0.031	0.136	Advanced but Depressed Sector	K2
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	0.043	0.177	0.059	0.153	Potential or Rapidly Developing Sector	K3
H	Transportation and Warehousing	0.016	0.045	0.040	0.025	Potential or Rapidly Developing Sector	K3
I	Accommodation and Food Service Provision	0.036	0.023	0.054	0.033	Advanced and Rapidly Growing Sector	K1
J	Information and Communication	0.082	0.028	0.052	0.012	Relative Lagging Sector	K4
K	Financial and Insurance Activities	0.014	0.030	0.035	0.012	Potential or Rapidly Developing Sector	K3
L	Real Estate	0.048	0.042	0.057	0.028	Potential or Rapidly Developing Sector	K3
M	Professional Services	0.039		0.024		Relative Lagging Sector	K4
N							
O	Public Administration, Defense, and Mandatory Social Security	0.043	0.033	0.031	0.106	Advanced but Depressed Sector	K2
P	Education Services	0.044	0.020	0.027	0.010	Relative Lagging Sector	K4
Q	Health and Social Activities	0.039	0.009	0.047	0.006	Potential or Rapidly Developing Sector	K3
R	Other Services	0.040	0.005	0.066	0.002	Potential or Rapidly Developing Sector	K3
S							
T							
U							

Source: Data Processing Result



### 3.4 Analysis of Leading Sectors in Humbang Hasundutan District

To analyze the leading sectors in Humbang Hasundutan District, the GRDP data of Humbang Hasundutan District from 2013 to 2021 was used. The analysis conducted includes Location Quotient (LQ), Shift Share, and Klassen Typology.

#### 3.4.1 Location quotient (LQ) analysis

The results of the Location Quotient (LQ) calculation indicate that there are 4 (four) base sectors: Agriculture, Forestry, and Fisheries; Construction; Accommodation and Food Service Provision; and Government Administration, Defense, and Mandatory Social Security. This suggests that these 4 sectors are capable of fulfilling the needs of the local community while also supplying demands outside of Humbang Hasundutan District. These base sectors play a significant role in driving economic growth in the district.

#### 3.4.2 Shift share analysis

Shift Share analysis in this study uses the GRDP to explain the economic growth of Humbang Hasundutan District, which is outlined as follows:

- Provincial Share Component (Nij) represents the growth of the GRDP of Humbang Hasundutan District.
- Proportional Shift Component (Mij) measures the magnitude of the net shift in Humbang Hasundutan District caused by changes in the composition of GRDP sectors.
- Differential Shift Component (Dij) measures the magnitude of the net shift caused by specific sectors that grow faster or slower in Humbang Hasundutan District compared to North Sumatra Province due to locational/internal factors.

The results of the Shift Share analysis on the GRDP of Humbang Hasundutan District are presented in the following table:

This analysis reveals that Humbang Hasundutan District has four basic sectors, namely Agriculture, Forestry, and Fisheries; Construction; Accommodation and Food Service Provision; and Public Administration, Defense, and Mandatory Social Security. These sectors are capable of supporting the needs of the

community while also supplying needs beyond Humbang Hasundutan District. These basic sectors significantly influence the economic growth in Humbang Hasundutan District.

The results from the Shift Share analysis of the Gross Regional Domestic Product (GRDP) of Humbang Hasundutan District from 2013 to 2022:

1. Humbang Hasundutan District experienced an increase in economic value amounting to 1.311,37 billion rupiah (1.31 billion). This is evident from the positive growth value (Dij) across all sectors/industries.
2. The economic growth of North Sumatra Province towards the regional economy of Humbang Hasundutan District showed positive values across all sectors/industries, totalling 1.352,54 billion rupiah (1.3 billion). This indicates that the regional economy of Humbang Hasundutan District grew faster than the average growth of North Sumatra Province.
3. The Proportional Shift (Mij) reveals that the sector/industry with the largest positive Mij value is Agriculture, Forestry, and Fisheries. This sector demonstrates rapid growth in Humbang Hasundutan District.
4. The Differential Shift (Dij) values in Humbang Hasundutan District vary, with some positive and some negative. Sectors/industries with positive values include wholesale and retail trade; repair of motor vehicles and motorcycles; construction; transportation and warehousing; accommodation and food service activities; real estate; manufacturing; mining and quarrying; financial services; and other services. On the other hand, Agriculture, Forestry, and Fisheries sector exhibit the largest negative value, followed by government administration, defense, and mandatory social security; education services; health and social activities; electricity and gas procurement; water supply, waste management, waste recycling.

#### 3.4.3 Typology klassen analysis

The Typology Klassen analysis categorizes fields of operation based on their growth rate and contribution to the total Gross Regional Domestic Product (GRDP) in Humbang Hasundutan District, juxtaposed against the same sectors in North Sumatra Province.

This analytical approach offers a nuanced understanding of the economic landscape, allowing for a comprehensive assessment of sectoral dynamics and their relative significance within the regional economy.

Based on the table above, there is 1 (one) sector located in quadrant 1, which is the accommodation and food service provision sector, indicating that this sector is experiencing growth and is dominant in the local economy. In quadrant 2, there are 3 (three) sectors including agriculture, forestry, and fisheries; construction; public administration, defense, and mandatory social security. This implies that the growth of these sectors is slow but they still contribute significantly, suggesting a decline in these sectors.

Quadrant 3 contains 8 (eight) sectors, indicating an increase in these sectors and potential for further growth to boost the economy of Humbang Hasundutan. Quadrant 4 includes 5 (five) sectors, indicating that these sectors have less potential for development in the Humbang Hasundutan region.

### 3.5 Strategy for Developing Key Sectors in Humbang Hasundutan District

Based on the SWOT analysis conducted to select the appropriate development policy strategies, particularly in developing the agricultural sector as a base sector in Humbang Hasundutan District, the following internal and external factors were identified;

**Table 4. Assessment results of respondents on internal factors**

No	Internal Factor	Weight	Criteria
1.	Geographic Position of Humbang Hasundutan District	8.06	Strength
2.	Topographic Conditions of Humbang Hasundutan District	5.5	Weakness
3.	Potential Natural Resources of Humbang Hasundutan District	7.88	Strength
4.	Local Government Support for Agricultural Sector Development	8.38	Strength
5.	Availability of Agricultural Sector Supporting Infrastructure	7.69	Strength
6.	Agricultural Tourism Potential	6.56	Strength
7.	Farmers' Bargaining Position	5.06	Weakness
8.	Quality of Human Resources/Farmers	5.19	Weakness
9.	Planning Supporting Documents	5.5	Weakness
10.	Availability of Labor Force	5.19	Weakness
11.	Farmer Group Institutions	5.13	Weakness
12.	Farmer Training	5.38	Weakness

Source: assessment of respondents on SWOT questionnaire

**Table 5. Assessment results of respondents on external factors**

No	External Factor	Weight	Criteria
1.	Increased Demand for Agricultural Products	7.56	Opportunity
2.	Investor Interest in Investing in the Agricultural Sector	6.75	Opportunity
3.	Central Government Support for Agricultural Development in Humbang Hasundutan District	8.06	Opportunity
4.	Value-Added Product Management with Agricultural Raw Materials	5.13	Threat
5.	Socio-Political Conditions	7.38	Opportunity
6.	Availability of Superior Seeds	7.00	Opportunity
7.	Access to Financing/Capital	5.06	Threat
8.	Availability and Price of Agricultural Raw Materials	7.00	Opportunity
9.	Availability of Information and Technology	6.44	Opportunity
10.	Agricultural Land Conversion	5.13	Threat
11.	Interest of Younger Generations in Continuing Agricultural Businesses	5.06	Threat
12.	Climate and Weather Conditions	5.13	Threat
13.	Plant Diseases and Pests	5.06	Threat
14.	Price Fluctuations	5.19	Threat

Source: assessment of respondents on SWOT questionnaire

**Table 6. IFAS-EFAS SWOT Interaction Matrix**

<b>IFAS</b>	<b>Strength</b>	<b>Weaknesses</b>
	<ol style="list-style-type: none"> <li>1. Geographic position of Humbang Hasundutan Regency.</li> <li>2. Natural Resource Potential (SDA) of Humbang Hasundutan Regency.</li> <li>3. Local Government Support for the development of the agricultural sector.</li> <li>4. Availability of facilities and infrastructure supporting the agricultural sector.</li> <li>5. Agricultural/agrotourism potential.</li> </ol>	<ol style="list-style-type: none"> <li>1. Topographic conditions of Humbang Hasundutan Regency.</li> <li>2. Farmers' bargaining position.</li> <li>3. Quality of Human Resources/Farmers.</li> <li>4. Supporting planning documents.</li> <li>5. Availability of labor.</li> <li>6. Farmer group institutions.</li> <li>7. Training for farmer</li> </ol>
<p><b>EFAS</b></p> <p><b>Opportunities:</b></p> <ol style="list-style-type: none"> <li>1. Increased demand for agricultural products.</li> <li>2. Investor interest in investing in the agricultural sector.</li> <li>3. Central Government support for agricultural development in Humbang Hasundutan Regency.</li> <li>4. Socio-political conditions.</li> <li>5. Availability of superior seeds.</li> <li>6. Availability and price of agricultural raw materials.</li> <li>7. Availability of information and technology</li> </ol> <p><b>Threats:</b></p> <ol style="list-style-type: none"> <li>1. Value-added product management with agricultural raw materials.</li> <li>2. Access to financing/capital.</li> <li>3. Agricultural land conversion.</li> <li>4. Interest of the younger generation in continuing agricultural businesses.</li> <li>5. Climate and weather conditions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Utilizing the increased demand for agricultural products by leveraging natural resource potential and geographical location that supports the development of the agricultural sector.</li> <li>2. Utilizing local government support and leveraging Central Government support to develop the agricultural sector.</li> <li>3. Utilizing natural resource potential, agricultural tourism potential, and the supportive socio-political conditions to attract investor interest.</li> <li>4. Utilizing the availability of information and technology to develop the agricultural sector.</li> </ol> <ol style="list-style-type: none"> <li>1. Encouraging the development of agro-industry in Humbang Hasundutan Regency.</li> <li>2. Increasing support from the Local Government to facilitate access to financing/capital.</li> <li>3. Utilizing existing facilities and infrastructure to increase agricultural production and address price fluctuations.</li> <li>4. Creating agricultural youth entrepreneurship</li> </ol>	<ol style="list-style-type: none"> <li>1. Utilizing Central Government support to assist in the construction of relatively expensive infrastructure due to the hilly topography of Humbang Hasundutan Regency.</li> <li>2. Improving the quality of Human Resources/Farmers with support from the Central Government.</li> <li>3. Providing planning documents by leveraging the availability of information and technology.</li> <li>4. Strengthening farmer group institutions.</li> </ol> <ol style="list-style-type: none"> <li>1. Improving agricultural business management to gain trust for financing access from banks.</li> <li>2. Strengthening farmer groups/association of farmer groups to assist farmers in accessing financing.</li> <li>3. Developing institutions into producer cooperatives and marketing</li> </ol>

<b>IFAS</b>	<b>Strength</b>	<b>Weaknesses</b>
6. Pests and diseases affecting agricultural crops.	programs with funding assistance and business mentoring.	cooperatives to address price fluctuations.
7. Price fluctuations.	5. Collaborating with research institutions to address rapidly changing pests/diseases and climate change.	

**Table 7. Weighting of SWOT questionnaire results**

	<b>S = 2,61</b>	<b>W = 0,42</b>
O = 2,22	SO = 4,83	WO = 2,64
T = 0,20	ST = 2,80	WT = 0,62

**3.5.1 Internal factors**

Based on the calculations, it is known that the average value of all internal factors is 6.29. These internal factors are then divided into two parts: internal factors with average values above the threshold are grouped into strengths, while those below the threshold are categorized as weaknesses.

**3.5.2 External factors**

Based on the calculations, it is known that the average value of all external factors is 5.98. These external factors are then divided into two parts: external factors with average values above the threshold are categorized as opportunities, while those below the threshold are classified as threats.

**3.5.3 Strategy formulation**

To determine the priority and correlation between strategies based on their SWOT weighting, an interaction of internal-external strategy combinations is performed. The formulation of these strategies is based on internal factors, strengths, and weaknesses, as well as external factors, opportunities, and threats, into the following IFAS-EFAS SWOT interaction matrix:

Summary of the results from formulating the IFAS-EFAS matrices, based on the SO, ST, WO, and WT strategies. Weighting assessments were conducted to determine their priority scale. The sequence of alternative strategies based on their prioritization obtained from the SWOT matrix weighting is as follows:

The SWOT analysis results indicate that the highest priority strategy is Strength-Opportunity (SO), which involves leveraging internal strengths to exploit external opportunities. Humbang Hasundutan District has significant potential in the agricultural sector that can be utilized to improve farmer welfare and regional economic growth. This strategy encompasses efforts to increase agricultural production through land intensification and expansion, leveraging support from the Central Government, developing agricultural tourism, and adopting modern agricultural technology.

The next strategy is Weakness-Opportunity (WO), emphasizing on leveraging external opportunities to address internal weaknesses. This involves infrastructure development, improving the quality of farmer human resources, providing planning documents, and strengthening farmer group institutions. Subsequently, Strength-Threat (ST) highlights the use of internal strengths to mitigate external threats, such as increasing agro-industry, improving access to financing, and creating youth entrepreneurship programs in agriculture [9,10].

Finally, the Weakness-Threat (WT) strategy includes efforts to improve agricultural business management, strengthen farmer groups, and develop producer cooperatives and marketing cooperatives.

Overall, the priority strategies are designed to leverage internal strengths and external opportunities, while addressing internal weaknesses and external threats, with the aim of enhancing growth and prosperity in Humbang Hasundutan District.

**4. CONCLUSION AND RECOMMENDATION**

The agricultural sector is a leading economic potential in Humbang Hasundutan Regency, supported by factors such as suitable geographic location, natural resource potential, and government support. However, there are still challenges such as difficult topographic conditions, low quality of human resources/farmers, and shortcomings in production management. The proposed priority strategy is to utilize internal strengths to exploit external opportunities, by increasing agricultural production, fostering synergy between the central and local governments, and leveraging modern agricultural technology.

Prioritizing the agricultural sector to enhance Gross Regional Domestic Product (GRDP), developing the agro-processing industry sector, drafting comprehensive regional planning documents, increasing the number of agricultural extension workers, promoting data-driven development, and stimulating further research to

optimize regional development potential. Thus, Humbang Hasundutan Regency can be more effective in utilizing its economic potential and improving the welfare of the community.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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