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Factors Determining The Elements of Communal Land for Orang Asli Communities: The Fuzzy Delphi Method

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Abstract

Land ownership for Orang Asli is established under the Aboriginal Peoples Act of 1954 (Act 134). However, this provision does not protect the Orang Asli's position in terms of land ownership. This has led to claim after claim for land as a result of the competitiveness and conflict that arise in development. The objectives of this research were to analyze the elements of communal land from an expert's perspective using the Fuzzy Delphi method. The Fuzzy Delphi method was used in this quantitative study and a total of 11 experts in the field of land administration related to the development of Orang Asli have been interviewed to get their perspectives on the issue of this research. A questionnaire designed for this study's data collection was based on the results of previous research. The data was analyzed using Microsoft Excel software and the defuzzification process was used to quantify the significance of communal land components in order to determine the defuzzification score value and address the research objectives. According to the findings of the expert consensus based on the importance of defuzzification, the element of Orang Asli identity is the major element with a defuzzification score value of 0.851. This is because land is viewed as a valuable resource that significantly contributes to self-esteem, economy, biodiversity, purity, and spirituality. There is, however, a lack of agreement among experts about the social element, which has a defuzzification score of 0.798 since development on the land owned by this community could dismantle family and solidarity ties among Orang Asli. The implication is that this aspect of communal land should be highlighted in the development of better and clear land ownership for the Orang Asli community. Following that, the research's findings can assist JAKOA in enacting policies related to Orang Asli customary land in order to protect their land ownership.

Keywords: Communal Land, Orang Asli, Ownership, Defuzzification, Fuzzy Delphi Method

Introduction

The issue of natural people's land ownership is likely to be problematic since these Orang Asli communities have been fighting for their land for so long, despite the fact that the government has passed laws to address the issue. The following resolutions and changes in

Orang Asli's land ownership were presented to the Orang Asli's convention. In addressing the issue of land ownership, the 11th Malaysian Plan highlighted well-being outside of cities, including Orang Asli development. This development plan has a lot to do with the Orang Asli's land problem, particularly issues concerning ownership and border land.

The designation of Orang Asli settlement areas is a topic that is highlighted in the JAKOA Strategic Plan 2019, yet this initiative still raises questions regarding how their land ownership can be safeguarded. This is due to the fact that as the nation's development program picks up speed, Orang Asli in this nation face the threat of losing their homes or their land (Malaysia Kini, 2020; Malaysia Kini, 2020). For example, in the district of Kuala Langat, Selangor, the issue of renewal for development purposes has resulted in the loss of approximately 90% of Orang Asli's land by 2020 (Malaysia Kini, 2020). This situation has caused concern among landowners, resulting in ongoing land claims as a result of conflict or dispute. Orang Asli communities are protected in terms of land ownership under the provisions of the Aboriginal Act 1954 (Act 134). However, this provision is not seen as adequately protecting the position of Orang Asli, particularly in the context of land ownership. Furthermore, there is no provision that addresses aspects of communal land ownership that are suitable for Orang Asli communities. This aspect of communal land is not seen as an important factor in ensuring the existence of land ownership in the context of the provisions of the Aboriginal Peoples Act, which ultimately leads to the emergence of various problems that cannot be solved.

Problem Statement

The issue of Orang Asli's land is not only present in this country, but also in foreign countries that encourage communities to obtain land ownership. Communal land was introduced as one of these recognized measures in dealing with land. In the context of this study, communal land emphasizes the aspect of legal provisions that allow Orang Asli communities to become legitimate landowners (Ekers et al., 2020; Rozideteno et al., 2020; Mudombi-Rusinamhodzi & Thiel, 2020). Scholars in African countries have revealed that indigenous peoples' rights as land keepers are not fully recognized, necessitating the need for a clearly defined legal process to address the issue of ownership (Kurebwa, 2022; Ntombini, 2022). The communal land is valued not only for its ability to provide a livelihood for Orang Asli, but also for its ecological and cultural balance (Karigawa, 2018). As a result, communal land has been widely used in foreign countries where Orang Asli communities manage land ownership collectively.

The communal land is viewed as a resource that can protect Orang Asli's relationships with land, particularly from a social, spiritual, and spiritual standpoint (Cameron & Plata, 2023; Altamirano-Jiménez, 2023; Ruckstuhl et al., 2023). The majority of this predicament has to do with social, ethical, and legal aspects of regulation that are essential to maintaining Orang Asli's position in relation to land ownership. This collaborative relationship is required for communities and landowners to fight for the rights of their lands in the case of a conflict or dispute (Ruckstuhl et al., 2023; Brent, 2023). It is definite that communal land ownership has been implemented in several nations to support Orang Asli communities in living sustainably, not only for economic resources and livelihood, but also for relationships or solidarity and the preservation of Orang Asli areas (De Ann & Pendry, 2023).

Since Orang Asli have conflicts and issues with the law and the security of land ownership, JAKOA must conduct research on the element of communal land to address the issue. To

address this issue, the needs of communal land in the country and abroad are examined in the context of recognizing land ownership by people of origin. The Fuzzy Delphi method that is being applied seeks to make each component fascinating as a consequence. It is emphasized how crucial it is to address concerns of land ownership and ensure the safety of the Orang Asli in order to achieve land recognition. Throughout this time, the Aboriginal Peoples Act 1954 (Act 134)—which in general did not emphasize Orang Asli's ownership rights clearly—was used to view Orang Asli's land ownership. This is due to the fact that Orang Asli could not have been the root cause of the demand for land recognition in the setting of this study. Thus, this study can be carried out to gather consensus from experts utilizing the Fuzzy Delphi method. Next, present the JAKOA ideas and points of view for developing land policies.

The Significant of the Study

In Peninsular Malaysia, especially in conjunction with the provisions of the Aboriginal Peoples Act, this element of communal land is not recognized as a determining factor in ensuring the existence of Orang Asli land ownership. Nevertheless, in light of the current situation, in which the government is beginning to recognize the Orang Asli's demand for communal land ownership since it comprises their protection and well-being in the context of maintaining the security of land ownership. As a consequence of the researcher's observation and reading, there is a gap that may be addressed by the researcher by evaluating the needs of the communal land element of orang Asli using expert consensus.

Research Objectives

The study aims to achieve the following specific research objectives

1. To analyze the elements of communal land from an expert's perspective using the Fuzzy Delphi technique
2. To analyze the expert's viewpoints on the elements of communal land in depth to ensure the existence of Orang Asli land

The Elements of Communal Land for Orang Asli

The issue of Orang Asli land ownership has given rise to a great deal of competition and conflict. In dealing with land ownership conflicts or disputes, compliance with the law and land security should be prioritized. In Malaysia, land ownership research focuses on Orang Asli legal provisions and resource rights. Orang Asli was frequently faced with land loss as a result of the increasingly rapid development agenda, which has jeopardized landowners' safety.

The demands of communal land are highlighted in order to safeguard the Orang Asli community's economic pursuits as well as to maintain the security of land ownership (Claeys et al., 2022). Access to land is emphasized in the context of African countries to ensure the country's economic resources (Kurebwa, 2022). This situation has demonstrated that land is considered valuable and must be protected in a sustainable manner from an economic, ecological, and social viewpoint (Tarusarira, 2022). In this regard, one of the efforts implemented in the land administration of people of origin to address all issues or conflicts that arise in the country or abroad is the decision-making process among stakeholders.

The United States state's collective hold on indigenous communities and institutions in terms of political representation is better understood in the context of communal land (Carter, 2021). The importance of communal land for Indigenous people has been found to be crucial

for gaining access to land, nonetheless. As a result, communal land ownership is acknowledged as one of the approaches frequently offered by the government to the indigenous population in order to maintain the relationship between the parties concerned.

The issue of recognition and adherence to regulations affects the ownership of communal land by Indigenous people in the Philippines (McMurry, 2022). The communally discovered assets can assist the government in developing policies to recognize indigenous people's land rights. However, advanced studies on this land issue must consider indigenous people's attitudes towards land ownership conflict. The circumstance can further support the right to self-determination and the institutional and cultural status of indigenous groups.

Furthermore, Cambodia's communal land implementation emphasizes legal provisions in dealing with the issue of Indigenous peoples' access to land (Hak, McAndrew & A. Neef, 2018). This is due to the fact that the land they occupied was frequently looted by private companies, governments, and foreign sectors. The situation has prompted people to demand compensation for indigenous land.

According to Antonio & Griffith-Charles (2019), communal land is utilized in Papua New Guinea to improve the economic and social population of Indigenous peoples. The communal land is viewed as the group of Indigenous peoples' joint property, with the ability to use the land independently. This explains why land ownership issues are so important in increasing productivity and good land preservation of natural resources.

Meanwhile, study in the Peruvian Amazon focuses on indigenous peoples' livelihoods in resource management following the grant of communal land ownership rights in the 1980s to 2016 (Tubbeh & Zimmerer, 2019). Revenue derived from in-depth surveys and interviews conducted with stakeholders such as Indigenous people, tribal leaders, government agencies, lawyers, and non-governmental organizations. Environmental conservation projects and resource extraction have resulted in disputes over communal land of people of origin and their surroundings. As a consequence, communal land ownership has failed to protect Indigenous peoples' autonomy, access, and control over land. This is because the property is more likely to meet the territory's interests. As just a result, this discovery is being carried out in order to obtain opinions and perspectives from the Orang Asli community (Bhandar, 2011; Brook, 2016). Further research on authorities and governments on a larger scale is also expected to be conducted to investigate aspects of communal land and the role of Orang Asli in land management that are not covered in this study (Tubbeh & Zimmerer, 2019).

Furthermore, the issue of land recognition is being discussed in Indonesia in support of the conservation of natural resources for Orang Asli (Muur, 2020). Perspectives on communal land among Non-governmental organizations and other stakeholders can address land conflict issues while also protecting natural resources for the well-being of Orang Asli Suastika (2021) supports this by emphasizing the importance of being attentive to the Orang Asli's land issues throughout the nation, particularly in terms of sociology and land management based on customary law.

According to ethnic perspectives, Orang Asli have made significant contributions to the land. The framework for decision-makers is built on long-term cultural, knowledge, and

environmental elements that are critical to achieving land recognition (Normyle et al., 2022). This is because Orang Asli communities have for centuries formed a unique bond with the land and the living environment to create the practice of using biological diversity (Kurebwa, 2018; Omotayo, 2015). Orang Asli who are considered "land keepers" should fight for not only recognition and protection of land, but also knowledge and the right to share common benefits (Iloka, 2016).

Certainly, ownership of land, territories, and natural resources eventually form a unity and are inextricably linked (Yap, 2022). For Orang Asli, the meaning of land is more than just interaction and interconnection in all aspects of life. However, the perspective of legal provisions must also be considered (Yap, 2022). Thus, communal land is defined as land owned by the entire community with individual interests overseen by the chief or Orang Asli's leader (Anene & Uche, 2022). The extent to which existing land is placed is a result of land management and administration (Gheru & Okumo, 2016).

Furthermore, initiatives aimed at encouraging sustainable and collective environmental and resource management among Orang Asli are being prioritized through legislation (Veronesi et al., 2022). This is due to the fact that maintaining Orang Asli land areas is essential to preserving control and protection in land ownership (Robinson et al., 2017; Masuda et al., 2022). Academic research revealed a lot about land as a resource that is highly respected and valued (Todorovski et al., 2020). Orang Asli protects land and fights for ownership rights in the context of preserving cultural diversity and biodiversity (Peter et al., 2022). As a result, in the presence of human rights, people have the right to live freely, safely, and securely (Radziunas, 2022).

The right to self-determination is considered important in this context and must be protected through laws and land policies to ensure Indigenous people's settlement, particularly in land ownership (Johnstone & Wilson, 2023). In Africa, for example, historical, geographical, and cultural elements should be highlighted in order for Indigenous people to determine how indigenous institutions and land ownership are jointly and on the basis of consent by ethnic chiefs or community members (Lewis, 2023). Definitely, land ownership particularly in communal terms, is essential in resolving confrontation or land disputes (Lewis, 2023; Gonda et al., 2023). This situation is largely related to governance and land management practices designed to protect land ownership and natural resource interests while also ensuring indigenous communities' survival (Gonda et al., 2023; Teck et al., 2023).

In this regard, aspects of governance and legislation are seen as crucial in indigenous land ownership that utilizes communal land to ensure the survival of land (Puente, 2023). A study conducted in Latin America explains the legal aspects that are prioritized in the effort to protect the socioeconomic status of Indigenous people, particularly in recognized land ownership (Puente, 2023). Thus, communal land is a resource that is used collaboratively to facilitate communities in identifying the boundaries of Orang Asli territories and gaining access to land. Meanwhile, communal land in South Africa is tilting more towards the governorate in terms of Indigenous peoples' control and ownership of land (Claassens, 2018; Leynseele et al., 2023).

Bryan & Cruz (2023) support this by stating that communal land, such as in the Spanish state, is important in gaining hold and collective control over indigenous land ownership. Land is regarded as a valuable resource that ensures Orang Asli communities' well-being and daily survival, particularly as a source of traditions as well as a point of self-determination, and sustainable land conservation. This situation clearly demonstrates that land is recognized and protected by laws, which are important in dealing with conflict or competition caused by rapid development (Bryan & Cruz, 2023).

The Delphi Fuzzy method can be used to obtain expert consensus in this regard (Ramlan & Ghazali, 2018). Following techniques based on the function of equations to measure the level of agreement and consensus among these experts will result in factors of assessment of something that can be carried out more objectively and systematically through statistical analysis (Glumac, Hans, Meets, & Schaffer, 2011). Thus, the valuation of expert consensus calculated and obtained in this study indicates the importance of each item reaching a consensual level emphasizing the opinion of each of those experts.

Methods

The following issues will be discussed here: subjects of the study, sampling procedure, analysis, measurement and data collection instrument.

Participants

The study is a quantitative study that employs the Fuzzy Delphi method, in which 11 experts in the field of land administration related to Orang Asli development were interviewed to provide insights into the study's issue. This method is used to obtain the consensus of a group of experts in solving a problem (Ridhuan et al., 2017). The researchers created a seven-point survey to answer the study's question. The experts in this survey worked to determine the elements of communal land that are considered necessary for Orang Asli to own land. This survey question is based on literature highlights that have a high level of reliability. This survey question is adapted from literature highlights that have a good reliability rating (Alpha standard > 0.89, correlation > 0.5). This survey question tool was adapted from (Antonio & Griffith-Charles, 2019; Oniki et al., 2020; Mango et al., 2017; USAID, 2013; Gebreammanuel & Mekebo, 2018; Hilaire et al., 2019; Smith et al., 2021; Barrie, 2018; Ekers et al., 2020; Claessens et al., 2021).

Sampling Procedures

The panel of experts was chosen in accordance with the recommendations of (Adler & Ziglio, 1996; Jones & Twiss, 1978). This is because, according to Adler and Ziglio (1996), the appropriate number of experts is between 10 and 15 people if the experts chosen are diverse. According to Jones & Twiss (1978), the number of experts varied from 10 to 50. Thus, the number of experts in the study does not need to be large because there is a strong relationship between the number of experts and the quality of the results that can be generated from group discussions (Ocampo et al., 2018). Researchers take into account a variety of important factors when gathering data, including time limits and the difficulty in scheduling an appointment with a professional. As a result, the researcher is able to interview 11 experts (Table 1). This sum, nonetheless, is adequate for the data gathered in this study.

Table 1

Expert List

Experts list	Level of education	Field of expertise	Experiences
Activist	PhD	Orang Asli Development, Politics & Identity	31-50 years
Activist	Degree	Persatuan Orang Asli Semenanjung Malaysia (POASM)	5-10 years
Lawyer/ Research Associate	PhD	Orang Asli Land Rights in Peninsular Malaysia	11-20 years
Activist	Diploma	Jaringan Kampung Orang Asli Se-Malaysia (JKOASM)	5-10 years
Professor Emeritus	PhD	Orang Asli Affairs in Malaysia/Medical/Anthropology/Ethnography	>50 years
Lecturer/ JAKOA Officer	PhD	Anthropology/Ethnography	>50 years
JAKOA Officer	Master Degree	Land Development	11-20 years
Lecturer	PhD	Sociology & Anthropology	5-10 years
Lawyer	Degree	Economics, Law & Land Rights	11-20 years
JAKOA Officer	Degree	Orang Asli Community Development	11-20 years
Senior Lecturer	PhD	Law/Orang Asli land rights	11-20 years

Sources: In-depth Interview of this study

Expert Criteria

The experts must have a background or experience in the field of studies being carried out so that this selection can not only support their views on the needs of the study but also review their initial judgement to reach consensus among the specialists (Pill, 1971). One of the important aspects to consider in the Fuzzy Delphi study is the element of expert selection. Issues such as validity and reliability of the analysis results and conclusions may be disputed where expert selection is made inaccurately and on the basis of certain criteria (Mustapha & Darusalam, 2017). According to Saaty & Özdemir (2014) adding more inexperienced experts can reduce the accuracy of the results. In this context, the selected experts must meet criteria such as possessing a minimum of five years of knowledge and experience in the field studied, having a Masters in land administration or related fields of Orang Asli land rights, being able to commit fully until the study is completed, and having no personal interest to avoid heavy side studies (Saaty & Özdemir, 2014).

Data Collection Instrument

The researcher constructed the test instrument for Fuzzy Delphi on the basis of the literary research. Based on Skulmowski, Hartman & Krahn (2007), literature, pilot studies and experience may be used to form the forming of questionnaire elements. In the meantime, Mustapha & Darussalam (2017) have reported that questions for the technique from Fuzzy

Delphi have been formulated on the basis of research points, expert interviews and focus group techniques. Researchers therefore use literature to acquire the element of communal land.

Thereafter, a series of expert questions is formed using a 7-point scale. Choosing the 7-point scale was preferred because the greater the number of scales, the more precise and accurate the data collected (Jamil & Noh, 2020). The researcher placed value between 1 to 7 to replace the Fuzzy value as shown in Table 2 for the following 7-point linguistic scale to make it much easier for the experts to answer the questionnaire.

Table 2
Fuzzy Scale

Linguistic Variable	Fuzzy Scale
Strongly Disagree	0.0, 0.0, 0.1
Disagree	0.0, 0.0, 0.2
Somewhat Disagree	0.0, 0.3, 0.5
Neither agree or disagree	0.3, 0.5, 0.7
Somewhat Agree	0.5, 0.7, 0.9
Agree	0.7, 0.9, 1.0
Strongly Agree	0.9, 1.0, 1.0

Source: Jamil & Noh (2020)

This study's data is being collected using survey questionnaires according to prior findings. Data is analyzed using Microsoft Excel software in seven steps based on the method developed by (Ridhuan & Nurulrabihah, 2020). This stage of analysis is important in determining whether or not a study was successful. Similarly, steps must be taken to ensure that studies employing the Fuzzy Delphi method are considered empirical studies (Table 3). The steps taken by Chang, Huang & Lin (2000); Ridhuan & Nurulrabihah (2020) in this study are as follows:

Table 3
Steps in implementing Fuzzy Delphi Method

Step	Formulation
1. Expert selection	Assume that the number of experts is equal to K individuals who were chosen and interviewed as a group of experts to determine the relevance of the assessment criteria for the element to be measured using a linguistic variable (Table 2). There were a total of 11 experts used in this research. To ascertain the significance of the evaluation criteria on the variables to be examined using linguistic variables, a number of experts were invited.
2. Determining linguistic scale	The examiner then converts all linguistic variables into triangular Fuzzy numbers (Table 2) (Chang, Huang & Lin, 2000; Ridhuan & Nurulrabihah, 2020). In this step, the researcher assumes the fuzzy r_{ij} number is a variable for each element for the experts K th as:

	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> $\tilde{r}_{ij} = \frac{1}{K} [\tilde{r}_{ij}^1 \oplus \tilde{r}_{ij}^2 \oplus \dots \oplus \tilde{r}_{ij}^k]_{i=1, \dots, m; j=1, \dots, n; k=1, \dots, K}$ </div> <p style="text-align: center;">Figure 1: Triangular fuzzy number</p>
<p>3.The determination of threshold value "d"</p>	<p>In this step, the researcher employs the vertex method to compute the distance between the rij + k and rij averages (Chen, 2000). Thus, the condition to be met and observed is that the threshold value d (m, n) obtained must be less than or equal to 0.2. (Cheng & Lin, 2002). The formula below is used to calculate the distance between two fuzzy numbers:</p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> $d(m, n) = \sqrt{\frac{1}{3} [(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2]}$ </div> <p style="text-align: center;">Figure 2: Threshold value</p>
<p>4.The Determination of Linguistic Variables and Average Responses</p>	<p>The second condition for the Triangular Fuzzy Number is to involve a percentage of expert consensus. The traditional Delphi technique stated that if the expert group consensus exceeds 75%, it is accepted (Chu & Hwang, 2008; Murray & Hammons, 1995).</p>
<p>5. Identify the alpha cut aggregate level of fuzzy assessment</p>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> $\overset{+}{A} = \begin{bmatrix} \overset{+}{A}_1 \\ \overset{+}{A}_2 \\ \vdots \\ \overset{+}{A}_m \end{bmatrix} \quad \overset{+}{A}_i = \overset{+}{r}_{i1} \otimes \overset{+}{w}_1 \oplus \overset{+}{r}_{i2} \otimes \overset{+}{w}_2 \oplus \dots \oplus \overset{+}{r}_{in} \otimes \overset{+}{w}_n$ <p style="text-align: center;">$i = 1, \dots, m$</p> </div> <p style="text-align: center;">Figure 3: Aggregate level of fuzzy assessment</p>
<p>6.Defuzzification process</p>	<p>The fuzzy assessment's aggregate calculation process is carried out to determine the value of the Fuzzy score as well as the position and priority (ranking) of each element (Chang et al., 2000; Ridhuan & Nurulrabihah, 2020).</p> <p>The Defuzzification Process, on the other hand, is the determination of the fuzzy (A) score value based on the α-cut value of 0.5 (Tang & Wu, 2010; Bodjonava, 2006). If the fuzzy score value (A) is equal to or greater than 0.5, then the measured item is accepted, and if less than 0.5, then the measured item is rejected. The determination of fuzzy (A) score value was made based on the following formula:</p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> $A = (1/3) * (m1 + m2 + m3)$ </div> <p style="text-align: center;">Figure 4: Fuzzy score value</p>

	<p>The fuzzy evaluation is defuzzified using the following formula for each alternate choice:</p> <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> $a_i = \frac{1}{4}(a_{i1} + 2a_{i2} + a_{i3})$ </div> <p style="text-align: center;">Figure 5: Fuzzy evaluation</p> <p>The value of a_i can be used to identify alternative ranking alternatives.</p>
7. Ranking process	<p>In order to complete the placement operation, elements are chosen based on defuzzification values that are determined by expert consensus, where the element with the highest value is chosen based on the most significant placement (Chang et al., 2000; Ridhuan & Nurulrabihah, 2020; Fortemps & Roubens, 1996).</p>

The Development of Communal Land Framework Element

At this phase, the researcher uses a literature review approach to develop the elements of the Orang Asli communal land framework. After carefully scrutinizing certain literature for the research, the researcher gathers these elements and organizes them so that they may be examined by experts. The researchers justify this framework as the study's base because it expresses the use of communal land in Orang Asli's land ownership, which coincides with the study's objective, which is to look at the expert view of the needs of communal land. The elements of the study are as follows

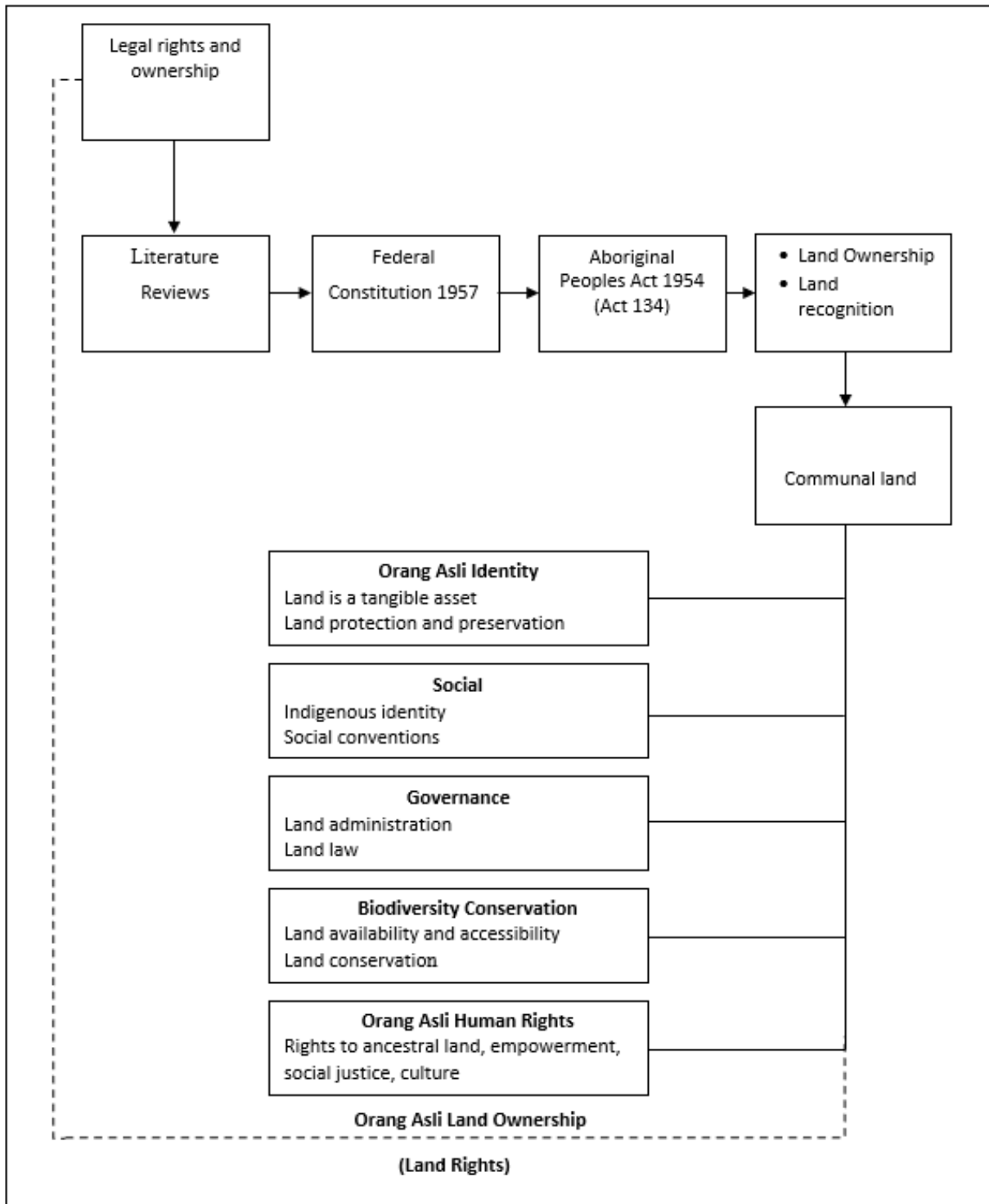


Figure 6. The Communal Land Framework Element
 Source: (Antonio & Griffith-Charles, 2019; Oniki et al., 2020; Mango et al., 2017; USAID, 2013; Gebreamanuel & Mekebo, 2018; Hilaire et al., 2019; Smith et al., 2021; Barrie, 2018; Ekers et al., 2020; Claessens et al., 2021).

Results and Discussions

The discussion is based on the following subheadings: element of communal land and expert consensus via in-depth interview.

To achieve the study's goals, data from the distribution of survey questions was analyzed and the defuzzification process was implemented to calculate the value of the scores. Communal land elements were then ranked according to their importance. According to the analysis of the study's findings, the five elements of communal land were accepted by experts based on the value of the defuzzification score and their importance was ranked starting with the Orang Asli's identity then biodiversity conservation, governance, and Orang Asli human rights and social (Table 4). The following Table 4 lists the elements in order of importance:

The Result of FDM 1 (Element Rank)

Table 4

Result of element rank

Element	Fuzzy Score	Ranking
Orang Asli identity	0.851	1
Biodiversity conservation	0.850	2
Governance	0.808	3
Orang Asli human rights	0.807	4
Social	0.798	5

The Result of FDM 2 (item Rank)

Table 5

Consensus value calculated using Fuzzy Delphi Method–Orang Asli Identity Elements

Orang Asli's Identity Elements									
Indicator Items		d	m1	m2	m3	A	G	Z	
A1	Land as a livelihood	0.134	0.718	0.882	0.973	0.858	0.858	8	
A2	Land is a valuable resource	0.061	0.845	0.973	1.000	0.939	0.939	1	
A3	Land as a resource for Orang Asli culture	0.089	0.755	0.918	0.991	0.888	0.888	5	
A4	Land for sustenance and spiritually	0.097	0.773	0.927	0.991	0.897	0.897	3	
A5	Land can create emotions and conflicts that can be resolved communally	0.25	0.627	0.8	0.909	0.779	0.779	11	
A6	Land as a source to be exploration rather than exploitation	0.11	0.718	0.891	0.973	0.861	0.861	6	
A7	Orang Asli had a strong relationship with the land	0.099	0.809	0.945	0.991	0.915	0.861	6	
A8	Land ensures that Orang Asli can utilize their assets and property	0.125	0.7	0.873	0.973	0.848	0.915	2	
A9	Orang Asli can own the land.	0.181	0.664	0.836	0.945	0.815	0.848	9	
A10	Land must be protected since it is a sacred space	0.192	0.627	0.8	0.927	0.785	0.785	10	
A11	Land under the protection of an Orang Asli tribe's chief	0.176	0.555	0.745	0.9	0.733	0.733	12	
A12	Orang Asli and the land are intrinsically tied	0.125	0.773	0.918	0.982	0.891	0.891	4	

Table 6

Consensus value calculated using Fuzzy Delphi Method– Biodiversity Conservation Elements

Biodiversity Conservation Elements								
	Indicator Items	D	m1	m2	m3	A	G	Z
B1	Land is used to build a living environment	0.071	0.773	0.936	1.000	0.903	0.903	1
B2	Land as a spirituality resource	0.071	0.773	0.936	1.000	0.903	0.903	1
B3	Land as a cultural resource	0.071	0.773	0.936	1.000	0.903	0.903	1
B4	Securing an equitable land allocation	0.190	0.645	0.818	0.936	0.800	0.8	13
B5	Ensuring a source of income and livelihood	0.149	0.645	0.827	0.955	0.809	0.809	12
B6	Preserving the biological resources or biodiversity of forest areas	0.163	0.682	0.855	0.955	0.83	0.83	10
B7	Preserve the native area	0.125	0.7	0.873	0.973	0.848	0.848	7
B8	Enhance land use for various work needs	0.153	0.627	0.809	0.945	0.794	0.794	14
B9	Ensuring the wellbeing of the Orang Asli	0.11	0.736	0.9	0.982	0.873	0.873	4
B10	Preserving the ecosystem's balance of nature	0.11	0.736	0.9	0.982	0.873	0.873	4
B11	Encourage participation of the community in conservation efforts	0.171	0.7	0.864	0.955	0.839	0.839	9
B12	Increase collective action to preserve natural resources	0.157	0.7	0.864	0.964	0.842	0.842	8
B13	Mitigating the negative effects of exploitation on Orang Asli lands	0.137	0.664	0.845	0.964	0.824	0.824	11
B14	Ensuring sustainable land management practices	0.134	0.718	0.882	0.973	0.858	0.858	6

Table 7

Consensus value calculated using Fuzzy Delphi Method-Governance Elements

Governance Elements								
	Indicator Items	d	m1	m2	m3	A	G	Z
C1	Ensuring good land monitoring	0.161	0.664	0.836	0.955	0.818	0.818	5
C2	Enhance the management of natural resources in a sustainable manner	0.157	0.7	0.864	0.964	0.842	0.842	2
C3	Ensuring wise decision-making.	0.202	0.664	0.836	0.936	0.812	0.812	6
C4	Protecting the land ownership	0.171	0.7	0.864	0.955	0.839	0.839	3
C5	Establish legal rights recognition	0.194	0.718	0.873	0.945	0.845	0.845	1
C6	Include Orang Asli in Politics	0.191	0.573	0.755	0.9	0.742	0.742	15
C7	Acknowledge Orang Asli's leadership in land-related issues	0.202	0.664	0.836	0.936	0.812	0.812	6
C8	Improving the right to self-determination	0.205	0.627	0.809	0.927	0.788	0.788	13
C9	Encourages Orang Asli to engage with agency (government, public sector etc.)	0.194	0.645	0.827	0.936	0.803	0.803	10
C10	Ensuring peace, equal and equitable	0.194	0.645	0.827	0.936	0.803	0.803	10
C11	Ensuring the right to own land	0.224	0.664	0.827	0.927	0.806	0.806	9
C12	Resolving issues on land rights	0.209	0.682	0.845	0.936	0.821	0.821	4
C13	Ensuring Orang Asli sovereignty	0.192	0.627	0.8	0.927	0.785	0.785	14
C14	Ensuring Orang Asli social resilience	0.171	0.645	0.827	0.945	0.806	0.806	8
C15	Ensuring the adaptability of the Orang Asli to any changes	0.179	0.627	0.809	0.936	0.791	0.791	12

Table 8

Consensus value calculated using Fuzzy Delphi Method– Orang Asli Human Rights Elements

Orang Asli Human Rights Elements								
	Indicator Items	D	m1	m2	m3	A	G	Z
D1	Each tribe will inevitably be dependent on a distinct type of land	0.225	0.664	0.827	0.927	0.806	0.806	8
D2	Maintaining the Orang Asli territorial base	0.076	0.791	0.945	1.000	0.912	0.912	1
D3	Ensuring Orang Asli respects the land	0.125	0.7	0.873	0.973	0.848	0.848	2
D4	Promote community participation in decision-making	0.181	0.664	0.836	0.945	0.815	0.815	6
D5	Improve effective land policies	0.224	0.664	0.827	0.927	0.806	0.806	7
D6	Ensuring a resolution or settlement of land disputes	0.301	0.555	0.727	0.855	0.712	0.712	14
D7	Improving the reconciliation mechanism on land	0.249	0.609	0.782	0.9	0.764	0.764	12
D8	Maintaining the traditional way of life	0.179	0.718	0.873	0.955	0.848	0.848	2
D9	Avoiding any discriminatory actions by institutions like the government or public sector	0.242	0.664	0.818	0.918	0.8	0.8	9
D10	Provide a fulfilling social life	0.199	0.7	0.855	0.945	0.833	0.833	5
D11	Uphold a strong family social structure	0.171	0.7	0.864	0.955	0.839	0.839	4
D12	Increasing awareness for cultural diversity	0.209	0.609	0.791	0.918	0.773	0.773	11
D13	Ensuring the strong protection for Orang Asli culture	0.251	0.609	0.782	0.9	0.764	0.764	12
D14	Enhancing Orang Asli's ecological cultural knowledge	0.221	0.627	0.8	0.918	0.782	0.782	10

Table 9

Consensus value calculated using Fuzzy Delphi Method–Social Elements

Social Elements								
	Indicators Items	d	m1	m2	m3	A	G	Z
E1	Land is a part of Orang Asli's social identities	0.1	0.791	0.936	0.991	0.906	0.906	1
E2	Collective use of the land based on customs	0.179	0.627	0.809	0.936	0.791	0.791	4
E3	Land strengthening the Orang Asli's relations of solidarity	0.181	0.664	0.836	0.945	0.815	0.815	2
E4	Land strengthening family ties	0.215	0.645	0.818	0.927	0.797	0.797	3
E5	Ensures a land use agreement between community	0.203	0.591	0.773	0.909	0.758	0.758	8
E6	Create a land agreement for agricultural works	0.178	0.609	0.791	0.927	0.776	0.776	6
E7	Increasing Orang Asli social institutional harmony	0.192	0.627	0.8	0.927	0.785	0.785	5
E8	Ensuring Orang Asli horns in accordance with customary laws	0.17	0.591	0.773	0.918	0.761	0.761	7

Note

d = threshold value

A = Fuzzy value

G = Consensus value

Z = Ranking

Condition:

Triangular Fuzzy Numbers

1. Threshold Value (d) < 0.2
2. Percentage of Experts Consensus > 75%
3. Fuzzy Score (A) $\geq \alpha$ - cut value = 0.5

The following are five elements based on the consensus value using Fuzzy Delphi Method and in-depth interview among experts which is (Orang Asli identity, biodiversity conservation, governance, Orang Asli's human rights and social) to carry out further discussions.

In-Depth Interview Analysis

According to expert consensus results based on defuzzification values, Orang Asli's identity elements were found to be the most major elements, with a fuzzy score of 0.851. This is so because communal land is a valuable resource that guarantees not only the right to use it, but also plays a significant role in the spiritual, religious, and cultural of the Orang Asli. This argument was supported by Antonio & Griffith-Charles (2019) explaining that Orang Asli's lives are influenced by the land. Significant roots are employed as a living environment from the standpoint of knowledge, life experience, culture, and beliefs that are distinct and varied for each community. This issue is mostly related to the strong relationships between areas and communities that are founded on the customs, traditions, and lifestyles that support their survival and well-being (Bowie, 2021). This supports the viewpoint of subject matter expert X and explains

"...Orang Asli's land, or the soil of the so-called nagari, encompasses a variety of things, land not only vital for social and economic development but also for its biodiversity, purity, or spirituality..." (X, 2022).

A statement from Expert Y that also supports this article is as follows

"...Orang Asli communities regardless of the tribe or ethnic group involved, have a special relationship with their respective ancestral lands while they still have territory that hasn't been appropriated. Some Orang Asli communities continue to live according to their culture and way of life using their native land as a resource for their history, understanding of customs, culture, identity, and quality of life. The land is sacred to them regardless of their faith, and they typically maintain their unique relationships with the respective area..." (Y, 2022)

The study's analysis then revealed that the aspect of biodiversity conservation had a high defuzzification score value of 0.850. According to experts, this element is important because communal land is the most significant resource that influences the Orang Asli community's well-being and quality of life. For example, land is valuable as a living area as well as a spiritual and cultural resource. Magregor & Grimes (2022) provide support for the idea that communal land is a significant asset not just in terms of social interactions but also in terms of the spiritual, political, and environmental resources that ensure the survival of their future generations. This element is very closely tied to the biological side of diversity, which highlights the efforts to ensure that Orang Asli' lands and natural resources may be managed sustainably (AIPP, 2019). Thus, it's important for orang Asli communities to decide how their land can be utilized and maintained frequently by considering the more important components of access and control (Stankovics et al, 2020). This supports what the expert Z indicated in his assessment:

"...the communal land system is highly important to safeguard the ecosystem and biodiversity among Orang Asli... When some area is declared as communal land, Orang Asli groups must have and be able to recognize the territory's legal boundaries in order to prevent any external invasion, next strengthen and sustainably protect the Orang Asli's lands and territories..." (Z, 2022).

The expert G, on the other hand, retains the following opinions

"...Orang Asli's settlements, economic locations, geography are very important, accessibility means they can go to land here, access to land, they can farm, sell land, build houses, and they have the right to land and own land or property." (G, 2022).

As a consequence, communal land is being utilized widely globally, with a focus on access to land and natural resources. This is aligned with the opinion of experts who claim that Orang Asli's land and biodiversity are resources to be explored for the sake of community preservation against conflict or disagreements that may be resolved collectively. As the expert D explains;

"...communal land or land in common can guarantee the ecological area, or environment, of Orang Asli. A system where the natural resources in their environment will never be depleted. They are also clearly very conservative of the land and native territories, but that affects the ecology of the Orang Asli...they are obviously highly protective of the land and indigenous areas, but development—forage, embankment building, and mining has an impact on the ecosystem of their villages..." (D, 2022).

Based on expert consensus, governance elements were given a strong defuzzification score of 0.808. This is because communal land is an important resource in establishing legal land recognition. Indeed, communal land is seen as essential in guaranteeing the long-term existence of land ownership among Orang Asli, particularly in contributing to the safety and protection of land and environment. The findings of this analysis are supported by Rury (2021), who clarifies that the provisions of laws are given special attention, particularly when it comes to issues concerning the recognition of land required to protect the status of Orang Asli 's communal rights. In fact, land ownership on communal land is critical. In fact, employing communal land for land ownership is important for protecting land from conflict or dispute (Oniki et al., 2020). Thus, one of the most important elements for dealing with issues and conflicts in land ownership is the recognition of legislation, which has been used since then (Azima et al., 2020). This is coherent with the expert G's experience;

"...if the communal land is used to explain the lack of guarantee of the land rights of the Orang Asli in a comprehensive way...Orang Asli community are said not to be jointly involved in any Government decision on the land. However, they are the experts for the Orang Asli if the government does not acknowledge, they still recognize them any discussion process should involve the community from the beginning again...the government is said to not seek to solve the issues of the orang Asli's land but rather to force the community to agree with the decisions and opinions that they have set...the security of land rights is also not well guarded...so far no permanent restitution has been made...they purely want to sit on their land without being disturbed if they have to move because something expansion is in direct opposition to the Orang Asli's holding, culture, practice, or existence..." (G, 2022)

This issue is apparent when among the expert M who mentioned that

"...the legislation and the land procedure must be related to the land legislation in the Malaysian Peninsula... this depends on the concept of communal land that would be used in the Malaysia Peninsula... is it in a direction like the Land (Group Settlement Areas) Act 1960? Or does it involve the addition of new territories that must be approved by the state, or does

it involve Orang Asli' land reserves that must be presented? If it is focused on Orang Asli's reserve land...then the element of communal land can be enhanced in Act 134 through the use of sections 6, 7, 8, 10, 11 and 12..." (M, 2022)

This matter is evident when

"...The existing act called tenant at will the nature of section 6 and 7 if you want for the communal land...not want to change can but only reserve...because the reserve can be cancelled...if you are reserved under the act of section 7 ownership is not yet but more towards land security...if you want according to the suggestion by UNDRIP, the existing acts need to be amended and improved so that the rights of landowners can remain..." (D, 2022)

Following that, an expert consensus analysis discovered that the element of Orang Asli's human rights is one of the most essential elements of communal land in ensuring Orang Asli land ownership, with a defuzzification score of 0.807. This is because communal land is an important resource in their life, which allow communities to survive economically, socially, spiritually, and environmentally. Hond et al (2019) support this argument by stating that both communal and collective ownership are important in protecting Orang Asli's identity and human rights, particularly the right to survive. This situation is largely related to the right to self-determination, the right to preserve and strengthen political, legal, economic, social, and cultural institutions, and the right to live freely, safely, and securely (Radziunas, 2022; UNDRIP, 2016). Orang Asli had the right to fight for their land rights and to protect their land from conflicts and threats (Dalimartha & Sara, 2021). This is coherent with the perspective conveyed by expert X;

"..The right to life, the right to permission based on prior information, free and transparent, and self-determination are the three most important principles of human rights... Orang Asli must determine whatever desire they feel is appropriate to their lives, such as development...let them only determine the type of development they want...forest areas are considered valuable to them and have a spirit and spirituality worthy of customary relation can enjoy all the benefits of land resources, including the right to participate in making decisions about their life and land..." (X, 2022)

Finally, with a defuzzification score of 0.798, the social element was discovered to be less than the expert consensus. This is due to the fact that development on communal land has the possibility of affecting Orang Asli's ties of solidarity and family relations. However, land is an important part of the Orang Asli's social identity based on history, culture, and way of life, and it should be emphasized in controlling the behavior of the community's horn according to the rules. This is also supported by Wiko (2020) stating that communal land resources are important in regulating social relations among Orang Asli. This situation is primarily concerned with the regulatory aspects of granting the community the right to use collectively or exclusively (Bell et al., 2023; Carter, 2021). Land ownership is important in the context of protecting land and environments from conflicts or disputes caused by widespread development, which affects Orang Asli' relationships (Altamirano-Jiménez, 2023; Cameron & Plata, 2023; Brent, 2023). This is accurate with expert X viewpoint, who stated;

"...if Orang Asli's land is taken for development and so on, the land that is considered identity may be affected and break up the roots of the people...the land of the descent must be protected..." (X, 2022)

This continues what expert G said

"...The communal land can indeed strengthen the ties of solidarity and guarantee the family relations between the members of the Orang Asli...for them their bonds are very strong...they always consider as a community, or a family that helps each other voluntarily, such as a marriage...the Orang Asli occupy their areas and they are very familiar with the boundaries of their ancestors... (G, 2022)

This citation clarifies that land regarded as a symbol of Orang Asli identity should be respected and protected in order to ensure that ties and bonds of solidarity between communities are well founded.

The findings of this analysis show that the communal land framework and element have drawn good expert agreement. The items agreed upon by the consensus of experts are arranged according to priority (ranking) as shown on table 4 and 10, and figure 6.

Table 10

The importance and significance of the study

	Element	Importance & significant
Communal Land Framework	Orang Asli identity	<p>The element of Orang Asli identity achieved the highest defuzzification score rating from experts.</p> <p>Land as a tangible asset: There is a consensus among experts that land is a resource for history, knowledge, tradition, culture, identity, well-being, and life. It is also a resource for livelihood. The significance of land to Orang Asli's sense of dignity and self-esteem.</p> <p>Protecting the land: According to experts, Orang Asli can live according to their culture and way of life to protect it from exploitation, dissemination, and conflict.</p>
	Biodiversity conservation	<p>Land is available and accessible: Experts agreed that land can be used by the Orang Asli community as their home as well as a source of spiritual and cultural resources, ensuring the continuation of land ownership and the Asli the quality of life. Land becomes a source of communal economic livelihood and subsistence economic activities. Experts assert that Orang Asli may be aware of its boundaries in order to deter outsiders from encroaching on customary land.</p> <p>Land conservation: Experts indicate that communal land ownership enables Orang Asli to sustainably maintain their living environment, environmental areas, ecology, or biodiversity.</p>
	Governance	<p>Land administration policy: Experts concluded that in order to resolve any customary land disputes, the Orang Asli's perspectives must be considered during discussions and decision-making processes involving customary land. They seek ownership grants in order to secure the</p>

		<p>protection of their land rights as a result of land ownership rivalry or dispute.</p> <p>Land legislation: Experts stated that communal land is a resource that enables Orang Asli to be recognized as having official legal land ownership rights. In order to grant Orang Asli's the right to acquire permanent land ownership, legal frameworks and land procedures must be shaped.</p>
	Orang Asli human rights	<p>Rights to ancestral land, self-determination, social justice and culture: Experts acknowledged that communal land is crucial for protecting the Orang Asli's fundamental rights, including the right to life, the right to land and the right to self-determination.</p> <p>The experts concurred that Orang Asli have the right to environmental protection, conservation, and the ability of their lands, territories, and resources to be used productively.</p> <p>Orang Asli have the right to own, use, develop, and control the lands, territories, and resources that they have by virtue of traditional ownership or other traditional occupation or use, as well as those that they have otherwise acquired.</p>
	Social	<p>The element of social obtained the lowest defuzzification score according to experts.</p> <p>Indigenous identity: The experts agreed that land is a symbol of Orang Asli identity that must be protected in order for the tribe to retain its identity.</p> <p>Orang Asli's familial ties and sense of community can be strengthened via communal land.</p> <p>The ability to own land has evolved into a factor that encourages the following generation to remain connected with their community.</p> <p>According to experts, land acts as a key pillar of their community's collective identity.</p> <p>Social conventions: The experts concluded that communal land is fundamental to maintaining Orang Asli's behavior and social connections in accordance with rules and regulations.</p>

Conclusion

This is a new study in land administration that employs Delphi's Fuzzy Technique approach. Based on the study's objectives, researchers successfully analyzed the elements of communal land, analyzed expert views on the existence of Orang Asli's land, and developed communal models of Orang Asli lands. Revenue studies based on this defuzzification value discovered that Orang Asli's identity is the most important factor in ensuring the existence of communities' land ownership. This is because land is the most valuable asset and resource to them, not just as an income source but also in terms of maintaining dignity and self-esteem.

As a result, regardless of tribe or religion, they will always have close ties with the land. However, experts found social elements to be less consensual because communal land ownership must emphasize aspects related to rules and behavior in determining how land can be used properly. The five important elements are strongly highlighted in the establishment of clearer land ownership for Orang Asli so that they can sustainably survive from all aspects of life. Based on this scenario, the need for a specific framework to be used as a basic guide in element of communal land should be formed to assist JAKOA implement a clear policy to ensure that the orang Asli communities have access to land. Finally, the researcher managed to produce a basic framework for the implementation of a communal land element for Orang Asli in the context of customary land ownership in Malaysia.

Guideline for Future Research

This study basically uses developmental design research. Therefore, in the future researchers can gather more detailed data using various study techniques like quantitative or qualitative methodologies. Additionally, this study used a Fuzzy Delphi method that specialized in expert consensus; as a result, future research can utilize different techniques to get findings that are more broadly applicable. Future researchers can modify this research framework to create a module or research model that can be employed to the same field in the future if it can be made more precise.

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