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DETERMINATION OF CRITERIA AND ALTERNATIVES COMMODITIES FOR SUSTAINABLE AGRICULTURAL SCIENCE TECHNO PARK PLANNING USING ANALYTICAL HIERARCHY PROCESS METHOD

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ABSTRACT

Indonesia has established an Agricultural Science Techno Park (Agriculture STP) as a center for agricultural technology innovation and research. Agriculture STP aims to create an ecosystem that fosters growth, focuses on sustainable agricultural practices, and increases productivity in the agricultural sector. This paper seeks to apply the AHP's implementation steps and demonstrate the AHP application to determine the essential criteria and commodity alternatives for Agriculture STP development. The result of this study will encourage its application in sustainable agro science techno-park project management.

The Analytical Hierarchy Process (AHP) determined the criteria and commodity alternatives for Agriculture STP planning development. Data collection involved interviews, observations, and documentation, with input from academics, government officials, farmers, and the local community. The alternative commodities evaluated were food plants, horticulture, agriculture, and industrial crops, considering the geographical conditions of the case study of the Getasan Sub-district, Semarang Regency, which is situated at an elevation of approximately 1000 meters above sea level.

The results showed that the AHP analysis indicates that the critical factors for the development of an agricultural technology innovation center (Agriculture STP) are existing conditions (rank 1), institutional networking (rank 2), society needs for agriculture (rank 3), costs structure (rank 4), variety of agricultural services and attractions (rank 5), commodity diversity and uniqueness (rank 6), and technology trends (rank 7). The preferred alternative commodity for the Agriculture STP at Getasan sub-district is horticulture. Other alternatives include industrial crops, food/cereals, and biopharmaca. This research suggests that sustainable agriculture STP planning development should be given to adapt to existing conditions, collaborate with research and education/government/local farmers/other institutions, and stay updated with agricultural technology trends.

Keywords: Agriculture, Science Techno-park, Analytical Hierarchy Process, Indonesia

1. INTRODUCTION

Indonesia is a country with great agricultural potential, so it encourages agricultural innovation through agricultural development center facilities known as science techno-parks. Science Techno Parks is a concept that has emerged as an answer to the need for innovation and research centers in the agricultural sector. A science techno parks is built with the aim of

Vol. 10, No. 01; 2025

ISSN: 2456-8643

realizing an ecosystem that stimulates technological growth and development, the use of sustainable agricultural practices, and increased agricultural productivity, even creating jobs (Mursalim et al., 2024).

With reference to the International Science Park Association, a science park is defined as "an organization, staffed by professionals with specialized expertise, whose primary objective is to improve the welfare of society by promoting a culture of innovation and the competitiveness of related enterprises and knowledge-alternative institutions. To achieve this goal, science parks stimulate and manage the flow of knowledge and technology between universities, research and development institutions, enterprises and markets; facilitate the creation and growth of innovation-alternative enterprises through incubation and spin-off processes; and provide other value-added services in addition to high quality space and facilities" (Wessner, 2009). Science techno parks have been widely developed as a platform for agricultural innovation and development in various countries, and several studies have been conducted on STPs in China (Li et al., 2023; Yu et al., 2024), Russia (Valiev et al., 2017), Malaysia (Fikri et al., 2021) and Africa (Tavares, 2009). A literature review by Hobbis et al (2016) concludes that while attention to STPs has indeed increased over the last three decades, it has not exploded, and notes that the distribution of countries that are the focus of current research is skewed towards China, the UK, Spain and the US.

The availability of STPs has been an important agenda for many countries, including the Government of Indonesia, which has set priorities for the development and development of Science and Techno parks (STPs). In the 2016 Government Work Plan, the Indonesian government set out to build and develop 100 STPs across the country, which at the national level is called the National-STP (/NSTP), at the provincial level in the form of Science Park, and at the district/city level in the form of Agro-Science Techno Park) (Fathan et al., 2017).

There are many STPs in Indonesia, which are established and managed by the government, universities, or companies. Some STPs are developed and managed by universities, namely STP Sepuluh November Technology Institute (ITS) is an institution that supports technological innovation and commercialization, business creation and employment development and economic development from downstream research by lecturers and students. ITS's STP has seven focuses, including the automotive industry, maritime, creative industry, Settlement and environment, ICT and Nanotechnology incorporated in Science Techno park (STP). Many STPs have sprung up but only a few STPs focus on agriculture. Some agricultural STPs are developed by educational institutions, as explained by Sudaryanto (2016), that university participation is expected to collaborate with the government in the development of agriculture STPs. Research by Pamungkas et al (2024), that the basic concept of designing the Agro Science Techno Park area managed by Hasanuddin University, Maros Regency, which integrates aspects of education, research, industry, and agriculture-alternative tourism.

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Table 1. Types of Science Techno Parks in Indonesia

Example of STP in Indonesia	Type/ mentions	Scope	Main activities	Management
Bandung Techno Park, Solo Techno Park, and several others	Science Parks	Innovation in entrepreneur and general science, synergy between Academia, Business, Government, Community and Media	Training and education for community	Government
Science Techno Park IPB, UGM Science Techno Park, Science Techno Parks ITB, Science Techno Park UI, and several others	Science Techno Parks	Bioscience, Health and pharmaceutical sector, Agro-industry sector, New and renewable energy sector, Manufacturing, engineering, and information technology sector, Heritage, arts, culture, and sustainable management sector	Research, start-up development, intellectual property services, technical services	Universities
Bogor Agriculture STP, Agro Science Technology Park Arjasari, Diponegoro Agriculture STP, Agro Science Techno Park Jimbung, and several others	Agro Science Techno Park	Innovative, creative, and productive vehicle for economic acceleration and people's welfare	Agriculture production, marketing, tourism	Local government, universities

Source: various reference sources

Referring to Sudaryanto (2016), it is expected that the Agro science park (ASP) can serve new knowledge and technology to support the local economy, prioritising one or two priority commodities.

This paper outlines the use of the AHP (Analytical Hierarchy Process) methodology to assess STP planning. The AHP, developed by Saaty in 1986, is a decision-making technique that accommodates multiple criteria and has been widely applied to solve complex and unstructured problems in various decision-making scenarios, from simple personal choices to major capital-intensive decisions. The AHP application involves two main phases: hierarchical design and evaluation. During the hierarchical design, the problem is broken down into a structured hierarchy. Each level within the hierarchy is further subdivided into components that belong to the level beneath it. In the evaluation phase, pairwise comparisons are made among the elements at each level of the hierarchy in relation to the elements directly above them. A scale from 1 to 9 is used for these comparisons. The outcome of this process produces a relative ranking of the elements based on the criteria they were compared against. The final ranking of the bottom-level

Vol. 10, No. 01; 2025

ISSN: 2456-8643

elements (alternatives) is determined by aggregating the contributions from all hierarchical levels.

An organization's planning is in a complex context; in general, organizational development aims to achieve sustainability, which is determined by costs and benefits. In Vargas (2010), Table 1 interprets the concept of benefits and costs.

Table 2. Concept of High Benefits and Low Costs for Organization

Possible definitions for High benefits	Possible definitions for Low Costs
More profitable	Cheaper
Greater return of investment	Less resource needs
Increase in the number of customers	Easies to be executed
Increase in competitiveness	Less complex
Improvements for the society	Less internal resistance
Increase in market share	Less bureaucratic
Executive and shareholders happier	Less risks (threats)

One of the major challenges facing organisations is the ability to select appropriate and relevant alternatives so that organisational sustainability is maintained; although according the Project Management Institute's Standard for Portfolio Management (PMI, 2008), there is no perfect model that covers the right criteria to be used for any type of organization when prioritizing and selecting its projects. The research questions are (1) the most important criteria behind agriculture STP development planning in the Getasan sub-district considering the potential for achieving high benefits, low costs, and organizational sustainability, and (2) what commodities are prioritized. The rationale for employing AHP in this study is twofold: first, its ability to incorporate both tangible and intangible factors that are challenging to address in agriculture STP development planning; second, its hierarchical structure, which systematically breaks down the problem into smaller parts, helping clarify the issue and highlight the contribution of each element to the overall decision. Through this research, it is hoped that it can provide an overview for policymakers, agricultural education institutions, or the private sectors if they are going to develop an agriculture STP in climatic and socio-economic conditions**.** The result of this study will encourage of AHP application in the science techno-park project management.

2. MATERIALS AND METHODS

The data analysis technique in this study uses the Analytical Hierarchy Process, where the main principles of AHP include: (a) compiling a hierarchy; (b) determining priorities; and (c) calculating the consistency ratio (CR). Complex criteria can be broken down into groups which are then organized into a hierarchical form so that the problem will appear more structured and systematic (Saaty, 1986). Data were collected by distributing questionnaires as research instruments made by the researcher and discussed with experts. The technique for determining respondents in this study used a purposive technique, which is a technique of selecting sources alternative on certain characteristics that are considered relevant to the research, namely respondents who have enough information about commodities and the condition of the Getasan District area, for the development of Agriculture STP.

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Step 1. Development of decision hierarchy model with goal to achieve
A hierarchical scheme for determining alternative commodities alternative on certain criteria is shown in Figure 1.

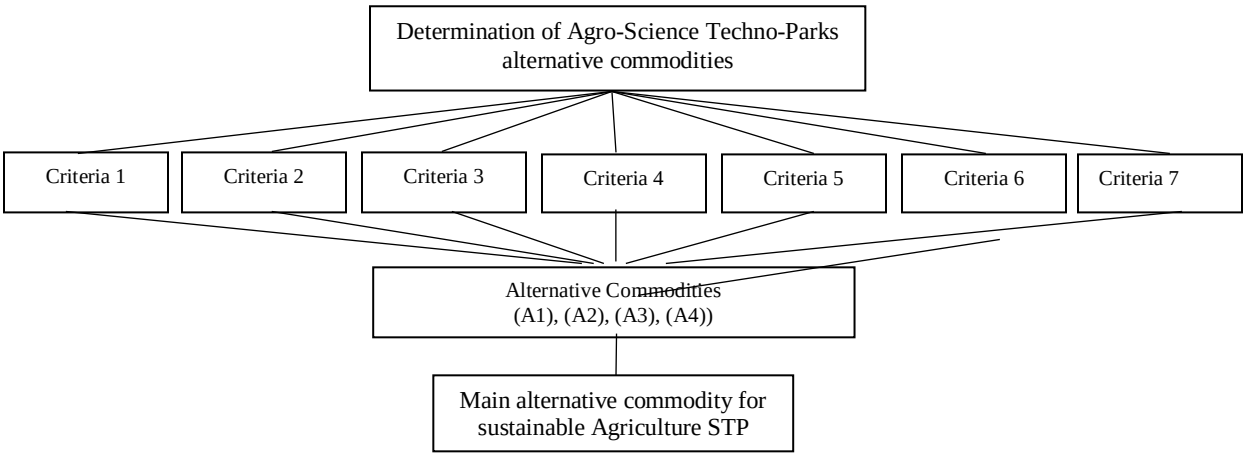

Figure 1. Hierarchical Scheme of Research

Step 2. Identifying the criteria and the importance of one criterion over another based on objectives
The criteria were compared with each other using the criteria format table, as follows:

Table 3. Criteria comparison format

	K1	K2	K3	K4	K5	K6	K7
K1	K11	K12	K13	K14	K15	K16	K17
K2	K21	K22	K23	K24	K25	K26	K27
K3	K31	K32	K33	K34	K35	K36	K37
K4	K41	K42	K43	K44	K45	K46	K47
K5	K51	K52	K53	K54	K55	K56	K57
K6	K61	K62	K63	K64	K65	K66	K67
K7	K71	K72	K73	K74	K75	K76	K77

Seven criteria/priority elements were determined by researchers and resource persons, including existing conditions (K1), society needs for agriculture, (K2), diversity and uniqueness of agricultural commodities as education objects and attractions,(K3), costs structure (K4), agricultural technology trends (K5), institutional networking (K6), variety of agricultural services and attractions (K7). In each column, the results of the assessment from the questionnaire are given alternatived on the intensity of importance scale in Table 4. According to Saaty (1986) for various problems, a scale of 1 to 9 is the best scale in qualifying opinions.

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Table 4. Importance intensity scale

Explanation	Importance intensity
Both elements are equally important	1
One element is slightly more important than the other	3
One element is more important than another	5
One element is clearly more absolutely important than the other	7
One element is absolutely more important than the other	9
Values between two judgement values	2,4,6,8

To obtain the overall priority, the consideration of comparisons needs to be synthesized by summing the values of each column in the matrix, dividing each column value by the total of the corresponding column to obtain the normalization of the matrix, and summing the values of each row and dividing them by the number of elements to obtain the average value.

Step 3. Evaluate the priority vector (weights) and consistency of the judgements

In the final stage, the level of consistency is measured. The level of consistency is important in decision making, because high consistency can be a strong consideration for determining decisions. The maximum value of the consistency ratio is below or equal to 0.1 (CR) < 0.1 or 10%) and should not exceed this value (Saaty, 1986). How to calculate the Consistency Ratio (CR) with the formula:

CR = CI / R

where: CR : Consistency Ratio; CI : Consistency Index, IR : Index Random Consistency

CI (Consistency Index) obtained from the formula:

CI = (lamda maximum – n)/n-1

where: n : total element

Step 4. Searching and analyzing alternative commodities

The alternative commodities of choice include four commodities, taking into account the climatic conditions of Getasan Sub-district.

Table 5. Determination for alternative commodities

Alternative commodities	Code
Agriculture STP alternatives on food/cereal commodities	A1
Agriculture STP alternatives on horticulture commodities	A2
Agriculture STP alternatives on medicine or biopharmacy plants	A3
Agriculture STP alternatives on industrial commodities	A4

In this study, AHP analysis data was processed using the Excel data processing application.

Vol. 10, No. 01; 2025

ISSN: 2456-8643

3. RESULTS AND DISCUSSION

Agriculture STP Planning Priority Criteria

The results of testing the consistency ratio (CR) of the priority elements in the planning of agriculture STP, taking case development in Getasan sub-district, Semarang regency, Central Java Province, Indonesia. The consistency ratio is below or equal to 0.1 (CR) < 0.1

Table 6. Testing the Consistency Ratio (CR) to the Agriculture STP Development Planning priority criteria

No	Informant	Consistency Ratio (CR)
1.	Farmer	0,0951
2.	Academics	0,0986
3.	Local government	0,0848
4.	Community (visitors)	0,0966

Source: primary data analysis (2024)

The criteria value is used as a reference to calculate the final value of this study in addition to the value of alternative aspects. The existing conditions criterion has the highest average value, followed by the quantity and quality of institutional support and networking criteria in 2nd place, community needs in 3rd place.

Determination of priority criteria using the AHP stage, obtained the following results:

Table 7. Determination of priority criteria

No.	Criteria	Value of determination of priority criteria				Average	Rank
		Farmer	Academics	Local government	Community (visitors)		
1.	Existing conditions	0.31	0.42	0.03	0.34	0.275	1
2.	Society/market needs for agriculture	0.20	0.07	0.31	0.03	0.152	5
3.	Variety and uniqueness of commodities	0.03	0.17	0.04	0.07	0.077	6
4.	Cost structure	0.14	0.14	0.16	0.15	0.147	4
5.	Trend of agricultural technology	0.03	0.05	0.09	0.12	0.072	7
6.	Institutional support and networking	0.07	0.04	0.30	0.22	0.157	2
7.	Variety of agricultural attractions	0.22	0.12	0.06	0.08	0.12	5

Source: primary data analysis (2024)

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Existing conditions criteria are prioritised in commodity development, including maintaining biodiversity, supported by various research and existing conditions concepts. The basic concept in evaluating the existing conditions of a land use is to match the quality of land with the growth requirements of certain plants, in this way the land potential or existing conditions class for that type of land use will be known (Hardjowigeno 2007). Research by Henny et al. (2011) that planning for the development of a commodity needs to pay attention to the limiting factors that exist in that area. Low crop production can be caused by low soil fertility and incompatibility of agrotechnology or soil and plant management with soil characteristics and plant needs existing conditions includes nutrient conditions, namely soil pH measures that will affect soil fertility, soil and air moisture conditions, and the rainfall. According to Wunarlan et al (2022), existing conditions is very important in order to become a reference for development activities because land conversion from one function to another must be carefully calculated. 'The concept of habitat suitability' (Hermawan, 2019; Widiyanti et al, 2018), which is certainly alternatives on the biotic and abiotic aspects of the surrounding environment (biophysical), for the growth and development of a type of creature (flora and fauna) in a conservative manner.

The government does not place existing conditions as the main factor to consider in the development of agriculture STP, because the government considers the needs of the community and the criteria for the quantity and quality of institutions and networks. The networking and institutional support related to agriculture STP development is the second criterion to consider, this is mainly conveyed by government sources and the community (visitors). Academics and farmers consider that the quantity and quality of institutional support and networking are the least important things to consider, because agriculture STP development is considered to be developed independently by the institution, provided that optimal managerial actions are taken. Meanwhile, Dewi's research (2012) states that one of the obstacles in the development of an STP is the lack of optimal synergism between the Agricultural Technology Research Centre and other research institutions (universities), and the lack of established links with incubators, as well as the number of incubators that have stagnated.

The community's need for agriculture (products and technology) will affect the selection of focused market segments. In accordance with the concept of STP, it is developed as a unit of innovation and development and commercialisation of technology for education, therefore STP needs to pay more attention to the needs of the community so that they want to visit and use STP facilities. According to Fajar et al (2023), community visits to edu-tourism locations are due to public interest in visiting natural tourism due to the need for refreshing to reduce fatigue due to activities and the effects of pollution in urban areas.

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Table 8. Determination of Main Criteria in Agriculture Science Techno Park Planning

Criteria	Rank	Explanation of criteria in Agriculture Science Techno Park Planning from key informants
Existing conditions	1	The conditions or circumstances in which the agriculture STP is built, including the suitability of the land, environment, and surrounding infrastructure, will influence the development of the potential for agricultural commodities growth, type of research/education, and all the attraction in the agriculture STP.
Institutional support and networking	2	Networking with research institutions, government, education institutions, farmers, and even the surrounding community is essential to consider and will influence agriculture STP development.
Society needs for agriculture	3	Agriculture STP should serve the innovation needs of the farming community, especially various types of superior seeds and agricultural commodity marketing innovations. Community needs will direct focused market segments, and this will direct agriculture STP marketing channels. Community needs will direct focused market segments and this will direct agriculture STP marketing channels.
Cost structure	4	Agriculture STP managers must consider the potential construction and maintenance costs and the matters involved in developing agriculture STP. Cooperation in management and partnership with tenants can be considered for cost efficiency. Potential high costs will threaten the sustainability of agriculture STP.
Variety of agricultural attractions	5	The type of agricultural services and activities offered, which agriculture STP managers need to consider, may be small, but they provide services and facilities that reach a defined market segment, such as farm production facilities, agricultural education facilities, introduction of new agricultural technology
Variety and uniqueness of commodities	6	The uniqueness of commodities is one of the strengths of agriculture STPs to attract public attention, especially if STPs provide agricultural tourism and the beauty of crop expanses that are not easily found elsewhere, also plants that are cultivated with artistic value and have economic value to cultivate
Trend of agricultural technology	7	Smart agriculture is a technology currently trending in the global and national arenas. Therefore, agriculture STP needs to strive to take a role in following the development of agricultural technology, even though it is a minor role.

Source: results of primary data analysis (2024)

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Agriculture STP Alternative Commodities

With reference to the seven criteria considered in the AHP analysis, the alternative commodities to be developed in the agriculture STP in Getasan District were determined. The alternative commodities of choice include four commodities, include food/cereal commodities, horticultural commodities, industry commodities, and medicine/pharmaceutical commodities. Table 5 shows the determination of alternative commodities in agriculture STP in Getasan District, Semarang Regency, Central Java Province.

Table 9. Consistency Ratio (CR) Testing of Alternative Commodities in Agriculture STP Development Planning

No	Criteria	Consistency Ratio (CR)			
		Farmer	Academics	Local government	Community (visitors)
1.	Existing conditions	0,0654	0,0153	0,0528	0,0738
2.	Market/society needs	0,0481	0,0959	0,0841	0,0465
3.	Variety and uniqueness of commodities	0,0925	0,0750	0,0457	0,0989
4.	Cost structure	0,0997	0,0750	0,0769	0,0272
5.	Trend of agricultural technology	0,0489	0,0761	0,0079	0,0997
6.	Institutional support and networking	0,0991	0,0001	0,0879	0,0998
7.	Variety of agricultural attractions	0,0479	0,0828	0,0941	0,0946

Source: primary data analysis (2024)

The consistency ratio in Table 9 is below or equal to 0.1 (CR) < 0.1 or 10%, so the analysis is sufficient for follow-up. Determination of alternative commodities that become alternative commodities that should be developed in agriculture STP planning using AHP, shown in Table 10.

Table 10. Determination of alternative commodities

No	Commodities alternative	Value for determination of alternative commodities priority				Average
		Farmer	Academics	Local government	Community (visitors)	
1	Agriculture STP alternatives on food/cereal commodities	0,210 (rank 3)	0,361 (rank 2)	0,140 (rank 3)	0,102 (rank 4)	0,203 (rank 3)
2	Agriculture STP alternatives on horticulture commodities	0,461 **(rank 1)**	0,399 **(rank 1)**	0,465 **(rank 1)**	0,431 **(rank 1)**	**0,439 (rank 1)**

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Table 10 continued.

No	Commodities alternative	Eigen value for determination of alternative commodities				Average
		Farmer	Academics	Local government	Community (visitors)	
3	Agriculture STP alternatives on medicine or biopharmaca commodities	0,110 (rank 4)	0,141 (rank 3)	0,093 (rank 4)	0,245 (rank 2)	0,147 (rank 4)
4	Agriculture STP alternatives on industrial commodities	0,217 (rank 2)	0,097 (rank 4)	0,300 (rank 2)	0,220 (rank 3)	0,208 (rank 2)

Source: primary data analysis (2024)

The results of the calculation of criteria and alternative data state that the horticultural commodity alternative has the highest value with an average of 0.439, followed by the industrial plant commodity alternative with an average of 0.208, the food/cereal commodity alternative is ranked 3rd with an average of 0.203 and finally the agricultural commodity alternative with an average of 0.147.

Table 11. Determination of Alternatives Commodities in Agriculture Science Techno Park Development Planning in Getasan District, Semarang Regency

Alternative Commodities	Rank	Explanation of alternative commodity from key informants
Agriculture STP alternatives on horticulture commodities	1	The focus on innovation, services, agricultural attractions, or the beauty of the agriculture STP environment adjusts the suitability of plants that can grow optimally in the location where the agriculture STP is built. Horticultural commodities, namely vegetables, ornamental plants, and fruits, are still widely open to innovation opportunities and become attractive objects of beauty.
Agriculture STP alternatives on industrial commodities	2	Industrial crops, such as raw materials for health, food, beauty, fuel, and other industries, are commodities people and agricultural companies need. Coffee is one type of industrial crop mentioned by informants in this study.
Agriculture STP alternatives on food/cereal commodities	3	Innovation and education about food crops are still a concern and needed by the wider community, especially since the government is still working towards local food self-sufficiency. Agriculture STP can consider the development of food crop innovations, and one of them is the cultivation of tropical wheat plants that can grow in low and highlands.
Agriculture STP alternatives on medicine or biopharmaca commodities	4	Agricultural commodities such as spice/medicinal plants and biopharmaca plants are commodities increasingly in demand by the public, especially as the public is increasingly practicing natural lifestyles.

Source: results of interview results analysis (2024)

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Horticultural commodities as an alternative ranking 1 that is more likely to be developed in agriculture STP. Key informant explained that certain types of vegetables, ornamental plants, and fruit plants can be the main crops developed by agriculture STP, judging from the suitability of the land, the diversity of commodities, the needs of the surrounding farming community and the support of local government programs, the continuity of attractions, or the potential for cost efficiency if developing horticultural commodities, especially types of vegetables. This result in accordance with the study of Arifin et al., (2022) that horticultural commodities in Getasan District have the potential to be developed, either vegetables or plants that are suitable for temperature conditions and the possibility of lower erosion hazards. Getasan District has fertile land with sloping and steep terrain, so the greatest potential is to develop agro-tourism that focuses on horticultural crops, especially vegetables, livestock and natural panoramas. According Anindyasari et al., (2015), to develop agro-tourism effectively, it is necessary to pay attention to several important things. First, the importance of developing a comprehensive concept, both for the potential of agro-tourism and the organisational structure of the community. With a structured concept and synergy, agro-tourism management will become easier. Furthermore, the selection of suitable plant commodities alternatived on the evaluation of existing conditions can be a superior sector that can improve the economy of farmers. Moreover, the majority of the population in the Getasan sub-District area depend on their livelihoods as farmers and breeders, which is a great potential for agricultural development in the future.

Types of industrial plants that can be developed according to climatic conditions in Getasan Sub-district include several types of coffee and tea (Azham et al., 2023). Referring to the research of Fathan at al. (2019), clove plants show class S1 (very suitable) of 1,224 Ha located in Getasan sub-District, as well as robusta coffee plants class S2 (suitable) of 2,001.920 Ha are also suitable for cultivation in Getasan sub-District. Types of food crops that can be developed according to climatic conditions in Getasan Sub-district include field rice, secondary crops, and corn (Sagrim et al., 2017). Wheat crops became one of the alternative food crops considered by the interviewees to be developed in agriculture STP in the Getasan Sub-district area, due to research support from a nearby university that has developed various wheat varieties. Alternatived on the results of the analysis, the 4th place as an alternative commodity is biopharmaceutical plants. Biopharmaceutical plants or medicinal plants are plants that produce one or more active components used for health care because they contain effective compounds. Types of biopharmaceutical plants that can be developed according to climatic conditions in Getasan Sub-district include lemongrass, *meniran*, *alang-alang* root, galangal and others (Rahmayenti et al, 2024).

Vol. 10, No. 01; 2025

ISSN: 2456-8643

Agricultural Science Techno Park project planning strategy

Based on the analysis results, agriculture STP planning strategies can be summarised through following diagram:

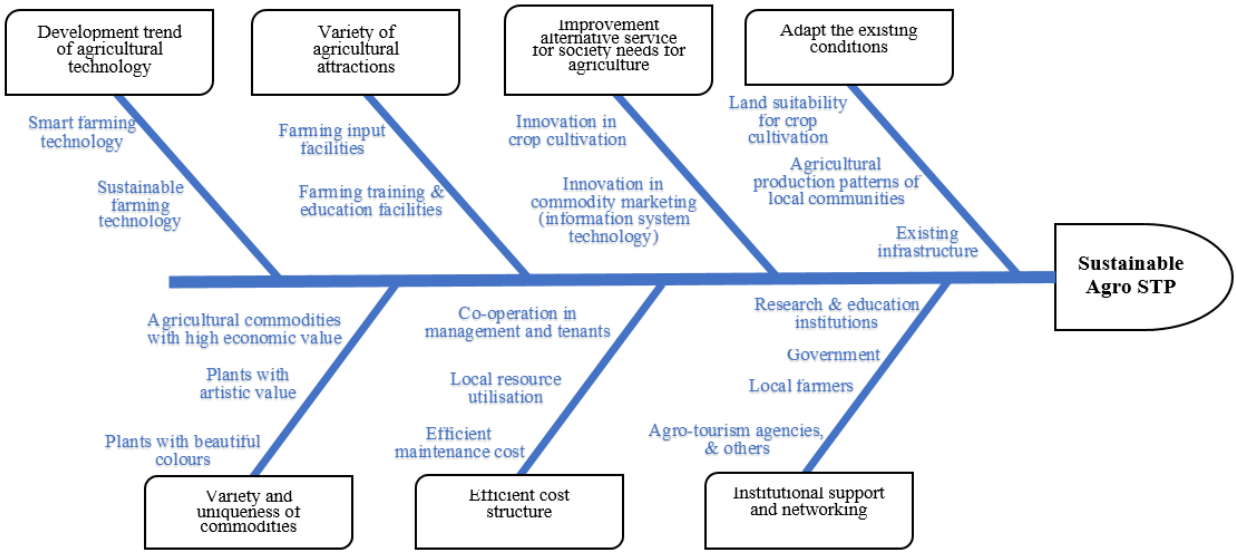

Figure 2. Important criteria for realising sustainable Agriculture STP

Research using the AHP method has several weaknesses. The weaknesses of AHP include the dependence of the AHP model on its main input. This main input is in the form of an expert's perception so that in this case it involves the subjectivity of the expert. In addition, the model becomes meaningless if the expert gives an erroneous assessment. Furthermore, the AHP method is only a mathematical method without statistical testing so that there is no limit to the confidence in the correctness of the model formed. However, the criteria for designing business development can refer to the Business Model Canvas (BMC) concept. Referring to the concept Business Model Canvas (BMC), which helps understand an organization's business model, there are important elements that need to be considered, namely by visualizing key resources, value proposition, revenue, channels, and other key components (Osterwalder and Pigneur, 2010).

4. CONCLUSION

The results of the Analytical Hierarchy Process (AHP) analysis concluded that the most important criteria considered in planning the development of agriculture STP are existing conditions; the support and networking of related institutions, society needs for agricultural services and technology to determine focused market segments, cost structures, variety of agricultural attractions, variety and uniqueness of commodities, and trend of agricultural technology. The results of the AHP analysis further concluded that the most considered alternative commodities to be developed in Getasan sub-district, Semarang regency, are horticultural commodities, followed by industrial crop commodities, food/cereal commodities, and finally agricultural commodities.

Vol. 10, No. 01; 2025

ISSN: 2456-8643

CONFLICT OF INTEREST

There are no conflicts of interest related to this research.

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Vol. 10, No. 01; 2025

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