Polarization of perception and motivation in ecotourism development based on sustainable peat ecosystem utilization

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Abstract. Tourism development in Indonesia is currently one of the alternatives in the national program as an effort to economic growth. The study's objectives are (1) analyzing the perception and motivation values of the stakeholder community; (2) developing a strategy to optimize the development of sustainable peat ecosystem ecotourism. The research result shows that the polarization of perception and motivation of the community and stakeholders expressed a positive attitude towards the ecotourism development in the values of 6-7. The value shows a positive attitude between the community and stakeholders. The motivational value of both actors illustrates an optimistic attitude in the ecotourism development with a value between 6-7. The results of the matrix calculation of internal and external factors produce X coordinates of 0.50 and Y – 0.50 on the strategy quadrant diagram. The strategy is Weakness-Opportunity which is a strategy that minimizes weaknesses and takes advantage of existing opportunities. Strategic formulation, namely: (1) building and strengthening institutional systems; (2) improving the welfare of the community by opening business opportunities; (3) developing infrastructure and tourism support facilities; and (4) targeting marketing programs. The research benefit is that it can be used as one of the basis in drawing up a plan to optimize the utilization of peat ecosystems sustainably. It also can improve local communities' attitudes of concern, awareness, and welfare.

1. Introduction
The development of tourism in Indonesia has become one of the alternatives in the national program to increase economic value. However, the rich biodiversity of the peat ecosystem in Indonesia has the potency to be developed as a tourist attraction. This is following the statement [1] that peat swamp ecosystems have multi-functions and benefits, including maintaining the balance of the environment, as a habitat for biodiversity, a buffer of local people's life as a necessity of life and as ecotourism. Ecotourism is one ecosystem that has the potency of non-timber forest products. This potency can provide economic benefits and welfare for local communities [2]. Furthermore, [3] state that ecotourism can be explored as ecological ecotourism. In that area, tourists can have their activities to witness or enjoy the beauty, uniqueness, and peculiarities of its ecological potency. [4] stated that ecotourism aims to enjoy and learn about nature, history and culture in an area whose tourism patterns help the local community's economy and support nature conservation.

The utilization of peat ecosystems in Pulang Pisau Regency, especially in Kahayan Hilir Sub District, has long been used by the community to meet their life needs, including raw materials for food,
medicine, and handicrafts, home building and cultural ritual activities. However, the potency has not been explored further to be developed as an object of ecotourism attraction. The development of peat ecosystem potency as an object of ecotourism attraction is one of the alternative tools of solutions in overcoming the aspects of community poverty, deforestation and other environmental issues [4]. Ecotourism is carried out based on conservation education. It is in addition to enjoying time during travel by balancing between human life and the environment [5]. Furthermore, according to [6], the development of tourism objects in the peat ecosystem can provide benefits for local communities and become drivers of regional economic development and the sustainability of the peat ecosystem benefits.

Ecotourism development requires a plan based on accurate and updated data. It must be based on the current situation and condition based on the harmony of the community and stakeholders’ attitudes, perceptions, and motivations. The value of perception and motivation is a fundamental parameter that needs to be known before planning activities that will involve the community and stakeholders [7]. Understanding the attitude and perception of various elements is very important to implement ecotourism development objectives because differences in perception can be an obstacle in the development of ecotourism [8]. According to [9], motivation is a potential force within a human being, which can be developed alone or developed by a number of outside forces that can positively or negatively affect their performance results. Polarization is multivariate, showing the relationship between a number of questions in developing an object based on the respondent's assessment. Furthermore, the polarization of perceptions and motivations results are analyzed using a SWOT matrix because the polarization of the two stakeholders is an inseparable part of developing ecotourism development strategies.

Based on the above statement, this research is critical to be undertaken. The objectives of this study are: (1) analyzing the value of perception and motivation of the community and stakeholders; (2) developing strategies to optimize ecotourism development based on the utilization of a sustainable peat ecosystem. The benefits of this research are that these can be used as one of the basis in drawing up a plan to optimize the utilization of sustainable peat ecosystem and improve the attitude of concern, awareness, and welfare of local communities.

2. Materials and Methodology

2.1. Research location and time
The research was conducted in Kahayan Hilir Subdistrict (Village, Gohong, Kalawa, and Buntoi), Pulang Pisau Regency, Central Kalimantan Province (Figure 1). The research was conducted for three months, from September - November 2020.

![Figure 1. Map of the research location in Kahayan Hilir District, Pulang Pisau Regency, Central Kalimantan Province, Indonesia.](image-url)

2.2. Materials and tools
The main materials used in this study include questionnaires and work maps. The main tools used are recording devices, office stationery, laptop and camera.
2.3. Methodology
The research method used is descriptive with a quantitative approach. Descriptive research is research that describes the actual state of the object under study [10]. The quantitative method is a research procedure that produces data in the form of the value of the questionnaire, which is analyzed based on the Likert scale and SWOT [11].

2.3.1. Data sources and data collection techniques. The collected data sources are secondary and primary data. Secondary data were obtained from literature, documents relevant to research, the social culture of the community, and related agencies in the development of ecotourism. The primary data are data obtained in the field, including: (1) field observations, i.e., direct observations to the research object to obtain a clear picture of the study object. The objects of field observation include the bio-geophysical condition of the peat ecosystem and the community's economic, social, and cultural conditions. (2) Questionnaire, which contains questions that have been systematically designed. This questioner aims to determine the perception and motivation of the community and stakeholders related to the development of peat ecosystem ecotourism in Kahayan Hilir Sub-district, Pulang Pisau Regency, Central Kalimantan Province, Indonesia. The questionnaire contains seven indicators of perception and ten indicators of motivation (Table 1).

| No. | Motivation Indicators                          | Perception Indicators                                                                 |
|-----|-----------------------------------------------|----------------------------------------------------------------------------------------|
| 1.  | Job opportunities                             | Appreciation of the concept of sustainable tourism,                                   |
| 2.  | Reduce unemployment                           | Supporting the improvement of the people's economy,                                   |
| 3.  | Increase regional income in the work          | Prioritizing environmental sustainability                                             |
| 4.  | Improve community skills in the work          | Supporting socio-cultural communities                                                 |
| 5.  | Increase knowledge about tourism              | Offering unique and satisfying travel experiences                                      |
| 6.  | Identity of competitive tourist villages      | Supporting peat forest conservation                                                 |
| 7.  | Improving transportation modes                | Support cultural sustainability education                                              |
| 8.  | Increasing the development of regional        |                                                                                        |
|     | infrastructure and facilities                 |                                                                                        |
| 9.  | Increasing people's income and purchasing     |                                                                                        |
|     | power                                         |                                                                                        |
| 10. | Increasing the commercialization value of     |                                                                                        |
|     | village culture                               |                                                                                        |

2.3.2. Determination of the number of respondents. Determination of the number of respondents in exploring perception and motivation is by selecting respondents' strata for data sources. It is based on the spread of the population in order to obtain a representative sample. In this study, the number of respondents was selected by purposive sampling. [12] States the sample size should not be less than 5% of the total population. In this study, the total number of respondents are 102 respondents consists of two groups, namely the community group consisting of (1) fishermen: 35 respondents; (2) farmers: 25 respondents; (3) boat owners: 15 respondents; (4) rattan craftsmen: 10 respondents; (5) swallow entrepreuners: 5 respondents; (6) tour group: 5 respondents. The stakeholder groups were seven respondents consisting of the Culture and Tourism Office of Central Kalimantan Province; Central Kalimantan Provincial Forestry Service; Pulang Pisau Regency Culture and Tourism Office; the Pulang Pisau Regency Environment Agency; Pulang Pisau District Forestry Service Office; Regional Development Planning Agency of Pulang Pisau Regency and Kahayan Hilir District, and Pulang Pisau Regency. The percentage of respondents can be seen in Figure 2.
Figure 2. Percentage of respondents by profession.

2.4. Data analysis
Data analysis perception and motivation value are based on modifications of the Likert Scale with a scale range of 1 - 7, with a range of attitude value (1=strongly disagree; 2=disagree; 3=doubt; 4=mediocre; 5=somewhat agree; 6=agree and 7=strongly agree). It is based on the situation that occurs by interpreting a very detailed value [13]. Based on the questionnaire instrument, the data obtained is analyzed using the one score one criteria scoring system method, an analysis model used to develop a series of questionnaires in data collection and evaluate various indicators set [14].

The formulation of ecotourism development planning strategy is carried by identifying internal and external factors to obtain the strategy that is in accordance with the purpose of research using SWOT strategy [15]. Identification of internal and external factors in the planning process of activities is vital in determining the influence on the objectives of activities and institutions [16]. Internal and external factors were obtained from interviews with stakeholders and the community based on strengths, weaknesses, opportunities, and threats in developing ecotourism in peat ecosystems based on weighting, rating, and score. The final result of the SWOT analysis can be used as the basis for determining the most appropriate strategy in ecotourism development.

3. Results and Discussion

3.1. Characteristics of research
Kahayan Hilir subdistrict has an area of 360 km², with ten villages namely Buntoi village, Mintin, Mantaren I, Mantaren II, Pulang Pisau, Anjir Pulang Pisau. Gohong, Kalawa, Hanjak Maju and Bereng. Buntoi village is the largest village which is 25% of the area of the sub-district [17].

Gohong, Kalawa and Buntoi villages are research sites (Figure 2). They have the same characteristics of society in terms of work, culture and local wisdom. The selection of research sites is based on the criteria of potential development of tourist destinations based on (1) the potential resources of peat ecosystems and community cultures that have the potential to be developed as an object of ecotourism attraction; (2) have accessibility that is easy to reach and (3) the community has a desire for ecotourism development.

3.2. The potency of the peat ecosystem as an object of ecotourism attraction
The biogeophysical potential of peat forest in Kahayan Hilir sub-district, Pulang Pisau Regency, Central Kalimantan Province, Indonesia, has many potencies to be developed as an object of ecotourism attraction. These potencies include flora diversity such as Mezzettia umbellata Becc, Syzygium
garciniifolium, Horsfieldia crassifolia, Syzygium zeylanicum, Gonystylus bancanus, Shorea balangeran Burck and Knema intermedia (Bl.) Warb. This type of flora is typical of peat ecosystem plants. The community also benefits those plants as food ingredients, medicine, furniture, handicrafts and others. This type of tree is found in the village forest and community gardens such as rubber, sengon, galam, rambutan and mango.

The diversity of fauna species consist of mammals, i.e., Pongo pygmaeus, Presbytis rubiund, Holobates muellerie, Macaca fascicularis, Sus vitatus and Nazalis larvatus. The biodiversity of bird are as follow: Egretta sacra, Pycnonotus goaiyer, Orthotomus astroglaris, Todiramphus cloris, Ictinaeus malayanus, Streptopelia chinensis, Treron fulvicollis, Pycnonotus melanotictus, Colocalia esculenta and Lampyridae. While for the reptiles, those are Varanus salvator, Phyton raticulatus and Crocodilus porosus. The diversity of fauna of mammals, bird, and reptile classes is the potential object of peat ecosystem ecotourism.

The diversity of flora dan fauna species in the peat ecosystem in the Kahayan Hilir sub-district is no different from the research results [18] in Sebangau National Park. Central Kalimantan has the potency as a special interest tourism attraction, including endemic fauna recorded only in peat ecosystems such as Tomistoma schlegelii, Ciconia stormy, and various types of birds, Nazalis larvatus and Macaca fascicularis. Pongo pygmaeus are endemic to Indonesia. They are also found in peat ecosystems with the highest density reaching approximately around 2.5 individual km². The type of fish that inhabit peat ecosystems are well known to have high levels of endemism. The aquatic habitats associated with peat swamp forests have distinctive characteristics such as high acidity, high dissolved organic matter content, and low nutrient contents. The biodiversity of fish species in the peat ecosystems includes Osteochilus spilurus, Sphaerichthys acrostoma, Desmopuntius foerschi, Mytstus olyroides and Rasbora cephalotaenia, Rasbora kalochroma, Betta anabatoides, Encheloclaris tapeinopterus, Chana gachua and Belontia hasselti [19].

Based on the identification of peat ecosystem potency of Kahayan Hilir Sub-district, Pulang Pisau Regency, several ecotourism themes can be developed as written in Table 2 and Figure 3.

Table 2. Potential peat ecosystem as an object of ecotourism attraction in Kahayan Hilir Subdistrict, Pulang Pisau Regency, Central Kalimantan Province.

| Object                  | Ecotourism Theme                                                                 |
|-------------------------|---------------------------------------------------------------------------------|
| Peat Ecosystem          | 1. Tracking peat along a blackwater river                                        |
|                         | 2. Fauna watching: mammal, bird, reptile and fireflies                           |
|                         | 3. Knowledge of types of peat vegetation as medicinal plants and food.           |
|                         | 4. Fishing typical of peat ecosystems                                            |
|                         | 5. Agrotourism in village forests                                               |
| Kahayan River           | Kahayan river event, the culture of Kahayan Hilir community event and ecology   |
|                         | knowledge of swallows                                                           |
| Community Culture       | Community culture: Dances, religious rituals, rattan handicrafts, special foods  |
|                         | and herbal medicinal products derived from peat ecosystems                        |
3.3. Community perception and stakeholders on peat ecosystem ecotourism development

Based on the analysis results, the interval of the value of public perception and stakeholders, there is no real difference between those two actors in expressing a positive attitude toward perception in the development of ecotourism with a range of values 6 - 7. This value shows an attitude that has the same will from the community and stakeholders. The same sense of desire is crucial in developing planning for ecotourism activities, which will lead to a sense of someone's involvement in ecotourism management and have a positive effect [20].

| Indicator                                      | Stakeholders | Community |
|------------------------------------------------|--------------|-----------|
| Appreciation for the concept of sustainable tourism | 👏           | 🙋       |
| Supporting peat forest conservation            | 👏           | 🙋       |
| Supporting cultural sustainability education    | 👏           | 🙋       |
| Prioritizing environmental sustainability      | 👏           | 🙋       |
| Supporting the improvement of the peoples economy | 👏         | 🙋       |
| Offers a unique and satisfying travel experience | 👏           | 🙋       |
| Supporting the sociological culture community  | 👏           | 🙋       |
Figure 4. (a) Community and stakeholder perception of ecotourism development based on sustainable peat ecosystem utilization; (b) Polarization of perception.

The statement reflects that ecotourism development in peat ecosystems received very high support based on seven questions asked, namely: Supporting the sociology culture community; Offers a unique and satisfying travel experience; Supporting the improvement of the peoples economy; Prioritizing environmental sustainability; Supporting cultural sustainability education; Supporting peat forest conservation and Appreciation for the concept of sustainable tourism. From the attitude of perception, there is an understanding and awareness of the two actors. The economic and ecological benefits in the utilization of peat ecosystems include: (1) realizing that ecotourism development is able to increase people's income, employment and respect for local socio-culture; (2) with the development of ecotourism, it obtains the satisfaction of traveling from the uniqueness of various potential peat ecosystems as tourist destinations; (3) ecotourism prioritizes environmental sustainability and education. This is following the presented by [21] that the development of ecotourism can improve the quality and function of various aspects of nature and culture and landscaping and can prevent massive land conversion. Through ecotourism, at least ecotourism plays a role in conserving natural resources and maintaining the authenticity of habitats at the same time.

3.4. Community motivation and stakeholders toward peat ecosystem ecotourism development

The motivation of the community and stakeholders describe an optimistic and earnest attitude in the ecotourism development, with a value between 6 and 7 (Figure 5 and 6). This shows strongly agree and agree based on ten questions that ecotourism development is able to provide job opportunities; reduced unemployment rate; Increase peoples income and purchasing power; Increase regional income; Improved community skills in working; Increase the commercialization value of village culture; Identity the tourism villages that have competitiveness; Improving modes of transportation; Improving the development of regional infrastructure and facilities. This is related to the attitude of both actors, both the community and the government. Furthermore, it realizes that the various potency of Kahayan Hilir Sub District, Pulang Pisau Regency of Central Kalimantan Province, in general, are considered very potential to be developed as a tourist destination.
Motivation is a trigger for human efforts to meet their needs [22]. Motivation is a desire in achieving needs include five classifications of human needs sorted consisting of (a) Physiological, among others the need for clothing, food, board and other physical needs; (b) Security, among others, the need for safety and protection against physical and emotional harm; (c) Social, among others compassion, mutual belonging, acceptance-good, friendship; (d) Awards, among others include factors of self-respect such as self-esteem, autonomy, and achievement; and external self-respect factors such as status, recognition and attention; (e) Self-actualization is the urge to become a person or according to his ambitions that include growth, potential achievement, and fulfillment of self-needs [23].

3.5. Strategy for optimizing ecotourism development based on sustainable peat ecosystem utilization
Ecotourism development planning based on the bio-geophysical potential of peat ecosystems, perception and motivation values, regional tourism development planning documents, socio-economic conditions of the community is important factors as the basis for formulating ecotourism development planning strategies. These factors are internal factors that influence the formation of strengths and weaknesses, where these factors describe conditions that occur in real and actual. Furthermore, identifying external factors based on conditions that can affect the formation of opportunities and threats
is needed. External factors are generally related to conditions, including the macro environment, changes in politics, economy, technology, and population growth. These factors are related to conditions that occur outside. The stages of formulating an ecotourism development strategy are sensitive to be identified because the tourism industry provides positive value in service trade and has a powerful influence on a country's economy [24].

Furthermore, identifying internal and external factors in formulating a planning strategy for ecotourism development in peat ecosystems in Kahayan Hilir District, Pulang Pisau Regency, Central Kalimantan Province can be seen in Table 3.

**Table 3.** Internal and external factors in ecotourism development in peat ecosystems in Kahayan Hilir Subdistrict, Pulang Pisau Regency, Central Kalimantan.

| INTERNAL FACTORS | WEAKNESS |
|------------------|----------|
| Peat ecotourism attraction | Not yet maximum budgeting for the development of facilities and infrastructure ecotourism area |
| Diversity of culinary types typical of the community | The population works as a large number of fishermen, farmers and laborers with low levels of welfare |
| Local culture and wisdom | Planning of ecotourism development from the local government to develop the culinary potential, culture and rattan handicrafts have not been optimal implementation |
| The existence of a group of rattan craftsmen | Lack of direct coordination to the community in realizing Kahayan Hilir as an ecotourism destination |
| Have alternative attractions | The condition of the road to the attraction to be developed is still much damaged |
| There is a stretch of Kahayan River as a tourist attraction of local residents | The facilities and infrastructure of tourist tourists are still not available such as, the design of each village pier, trash cans, MCK road signs and others |
| The existence of village forests that have the potential as agrotourism and education | Human resources in village tour managers who do not yet have skills as tour guides |
| Strong support from local and central governments in ecotourism development | Access to information and promotion has not been optimal in an effort to build the interest of tourist visitors |

| EXTERNAL FACTORS | THREAT |
|------------------|--------|
| The establishment of ecotourism destination in Kahayan Hilir | Damage to peat ecosystems |
| Become a priority program in regional tourism development | The existence of natural disasters, fires and floods |
| Visitors' interest in the annual cultural festival | Villages incorporated in Kahayan Hilir Sub-district have almost the same tourism potential as they can impact the undeveloped competitiveness of tourist attractions. |

| EXTERNAL FACTORS | THREAT |
|------------------|--------|
| Increase employment and business | |
| Increase people's income | |
| Tourism development has become one of the work programs in the village | |
Based on Table 2, the most important factors are determined based on weights, ratings, and scores in calculating the internal and external factors matrix. The results of the calculation matrix of these two factors resulted in the X coordinates of 0.50 and Y – 0.50 in the strategy quadrant diagram (Figure 6).

**Figure 7. Diagram of ecotourism development strategy in peat ecosystem.**

Based on figure 6, the formulation of an optimization strategy for ecotourism development based on the utilization of sustainable peat ecosystems in Kahayan Hilir Subdistrict is a formulation strategy (W-O) to minimize weaknesses and utilizes existing opportunities, with several parameters of strategy formulation, namely: (1) establishing and strengthening institutional system; (2) improving community welfare by opening business opportunities; (3) developing infrastructure and tourism support facilities; and (4) targeting marketing programs. Based on SWOT analysis with strategy (W-O) of the priority programs, some items must be done, i.e.:

1. Establishing a system of cooperation between the government and the village community in the form of ecotourism management to create a mechanism of coordination in a higher hierarchy, especially with the Tourism Office and regional development agency;
2. Creating diversification of products that have attractiveness and high economic value so that it becomes a superior product that is characteristic of the village to attract tourists;
3. Providing skills training to the community about ecotourism, making handicraft products, food and souvenirs to create jobs and increase people's economic income;
4. Developing and improving infrastructures such as roads and other public facilities can be useful for shared public use for the community and tourists;
5. Formulating a mutually agreed regulatory product to realize the goals of ecotourism development that are fulfilling tourists demand;
6. Promoting ecotourism destinations with a trend technology theme in them.
4. Conclusion
The bio-geophysical potential of peat forests in Kahayan Hilir Sub-District, Pulang Pisau Regency, Central Kalimantan Province, has many potentials to develop as an object of ecotourism attraction. The potential is in the form of biodiversity of peat ecosystems and local wisdom regarding peat resources and local community culture. However, polarization perception and motivation are a part that cannot be separated to create action plans and strategies for the development of ecotourism. By mapping the perceptions and motivations of each stakeholder, it is possible to describe the desires and hopes to support the program to be developed.

The perception of the community and stakeholders in ecotourism development expresses a positive demeanor towards ecotourism development in the range of 6-7 values, and the value shows a common will demeanor from the community and stakeholders. Similarly, these actors portray upbeat motivation and are very serious in developing ecotourism with a value of between 6 and 7 by ten questions. The results of the matrix calculation of internal and external factors produce X coordinates of 0.50 and Y = 0.50 on the strategy quadrant diagram. Therefore, the most appropriate strategy is the WO strategy, which is a strategy that minimizes weaknesses and takes advantage of existing opportunities, with several strategic formulation parameters, namely: (1) establishing and strengthening institutional systems; (2) improve the welfare of the community by opening up business opportunities; (3) development of tourism supporting infrastructure and facilities; and (4) targeting marketing programs.

The preparation of five priority programs that must be carried out include (a) establishing a system of cooperation between the government and the village community in the form of ecotourism management to create coordination in a higher hierarchy, especially with the Tourism Office and regional development agency, (b) creating diversification of products that have attractiveness and high economic value so that it becomes a superior product that is characteristic of the village to attract tourists, (c) provide skills training to the community about ecotourism, making handicraft products, food and souvenirs to create jobs and increase people's economic income, (d) developing and improving infrastructure such as roads and other public facilities so that it can be useful for shared public use for the community and tourists, (e) regulatory formulate products agreed upon by local and central governments to realize Ecotourism Development Goals that meet tourist demands and (f) promoting ecotourism destinations with the latest technology.

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