Jurnal Sylva Lestari

Full Length Research Article

Perception of Forest Farmer Groups as a Mediating Variable in Achieving Goals as Members of the Forestry Partnership

Christine Wulandari[1], Nanda Kurniasari[1,*], Samsul Bakri[1], Bainah Sari Dewi[1], Rahmat Safe'i[1], Riyanto[2]

[1] Master of Forestry Study Program, Department of Forestry, Faculty of Agriculture, University of Lampung, Bandar Lampung, Indonesia
[2] Bukit Barisan Selatan National Park (TNBBS), Tanggamus, Indonesia
* Corresponding Author. E-mail address: nandakurniasari015@gmail.com

ABSTRACT

Perception is an essential factor influencing attitudes and behavior toward the forestry partnership program. Apart from that, a person's perception can positively or negatively impact the program. The forestry partnerships program is a policy that is the basis of a community empowerment program that provides legal access for local communities to meet the needs of non-timber forest products originating from the Bukit Barisan Selatan National Park (BBSNP) area. The research was conducted to identify the role of partnership members' perceptions as a mediating variable in achieving goals and obtaining benefits as partnership members in the Semaka Region I National Park Management Sector, BBSNP. Data was collected using a questionnaire, and hypothesis testing was performed using Partial Least Square-Structural Equation Model statistical analysis using SmartPLS 4.0 software. The results showed that perception does not play a mediating variable in achieving goals and obtaining benefits as a member of the partnership. The community benefits from the forestry partnership program if they become members even without having a positive perception of the program. Thus, it is possible that they will not commit properly because the important thing is that they have become members because it will be secure and no longer be considered as an encroachment. This means that it is legal access that makes people want to become members of the partnership. So, to increase positive perceptions and ensure the program's goal is achieved, namely preserving forests and ensuring the fulfillment of people's lives, it is necessary to increase the intensity of activities that influence people's perceptions, for example, socialization, mentoring, and coaching.

1. Introduction

Communication and perception are tightly intertwined. Since perception is the foundation of communication, inaccuracies in perception will prevent the creation of successful communication. The higher the knowledge, the greater the perception and participation of the community (Yulia et al. 2014). A sense of ownership of preserving forest areas and obtaining benefits from these forests is essential for success in restoring the forest areas' function (Wulandari et al. 2021a). If the community has a positive perception of the existence of the forest, then the community will have positive implications for the existence of the forest, and vice versa (Aspuan and Nugraha 2022).

Perception will determine whether the community will participate in or ignore government programs, such as the Social Forestry program, which includes managing conservation areas. Differences in perceptions about the status and benefits of forests can also be a factor causing conflict between communities and forestry (Saputra and Dewata 2019).

The social forestry program in conservation areas called forest partnerships is listed in the Minister of Environment and Forestry Regulation Number 9 of 2021. This program is one of the leading programs to reduce conflict between communities using non-timber forest products (NTFPs) in Bukit Barisan Selatan National Park (BBSNP). According to Chiwaya and Mzuza (2022), partnerships involving communities in forest management are needed as partners to work with the government and other stakeholders in participatory forest management. Mohta et al. (2023) also reported that sustainable forest use can reduce poverty rates in developing countries, especially for forest farmer groups.

Forestry partnerships based on Director General of Natural Resource and Ecosystem Conservation Regulation Number 6 of 2018 are called conservation partnerships. Conservation partnerships are an institutional innovation for self-empowerment so that communities no longer depend on forest areas (Bakri et al. 2023). Conservation partnerships in BBSNP have been implemented since 2018 in TNBBS but have not shown effective implementation at the site level. Likewise, Okthalamo et al. (2022) concluded that the results of the evaluation of the implementation of the conservation partnership program implemented in the BBSNP forest area using the context, input, process, and product (CIPP) evaluation approach have not been effective and not implemented optimally. This means it is necessary to analyze the obstacles and why the community is not implementing the partnership program properly even though it has been implemented since 2018. This research was conducted in April 2023 and analyzed before the new policy was published on 3 November 2023. Starting November 2023, the BBSNP has implemented a new partnership regulation, i.e., conservation partnership, based on Minister of Environment and Forestry Regulation Number 14 of 2023. Therefore, community groups wishing to participate in the partnership program must fulfill the requirements stated in the Minister of Environment and Forestry Regulation Number 14 of 2023 concerning the Completion of Built Businesses and Activities in Nature Reserve Areas, Nature Conservation Areas, and Hunting Parks.

A program will be sustainable if the community implements it of its own accord due to its positive perception of the program. Up to now, the partnerships have been widely researched in terms of the products produced. However, there is still minimal data and information that discusses indicators that influence the implementation of forestry partnerships, for example, regarding community perceptions about participating in this program and gaining benefits as members of the partnership. Apart from that, according to Puspasari et al. (2017) and Wulandari and Kurniasih (2019), social forestry programs, including forestry partnerships implemented by the community of their own accord will have a more guaranteed positive impact so that they can reduce poverty, unemployment and gaps in forest area management.

Suyono et al. (2017) stated that the higher the benefits obtained by the community, the more active the role of the community will grow because of its dependence on the region. Community perception influences active community participation and plays a role in implementing forestry partnerships. Pangestika (2018) and Suharjito and Wulandari (2019) also stated that perception influences a person's attitudes and behavior. In this study, three variables were tested using Structural Equation Modeling (SEM): the purpose of becoming a member, perceptions of the program, and the benefits obtained after becoming a member of a forestry partnership. Perception

is subjective because it depends on the abilities and circumstances of each individual, so there will be differences in interpretation between one individual and another (Febrina et al. 2022).

Raharjo et al. (2019) explained that the main factor in the success of forestry partnerships is communication. The higher the knowledge, the greater the perception and participation of the community (Yulia et al. 2014). Community participation is divided into two forms, namely tangible (money, property, and energy) and intangible (ideas, decision-making, and representation) (Deviyanti 2013). Participation can increase income and increase information, as well as contribute to strengthening social capital (Valenzuela et al. 2020). According to Luswaga (2023), using NTFPs is a variable that influences community participation in forest management. The community's active role will grow if more benefits are obtained by the community because dependence on the region is very high (Suyono et al. 2017).

Based on the results of literature studies, there is still a lack of research on developing models to predict the influence of perceptions of group members who act as intermediaries on the goals and benefits obtained by members of forestry partnership groups. This study needs to be carried out to determine the extent to which group members understand the implementation of the forestry partnership program in achieving the goal of obtaining benefits from the program so that the programs issued by the government have a good impact on the community and area managers. Based on previous research conducted by Okthalamo et al. (2022) with a research location in the National Park Management Sector Region II Liwa, BBSNP, regarding the implementation of the conservation partnership program, it is known that the effectiveness of the forestry partnership program in BBSNP has not been effective and optimal. However, there has been no research on the perceptions of partnership members correlated to becoming a member and the benefits of the partnership. Therefore, it is essential to consider this study when implementing the program at the site level.

2. Materials and methods

2.1. Time and Location

This study was conducted in April 2023 at Bukit Barisan Selatan National Park (BBSNP) and analyzed before the new policy was published on November 3, 2023. The research location was at the Biha Resort, National Park Management Section Region II Bengkunat, National Park Management Section Region I Semaka (**Fig. 1**), with 41 respondents (**Table 1**) who were members of the forestry partnership.

2.2. Data Collection Methods and Sample Determination

The data collection method used a questionnaire with direct respondent interviews. Researchers used non-probability sampling techniques, such as saturated sampling (census). A census is a sampling technique that involves all population members in a survey (Garaika and Darmanah 2019). The validity of the census sample is guaranteed (Wulandari et al. 2021b).

The number of respondents was 41 people, all of whom were members of forestry partnerships. Partnership members who are research respondents have received permission to grant access to NTFPs collection in the Traditional Zone in the Biha Resort work area, Semaka National Park Management Sector Region I, BBSNP. It is hoped that this research will serve as consideration for prospective members of forestry partnerships who have not yet obtained permits

based on Minister of Environment and Forestry Regulation Number P.14 of 2023 concerning the Completion of Built Businesses and Activities in Nature Reserve Areas, Nature Conservation Areas, and Hunting Parks.
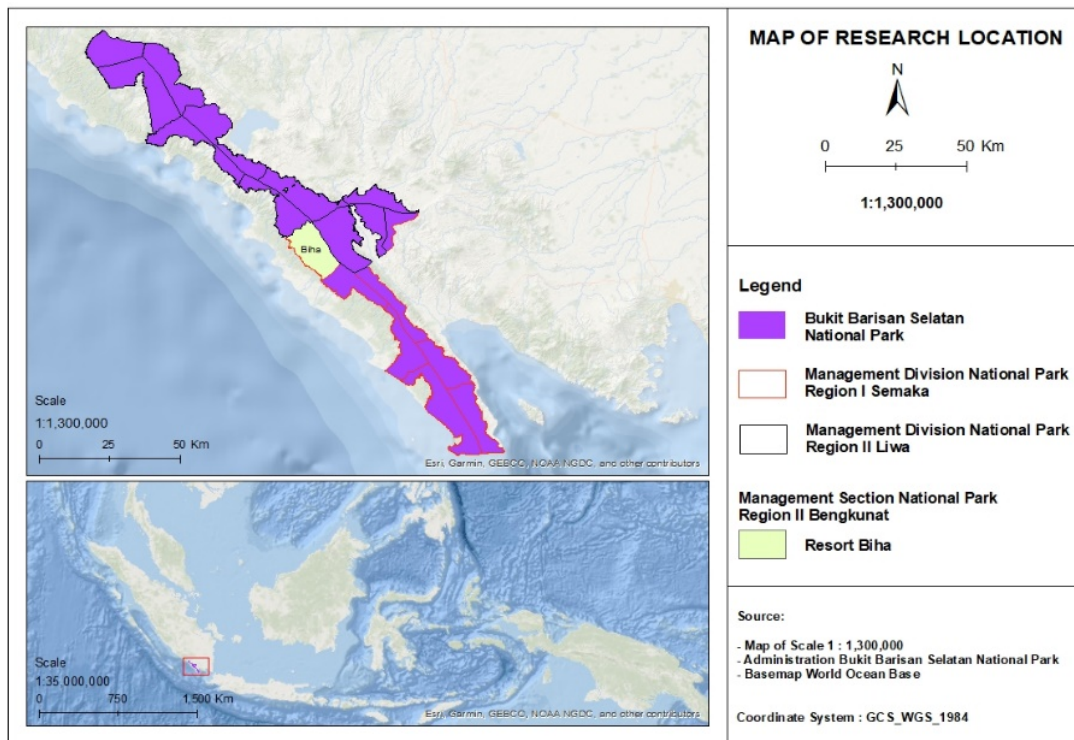

Fig. 1. Research site at Biha Resort, Bukit Barisan Selatan National Park.

Table 1. Sample of respondents at BPTN Region I Semaka

No.	Name of KTH	Area (ha)	Pekon	Subdistrict	Regency	Number of members	Number of samples
1.	Damar Pak Guess Us **Chairman**: Mirizal Efendi **Secretary**: Nazrul **Treasurer**: Lantur Wiyono	130.39	Sukarame	South Coast	West Coast	13	13
2.	Jaya Lestari Building Fort **Chairman**: Supriyadi **Secretary**: Riki Arista **Treasurer**: Amirudin	29.42	Jaya Well	South Coast	West Coast	28	28
	Amount					41	41

Notes: KTH = Forest Farmer Group. Data were obtained from BBBBBSNP Statistics 2023.

2.3. Data Analysis

Data analysis used in this research was a hypothesis testing approach using Partial Least Square-Structural Equation Model (PLS-SEM) statistical analysis techniques using SmartPLS 4.0 software. SmartPLS measures validity and reliability, ensuring research data meets data quality

(Astuti and Bakri 2021). According to Natalia et al. (2017), PLS-SEM is used if the variables in the study do not meet the normality assumption (normal multivariate distribution). The three latent variables used in this research are expressed on an ordinal scale in three rankings for the objective variables of becoming a member of a forestry partnership, perceptions, and benefits obtained by the community. Perception is an important variable in Social Forest Management (SFM) development. Perception is the essence of communication. Raharjo et al. (2019) reported that the main factor in the success of forestry partnerships is communication. Differences in perceptions about forests are a factor causing conflict between communities and forestry authorities (Saputra and Dewata 2019). The higher the knowledge, the higher the public perception (Yulia et al. 2014).

In this study, there were 3 (three) variables tested using SEM, namely the goal of becoming a member, perception of the program, and benefits obtained after becoming a member of the forestry partnership. These three variables are latent variables because they cannot be observed directly. The role of a latent variable can be observed using the indicators that make up that variable (Yanita et al. 2015). Variable analysis with many indicators allows researchers to conduct statistical tests by supporting or rejecting hypotheses through SEM tests (Roni et al. 2015). The test results can determine whether perception is a mediating variable for the first, second, or third latent variable or whether there is another role for perception of the 3 (three) latent variables in supporting the sustainability of the forestry partnership program in BBSNP. The PLS-SEM model proposed in this research is shown in **Fig. 2**.
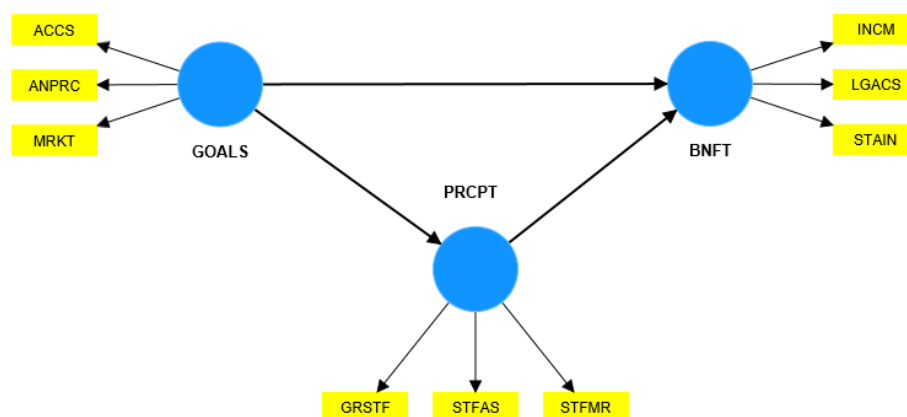

Fig. 2. PLS-SEM model the proposed algorithm.

The variables used in this research consist of one exogenous variable which is applied, namely the variable goal of becoming a member of the partnership [GOALS] with indicators including the existence of a marketing network [MRKT], wants to obtain permission to access the use of NTFPs in the [ACCS] area, and wants to collect other types of NTFPs such as durian (*Durio zibethinus*), petai (*Parkia speciosa*), jengkol (*Archidendron pauciflorum*), and other species) [ANPRC]. Raharjo et al. (2019) stated that product marketing and benefit sharing must be done after the forestry partnership cooperation agreement is signed. NTFP utilization is a variable that influences community participation in forest management (Luswaga 2023).

The mediating variable applied is the perception of partnership members [PRCPT] with indicators including opinions about group effectiveness [GRSTF], views about the intensity of officer assistance [STFAS], and opinions about NTFP marketing [STFMR]. Perception is closely related to communication. Raharjo et al. (2019) explained that the main factor in the success of

forestry partnerships is communication. The variable of benefits obtained as a member [BNFT] is an endogenous variable with indicators in the form of increased income (economic benefits) [INCM], sense of security (social benefits) [LGACS], and macro climate (ecological benefits) [STAIN]. The forestry partnership program can be said to be successful at the tenure conflict resolution stage, namely that the community is given a sense of calm, comfort, and security because it is recognized and given legal access to manage the cultivated area within the area (Rochaedi et al. 2021). Zande and Mzuza (2022) explained that economic benefits are the main factor influencing community participation.

3. Results and Discussion

3.1. Evaluation of the Suitability of the Measurement Model

3.1.1. Evaluation of the reliability and validity of the questionnaire

The external model evaluation aims to ensure that the questionnaire is used as a valid measuring tool (Wahyuni 2022). Model modification was done once by deleting question indicators whose value was less than 0.6. An indicator is reliable if it has a factor loading value of > 0.700, which can still be tolerated up to > 0.600 (Ghozali and Latan 2015). Anuraga and Sulistiyawan (2017) stated that if the research initially develops a measurement scale, a loading value of 0.500 to 0.600 for several variables between 3 and 7 means it can be considered sufficient. Thus, factor loading values < 0.600 were removed to obtain a suitable model. The measurement results are presented in **Fig. 3** and **Table 2**.

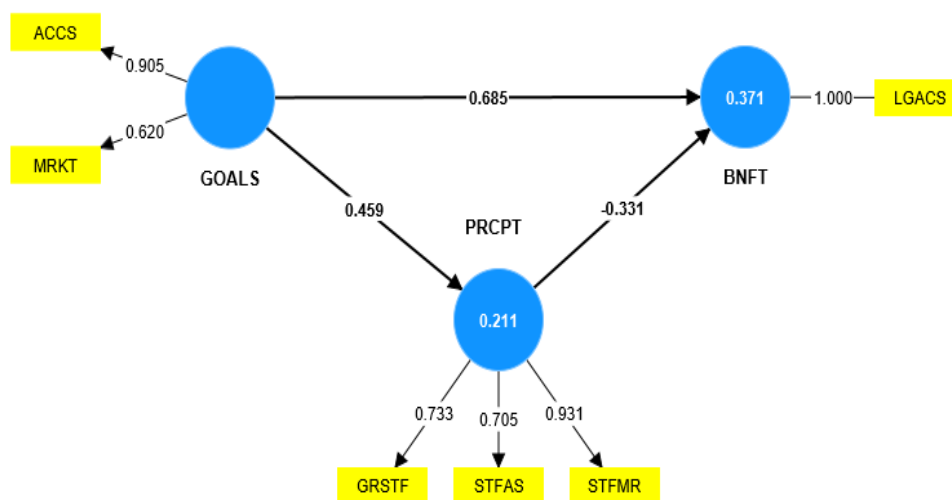**Fig. 3.** Measurement results of the PLS-SEM algorithm model.

After modification, indicators whose value is ≥ 0.600 are used for further analysis on the variable goal of becoming a partnership member [GOALS] with indicators including the existence of a marketing network [MRKT], wants to obtain access permission for the use of NTFPs in the [ACCS] area. The mediating variable applied is the perception of partnership members [PRCPT] with indicators including opinions about group effectiveness [GRSTF], views about the intensity of officer assistance [STFAS], and opinions about NTFP marketing [STFMR]. Meanwhile, the variable of benefits obtained as a member [BNFT] is an indicator of a sense of security (social benefits) [LGACS].

Table 2. The results of indicator testing with a valid loading factor/outer loading used in the research

Latent variables	Factor loading/external loading
ACCS <- GOALS	0.905
GRSTF <- PRCPT	0.733
LGACS <- BNFT	1.000
MRKT <- OBJECTIVE	0.620
STFAS <- PRCPT	0.705
STFMR <- PRCPT	0.931

As shown in **Table 2**, it is known that the indicator of wanting to obtain an access permit for NTFPs collection in the area [ACCS] has a Loading Factor (LF) value of $0.905 \geq 0.600$ and the indicator of the existence of a marketing network [MRKT] is LF $0.620 \geq 0.600$, which means that these two measurement indicators are valid for measuring the respondent's goal of becoming a member of the partnership program [GOALS]. Likewise, all three indicators measuring perception variables [PRCPT] [GRSTF, STFAS, and STFMR] have valid measurements with LF values $\geq$ 0.600. Meanwhile, for the benefit variable [BNFT], there is only one indicator that is valid to measure, namely the benefits currently felt by partnership members in the form of getting legal access to NTFPs collection in areas within the area [LGACS] with LF $1,000 \geq 0.600$.

Ghozali and Latan (2015) also stated that indicators can be said to have good reliability if they have a loading factor value > 0.700, which can still be tolerated up to > 0.600. Research by Anuraga and Sulistiyawan (2017) regarding the modeling of the public health development index also states that if the research is in the early stages of developing a measurement scale, the loading value of 0.500 to 0.600 for several variables between 3 and 7 means that it can be considered sufficient. The next step is to carry out validity and reliability test measurements to determine the relationship between questions and answers. The test results are presented in **Table 3**.

Table 3. Composite reliability and validity measurement results on the variables accepted in the research

Latent Variables	Cronbach's Alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
GOALS	0.372	0.457	0.745	0.602
PRCPT	0.708	0.825	0.836	0.633

Table 3 shows that the goal variable of becoming a member [GOALS] has a Composite Reliability Rho_C value of $0.745 \geq 0.700$ and the value of the member perception variable [PRCPT] $0.836 \geq 0.700$, which indicates that the variable is reliable. The AVE value for becoming a member is $0.602 \geq 0.50$ (0.602), meaning the variation in this variable is 60.2%. Likewise, the member perception variable with an AVE value of $0.633 \geq 0.500$. According to Yamin (2023), the variable AVE value > 0.500 indicates good convergent validity. Anuraga and Sulistiyawan (2017) reported that all latent variables have composite reliability values greater than 0.700, showing that all variables have good reliability. Faizah et al. (2021) stated that if Composite Reliability is > 0.700, then the level of reliability is accepted.

3.1.2. *Evaluation of the relationship between latent variables*

Heterotrait-Monotrait (HTMT) is carried out to determine how significant the correlation is with other latent variables and how the indicators represent the latent variables (Sarstedt et al. 2021). The results of HTMT measurements are presented in **Table 4**.

Table 4. Result of testing the relationship between variables in research with Heterotrait-Monotrait Ratio (HTMT)

Latent variables	Heterotrait-monotrait (HTMT)
OBJECTIVE <-> BNFT	0.734
PRCPT <-> BNFT	0.049
PRCPT <-> PURPOSE	0.939

The results of measuring the HTMT value (**Table 4**) show that the relationship between the goal variable [GOALS] and the benefits obtained by members [BNFT] shows an HTMT value of $0.734 \leq 0.900$, meaning that the variation shared by the goal variable to become a member [GOALS] is higher than the measurement item in each variable compared is divided into variable items of benefits obtained by members [BNFT] so that the discriminant validity value is met. Likewise, the perception variable [PRCPT] on the benefits [BNFT] shows an HTMT value of 0.049, meaning that the variation shared by the perception variable [PRCPT] is higher than the measuring indicator. So that discriminant validity is fulfilled, namely ≤ 0.900. It turns out that there is an HTMT value of $0.939 > 0.900$ (discriminant validity is not met) in the pair of perception variables [PRCPT] and the goal of becoming a member [GOALS]. According to Henseler et al. (2015) and Yamin (2023), discriminant validity is met if the HTMT value is ≤ 0.900. This tendency means that variations in measuring indicators have not been met.

Table 5. Results of discriminant testing with Fornell Lacker

Latent Variables	BNFT	TARGET	PRCPT
BNFT	**1,000**		
TARGET	0.533	**0.776**	
PRCPT	-0.016	0.459	**0.796**

Evaluation of discriminant validity with Fornell Lacker (**Table 5**) is acceptable if the root AVE of each indicator (in the diagonal axis) is higher than the correlation of that indicator with other indicators (Yamin 2023). For example, at the root of AVE, the benefits [BNFT] obtained by partnership members (1,000) are greater than the goal of becoming a member [GOALS] (0.776) and member perceptions [PRCPT] (0.796). This result shows that discriminant validity is met. This tendency means that the correlation of the indicator on each variable used to measure differs from other indicators.

3.2. *Evaluation of the Suitability of the Structural Model (Hypothesis Testing and Mediating Variables)*

Evaluation of the structural model in this research consists of a collinearity test (Inner VIF), a feasibility test for the relationship in the structural model, and a variable mediation test. The results of measuring the VIF value are shown in **Table 6**. According to Yamin (2023), multicollinearity is low if inner VIF < 5. Based on the measurement results (**Table 6**), it is known

that the indicator of wanting to obtain an access permit for NTFPs collection in the area [ACCS] has a value VIF $1.055 \leq 5.000$, indicators of the existence of a marketing network [MRKT] have value VIF $1.055 \leq 5.000$, which means that these two measurement indicators. There is no multicollinearity to measure the goal variable of becoming a member of the partnership program [GOALS]. Likewise, all three indicators measuring perception variables [PRCPT] [GRSTF, STFAS, and STFMR] do not have high multicollinearity with VIF values $\leq 5,000$. Furthermore, there is no high multicollinearity in the benefit variable [BNFT]; namely the benefit felt by current partnership members in the form of getting legal access to NTFPs collection in areas within the area [LGACS] with VIF $1,000 \leq 5,000$. Therefore, this result shows that the indicator for each variable shows a VIF value < 5, and the measurement continues with hypothesis testing.

Table 6. Multicollinear test results with Variance Inflation Factor (VIF)

Indicator	VIF
ACCS	1,055
GRSTF	1,524
LGACS	1,000
MRKT	1,055
STFAS	1,398
STFMR	1,992

3.2.1. Hypothesis test

The results of hypothesis testing on the goal variable of becoming a partnership member [GOALS] with indicators including the establishment of a marketing network [MRKT], wants to obtain access permission for the use of NTFPs in the [ACCS] area. The mediating variable applied is the perception of partnership members [PRCPT] with indicators including opinions about group effectiveness [GRSTF], views about the intensity of officer assistance [STFAS], and opinions about NTFP marketing [STFMR]. Meanwhile, the variable of benefits obtained as a member [BNFT] is an indicator of a sense of security (social benefits) [LGACS], as shown in **Fig. 4** and **Table 7**.
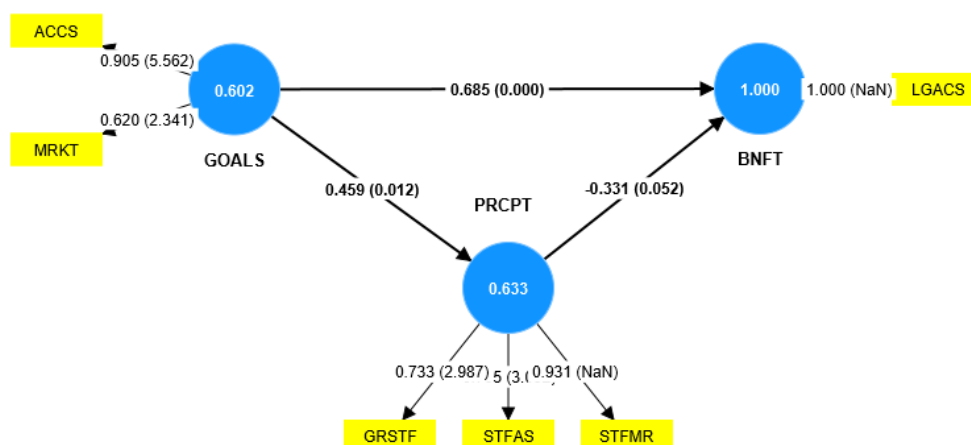
Fig. 4. Bootstrapping results of the PLS-SEM algorithm model.

As shown in **Fig. 4** and **Table 7**, the results show that the goal of becoming a member of the forestry partnership [GOALS] has a significant direct influence on the benefits obtained by [BNFT] with a value of 0.768 with a P-value (0.000 < 0.050). This result means that legal access

to the area motivated the respondent to participate in the forestry partnership program. This result is in accordance with 70.7% of respondents who stated that to date, the benefit obtained from being a member of a forestry partnership is the sense of security [LGACS] that the community has when collecting NTFPs in the area (there is legal access).

Table 7. Results hypothesis testing (path coefficient) based on bootstrapping

Latent variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P-value	Information
GOAL -> BNFT	0.685	0.672	0.194	3,525	0.000	Accepted
PURPOSE -> PRCPT	0.459	0.468	0.183	2,514	0.012	Accepted
PRCPT -> BNFT	-0.331	-0.299	0.170	1,944	0.052	Rejected

The purpose of becoming a member of [GOALS] also has a direct influence on members' perceptions of [PRCPT] with a P-value $(0.012 < 0.0500)$. This means that the goal of becoming a member is influenced by the community's positive perception of the effectiveness of the group [GRSTF], the intensity of officer assistance [STFAS], and the marketing of NTFPs [STFMR]. In contrast, the perception of partnership members [PRCPT] does not directly influence the benefits obtained by the community [BNFT] with a P-value $(0.052 > 0.0500)$. This tendency means that members have not felt positive perceptions regarding group effectiveness [GRSTF], the intensity of officer assistance [STFAS], and NTFP marketing [STFMR] as a goal of becoming a member of the partnership.

There is a relationship between the objective variables of becoming a member of a forestry partnership, namely the benefits obtained in the form of a sense of security for members holding forestry partnership permits in collecting NTFPs in their area (there is legal access). The objective variable of becoming a partnership member in the form of access to forests directly and significantly affects the perceptions of partnership members. Meanwhile, the perception variable only directly influences the benefits of being a member. However, it is not a mediating or intermediary variable between the goal of becoming a member and the benefit variable felt by partnership members. Communities will benefit from becoming members of conservation partnerships. Therefore, it is supposed to increase the perception of partnership members as a mediating variable on the benefits obtained by partnership members. In that case, it is necessary to increase activities that influence community perception, such as socialization, mentoring, coaching, and training. Agree on understanding and perception of relevant regulations, for example, Director General of KSDAE Regulation No. 6 of 2018 at the internal national park level and the community level, is a challenge in building conservation partnerships (Raharjo et al. 2019). Since the end of 2023, the challenge has been based on the Summary of Regulation of the Minister of Environment and Forestry Number 14 of 2023 concerning the Completion of Built Businesses and/or Activities in Nature Reserve Areas, Nature Conservation Areas, and Hunting Parks.

3.2.2. *Test mediating variables*

After testing the hypothesis, the next test is to test the mediating variable, namely the member perception variable [PRCPT], to find out whether this variable acts as a mediating or intermediary variable between the goal variable of becoming a member of the forestry partnership

[GOALS] and the benefit variable obtained as a member [BNFT]. The results of the perception variable mediation test are shown in **Table 7**.

Table 7. Results of testing the mediating variables used in the research

Latent Variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P-value	Information
GOAL -> PRCPT -> BNFT	-0.152	-0.147	0.105	1 . 445	0.149	Rejected

Based on the results of the mediation test, it is known that the perception of [PRCPT] members does not act as a variable that mediates the variable of the goal of becoming a member of the forestry partnership [GOALS] on the variable of benefits obtained as a member of [BNFT] with a P-value $0.149 > 0.050$. This tendency follows the results of interviews, which show that the public's positive perception of the forestry partnership program has not yet felt its benefits in increasing income, especially in marketing. Many people still do not know the rights and obligations that must be carried out when becoming members of a partnership because of the lack of two-way communication between officers and partnership members regarding the program's implementation. In fact, according to Raharjo et al. (2019), communication is an important factor in the success of forestry partnerships.

Valuation measurements of the effect size are used to determine whether the proposed model is valid and has a direct influence (Yamin 2023). According to Zuhdi et al. (2016), PLS-SEM is one of the optimum estimation techniques for prediction accuracy. The direct impact can be seen from the F-square value, automatically generated by SmartPLS 4. The results of measuring the effect size values are shown in **Table 8**.

Table 8. Effect size (f2) test results to determine the relationship between variables

Latent Variables	F-square
GOAL -> BNFT	0.589
PURPOSE -> PRCPT	0.268
PRCPT -> BNFT	0.137

F-square (f2) is one of the structural model tests to examine the relationship between constituent variables in the measurement model (Fauziyyah and Bisma 2019). According to Perdana et al. (2021) and Hussain et al. (2021), the effect size calculation is to predict the influence of a specific variable on other variables with a threshold value of 0.02 (small), 0.15 (medium), and 0.35 (large). Based on the processing of f square values (**Table 9**), the goal variable of becoming a member of a forestry partnership [GOAL] on the benefits variable [BNFT] has an enormous influence with a value of (0.589), the goal variable of becoming a member of a forestry partnership [GOAL] has an effect on the perception variable [PRCPT] at the medium level (0.268) and the perception variable [PRCPT] on the benefit variable of being a member [BNFT] has an effect from small to medium level (0.137). This result means that the results of the influence test strengthen the results of the hypothesis test and the results of the mediation test, which show that the goal of becoming a member of the forestry partnership [GOALS] has a significant direct influence on the benefits obtained by [BNFT]. The purpose of becoming a member of [GOALS] also directly influences perceptions of [PRCPT]. However, the perception variable of partnership members [PRCPT] has little direct influence on the benefits obtained by the community [BNFT].

Coefficient of determination (R2): The coefficient of determination calculation is carried out to determine the variance of each variable. As shown in **Table 9**, it is known that an R square value > 0.670 is declared strong, > 0.330 moderates, and > 0.190 weak (Chin 1998; Aditya et al. 2020). The R2 value is obtained automatically by SmartPLS 4. The R2 value can explain the influence of exogenous and endogenous variables (Anugerah and Sutarmin 2019).

Table 9. The results for the coefficient of determination (R-square) to determine the variance of each variable

Latent Variables	R-square	Adjustable R-squared
BNFT	0.371	0.338
PRCPT	0.211	0.191

The influence of the goal of becoming a member of a forestry partnership [GOALS] on the benefits obtained by [BNFT] members is 0.371 (moderate). The influence of the goal of becoming a member of [GOALS] on perceptions of [PRCPT] as a variable that mediates the benefits obtained by partnership members is 0.211 (weak). This tendency is in line with the results of interviews conducted that the community's goal in becoming members of the partnership is to gain legal access to collect NTFPs in the area with the perception that if they become members, they can increase community income. However, this positive perception has not been felt by the community because there is still a lack of socialization, counseling, and mentoring of the program from officers, and an NTFP marketing network has not yet been established.

3.3. Evaluation of Predictive Power and Model Fit

Goodness of fit (GoF) aims to test the predictive power and feasibility of the model (Muhson 2022). According to Hair et al. (2017), the model fit index can assess how well the hypothesized model structure can identify model specification errors. The GoF evaluates simple measurement models (Anugerah and Sutarmin 2019). The model used for measurement is an algorithmic model used after modification, namely the goal variable of becoming a partnership member [GOALS] with indicators including the existence of a marketing network [MRKT], wants permission to access and use NTFPs in the [ACCS] area. The mediating variable applied is the perception of partnership members [PRCPT] with indicators including opinions about group effectiveness [GRSTF], views about the intensity of officer assistance [STFAS], and opinions about NTFP marketing [STFMR]. Meanwhile, the variable of benefits obtained as a member [BNFT] is an indicator of a sense of security (social benefits) [LGACS]. The GoF measurements carried out by testing the predictive power and suitability of the model is shown in **Table 10**.

Table 10. Goodness of fit results with SRMR and NFI

The goodness of fit indicators	Saturated model	Model estimates	Information
SRMR	0.139	0.139	Good
NFI	0.632	0.632	Marginal

A model with a good fit to empirical data is considered a good fit if SRMR < 0.100 (Yamin 2023). Values less than SRMR 0.100 or 0.080 are appropriate (Hu and Bentler 1998). NFI value ≥ 0.900 (good fit) and l NFI ≤ 0.800–0.900 (marginal) (Lase et al. 2022). The closer the NFI value

is to 1. the better the match. The calculation results (**Table 10**) show that the structural model prepared to explain the variables of the purpose of becoming a member and the perceptions and benefits obtained by forestry partnership members is relevant.

3.4. The Role of Perception as a Mediating Variable in Supporting the Sustainability of BBSNP through Conservation Partnerships

Based on the results of the analysis that has been carried out, perceptions of the group effectiveness indicator [GRSTF], opinions about the intensity of officer assistance [STFAS], and opinions about NTFP marketing [STFMR] have not played a role as variables that mediate the goal variable of becoming a member with marketing network indicators [MRKT], wishes to obtain permission to access the use of NTFPs in the area [ACCS], and wants to collect other types of NTFPs (durian (*Durio zibethinus*), petai (*Parkia speciosa*), jengkol (*Archidendron pauciflorum*), and other species) [ANPRC] for the benefits obtained community after becoming members of the partnership with indicators in the form of increased income (economic benefits) [INCM], sense of security (social benefits) [LGACS] and macro climate (ecological benefits) [STAIN].

Raharjo et al. (2019) explained that having a legal access permit in the area improves public awareness of protecting the area, with the hope that this area will become a source of livelihood for the community. The impact of conservation partnerships in traditional use zones on the preservation of forest ecosystems is the establishment of cooperation to increase existing potential and maintain the sustainability of forest areas (Jabalnur et al. 2023). In line with the research results of Adnan et al. (2015), the forestry partnership program indirectly provides space between conservation area managers and the community to jointly monitor and evaluate the sustainability of managed forest areas concerning four pillars, namely land management, business governance, commercial governance, and institutional governance. According to Wandira et al. (2020), conservation partnerships are an alternative for resolving conflicts between communities and area managers.

If the community has a positive perception of the existence of the forest, then the community will have positive implications for the existence of the forest, and vice versa (Aspuan and Nugraha 2022). Harmonized perceptions from various parties are needed to smooth the implementation of multiple activities (Agustina et al. 2018). Thus, to increase public perception of the partnership program so that the goal is achieved, namely forest preservation as well as ensuring fulfillment of community life, there needs to be an increase in the types and intensity of activities that influence community perception, for example through socialization, mentoring and coaching.

3.5. Summary of Regulation of the Minister of Environment and Forestry Number 14 of 2023 Concerning Completion of Built Businesses and/or Activities in Nature Reserve Areas, Nature Conservation Areas, and Hunting Parks

This regulation is stipulated for completing built businesses and/or activities in Nature Reserve Areas, Nature Conservation Areas, and Hunting Parks. Developed Activities in Natural Reserve Areas, Nature Conservation Areas, and Hunting Parks, in the future referred to as Developed Activities, are all businesses and/or activities that have been built in natural reserve areas, nature conservation areas, and hunting parks before 2 November 2020. In the regulations, this forestry partnership in a conservation area or Conservation Partnership is a partnership between the head of a technical implementation unit or head of a regional technical implementation

unit following the authority with a Conservation Partner in the context of ecosystem restoration for the completion of built activities in the form of plantations, agriculture, and ponds in natural reserve areas, areas nature conservation, and hunting parks. This regulation covers the types of activities and inventory of built activities, schemes for completing built activities, procedures for completing built activities, monitoring, evaluation, development and control, and transition provisions. This regulation comes into effect from 3 November 2023. So it is hoped that the new policy that has been implemented can increase the role of the community in partnership programs and as a solution to problems that occur in the field, especially problems related to land use by communities in conservation areas, which have been carried out for generations but have not received legal permission to collect NTFPs in conservation areas.

4. Conclusion

It is proven that there is a relationship between the objective variables of becoming a member of a forestry partnership, namely the benefits obtained as a sense of security for members holding forestry partnership permits in collecting NTFPs in the area (there is legal access). The objective variable of becoming a partnership member in the form of access to forests directly and significantly affects the perceptions of partnership members. Meanwhile, the perception variable only directly influences the benefits of being a member. However, it is not a mediating or intermediary variable between the goal of becoming a member and the benefit variable felt by partnership members. Communities will benefit from becoming members of conservation partnerships. It is necessary to increase activities that influence public perception, such as socialization, mentoring, coaching, and training. It can improve the perception of partnership members as a mediating variable regarding the benefits obtained by partnership members.

Reference

Aditya, M. F., Abdurrahman, L., and Mulyana, R. 2020. Pemodelan Nilai Teknologi Informasi terhadap Performansi Kinerja Karyawan di PT Carano Integrasi Teknologi menggunakan Metode Structural Equation Modeling Berbasis Varian. *eProceedings of Engineering* 7(3): 9651–9660.

Adnan, H., Berlian, H., Hardiyanto, G., Suwito, and Sakti, D. K. 2015. *Pemberdayaan Masyarakat melalui Kemitraan Kehutanan*. Kemitraan bagi Pembaruan Tata Pemerintahan di Indonesia. Jakarta, Indonesia.

Agustina, M., Winarno, G. D., and Darmawan, A. 2018. Polarisasi Persepsi para Pihak dalam Pengembangan Hospitalitas Ekowisata di Unit Pengelola Wisata Kubu Taman Nasional Bukit Barisan Selatan (TNBBS). *Jurnal Hutan Tropis* 6(2): 154−160. DOI: 10.20527/jht.v6i2.5403

Anugerah, Y. R., and Sutarmin. 2019. Pengaruh Kompetensi Kerja dan Remunerasi terhadap Kinerja Anggota Kepolisian melalui Promosi Jabatan pada Polsek Sukomanunggal Surabaya. *Jurnal Fakultas Ekonomi Universitas Dr. Soetomo* 25(3): 281−299.

Anuraga, G., and Sulistiyawan, E. 2017. Autokorelasi Spasial untuk Pemetaan Karakteristik Indeks Pembangunan Kesehatan Masyarakat (IPKM) Pada Kabupaten/Kota di Jawa Timur. *Seminar Nasional Matematika dan Penerapannya Universitas Airlangga* 257–263. DOI: 10.26714/jsunimus.5.2.2017.%25p

Aspuan, A. and Nugraha, R. N. 2022. Persepsi Masyarakat terhadap Pengelolaan Taman Wisata Alam Telaga Warna Kabupaten Bogor Provinsi Jawa Barat. *Jurnal Inovasi Penelitian* 3(6): 6593–6598. DOI: 10.47492/jip.v3i6.2117

Astuti, N. P., and Bakri, R. 2021. Pelatihan Pengolahan Data Online menggunakan Aplikasi Smart-PLS 3 Pada Masa Pandemi Covid 19. *CARADDE: Jurnal Pengabdian Kepada Masyarakat* 4(1): 613–619. DOI: 10.31960/caradde.v4i1.1134

Bakri, S., Wulandari, C., Kurniasari, N., Safe'I, R., Ramdani, D., and Anshory. 2023. Effects of Characteristics and Perceptions of Collectors of Non-Timber Forest Products to be Members of the Partnership Program: A Case Study at Bukit Barisan Selatan National Park, Indonesia. *Jurnal Manajemen Hutan Tropika* 29(2): 109–118. DOI: 10.7226/jtfm.29.2.109

Chin, W. W. 1998. *The Partial Least Squares Approach to Structural Equation Modeling*. In: G. A. Marcoulides (Eds) Modern Methods for Business Research. Lawrence Erlbaum Associates Publishers. New Jersey, London.

Chiwaya, C., and Mzuza, M. K. 2022. Factors Influencing Community Participation in Forestry Management in Chiradzulu District, Malawi. *Open Journal of Forestry* 12(2): 177–184. DOI: 10.4236/ojf.2022.122010

Deviyanti, D. 2013. Studi tentang Partisipasi Masyarakat dalam Pembangunan di Kelurahan Karang Jati Kecamatan Balikpapan Tengah. *eJurnal Administrasi Negara* 1(2): 380−394.

Faizah, O. A. A., Suparti, S., and Hoyyi, A. 2021. Analisis Technology Acceptance Model pada Aplikasi Platform Shopee dengan Pendekatan *Partial Least Square* (Studi Kasus pada Mahasiswa Universitas Diponegoro). *Jurnal Gaussian* 10(3): 423–434. DOI: 10.14710/j.gauss.v10i4.33100

Fauziyyah, N. A. and Bisma, R. 2019. Analisis Kesesuaian Teknologi pada UNBK SMA/SMK di Jawa Timur. *Jurnal Informatika dan Teknologi* 2(2): 143−155. DOI: 10.29408/jit.v2i2.1499

Febrina, N., Dewantara, I., and Anwari, M. S. 2022. Persepsi Masyarakat Dusun Kopiang Kecamatan Mandor terhadap Keberadaan Kawasan Hutan dengan Tujuan Khusus Untan Kabupaten Landak. *Jurnal Hutan Lestari* 10(3): 536−546. DOI: 10.26418/jhl.v10i3.53558

Garaika and Darmanah. 2019. *Metodologi Penelitian*. CV. Teknologi Hira. Lampung, Indonesia.

Ghozali, I., and Latan, H. 2015. *Partial Least Squares: Konsep, Teknik dan Aplikasi menggunakan Program SmartPLS 3.0, -2/E*. Badan Penerbit Universitas Diponegoro. Semarang, Indonesia.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. 2017. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications. Los Angeles.

Henseler, J., Ringle, C. M., and Sarstedt, M. 2015. A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling. *Journal of Academy of Marketing Science* 43(1): 115–135. DOI: 10.1007/s11747-014-0403-8

Hu, L. T., and Bentler, P. M. 1998. Fit Indices in Covariance Structure Modeling: Sensitivity to Underparameterized Model Misspecification. *Psychological Methods* 3(4): 424. DOI: 10.1037/1082-989x.3.4.424

Hussain, T., Abbas, H., and Dake, W. 2021. Contributing Agents for Forest Management of Rural Areas: An Analysis Through SmartPLS Methods. *Journal of Business Strategies* 15(1): 109–134. DOI: 10.29270/Jbs.15.1(21).07

Jabalnur, Heryanti, Safiuddin, S., Intan, N., Ukkas, J., Suciati, M., and Tabiu, R. 2023. Kemitraan Konservasi di Hutan Mangrove dalam Zona Pemanfaatan Tradisional. *Halu Oleo Law Review* 7(1): 52–65. DOI: 10.33561/holrev.v7i1.13

Lase, B. D. G., Sujana, S., and Yusdira, A. 2022. Mengukur Kualitas Layanan Tempat Wisata, dan Dampaknya terhadap Kunjungan Ulang. *Jurnal Ilmiah Pariwisata Kesatuan* 3(2): 87–106. DOI: 10.37641/jipkes.v3i2.1371

Luswaga, H. 2023. Non-Timber Forest Products Benefits for Community Groups and Conservation Motivation in Mountains of Tanzania. *Environmental and Sustainability Indicators* 18: 100238.DOI: 10.1016/j.indic.2023.100238

Mohta, G., Sundawati, L., and Kuncahyo, B. 2023. Forest Farmer Group Development Model for Sustainable Well-Being in Kampar Regency. *Jurnal Sylva Lestari* 11(3): 427–453. DOI: 10.23960/jsl.v11i3.748

Muhson, A. 2022. *Analisis Statistik dengan SmartPLS: Path Analysis, Confirmatory Factor Analysis, and Structural Equation Modeling.* Program Magister Universitas Yogyakarta. Yogyakarta, Indonesia.

Natalia, E., Hoyyi, A., and Santoso, R. 2017. Analisis Kepuasan Masyarakat terhadap Pelayanan Publik menggunakan Pendekatan *Partial Least Square* (PLS). *Jurnal Gaussian* 6(3): 313–323. DOI: 10.14710/j.gauss.6.3.313-322

Okthalamo, V., Iskandar, D. A, and Masturiatna, A. 2022. Implementasi Program Kemitraan Konservasi di Taman Nasional Bukit Barisan Selatan. *Jurnal Penelitian Ekosistem Dipterokarpa* 8(2): 111–124. DOI: 10.20886/jped.2022.8.2.111-124

Pangestika, A. W. 2018. Persepsi Petani Padi terhadap Pemanfaatan Kartu Tani di Desa Kesesi Kecamatan Kesesi Kabupaten Pekalongan. Universitas Muhammadiyah Yogyakarta. Yogyakarta, Indonesia.

Perdana, A. A., Utami, M. C., and Aini, Q. 2021. End User Computing Satisfaction: Model Analisis Kepuasan Pengguna Aplikasi menggunakan *Partial Least Square Structural Equation Modeling* (Studi Kasus). *Jurnal Teknologi Informasi dan Ilmu Komputer* 8(6): 1237–1246. DOI: 10.25126/jtiik.2021863586

Puspasari, E., Wulandari, C., Darmawan, A., and Banuwa, I. S. 2017. Aspek Sosial Ekonomi pada Sistem Agroforestri di Areal Kerja Hutan Kemasyarakatan (HKm) Kabupaten Lampung Barat, Provinsi Lampung. *Jurnal Sylva Lestari* 5(3): 95–103. DOI: 10.23960/jsl3595-103

Raharjo, S., Firmansyar, R., Indina, L. A. and Aliadi, A. 2019. *Laporan Studi Literatur Kemitraan Konservasi di 12 Taman Nasional.* USAID. Washington.

Rochaedi, D. E., Priatna, D., and Rahayu, S. Y. S. 2021. Kemitraan Konservasi Pemulihan Ekosistem sebagai Alternatif Solusi Konflik Tenurial di Taman Nasional Gunung Halimun Salak. *Jurnal Penelitian Sosial dan Ekonomi Kehutanan* 18(3): 171–184. DOI: 10.20886/jpsek.2021.18.3.171-184

Roni, S. M., Djajadikerta, H., and Ahmad, M. A. N. 2015. PLS-SEM Approach to Second-Order Factor of Deviant Behaviour: Constructing Perceived Behavioural Control. *Procedia Economics and Finance* 28(1): 249–253. DOI: 10.1016/s2212-5671(15)01107-7

Saputra, J., and Dewata, I. 2019. Tenurial Conflict Between Parties in the Technical Implementation Unit of the Banjar Regency Forest Management Unit in the Province of South Kalimantan. in: *IOP Conference Series: Earth and Environmental Science* IOP Science 314(1): 012027. DOI: 10.1088/1755-1315/314/1/012027

Sarstedt, M., Ringle, C. M., and Hair, J. F. 2021. *Partial Least Squares Structural Equation Modeling*. In: Handbook of Market Research. (eds) Springer International Publishing. DOI: 10.1007/978-3-319-05542-8_15-2

Suharjito, D., and Wulandari, C. 2019. A Reflection Social Forestry in 2019: Towards Inclusive and Collaborative Government Approaches. *Forest and Society* 3(1): 137–140. DOI: 10.24259/fs.v3i1.6099

Suyono, R., Harahap, H., and Aththorick, T. A. 2017. Persepsi Masyarat Desa Lae Hole Ii dalam Pengelolaan Taman Wisata Alam (Twa) Sicike-Cike. *Jurnal Jeumpa* 4(1): 67–79.

Valenzuela, R. B., Yeo-Chang, Y., Park, M. S., and Chun, J. N. 2020. Local People's Participation in Mangrove Restoration Projects and Impacts on Social Capital and Livelihood: A Case Study in the Philippines. *Forests* 11(5): 1–24. DOI: 10.3390/f11050580

Yulia, N., Suratman, and Ritohardoyo, S. 2014. Pengetahuan Persepsi dan Partisipasi Masyarakat dalam Pemanfaatan Ruang Berwawasan Lingkungan di Kota Bengkulu. *Majalah Geografi Indonesia* 28(2): 153–162. DOI: 10.22146/mgi.13076

Wahyuni, A. S. 2022. Evaluasi Keberhasilan Implementasi E-Learning di UIN Suska Riau menggunakan Model Delone dan McLean dengan Pendekatan Structural Equation Modeling (SEM). Universitas Islam Negeri Sultan Syarif Kasim Riau. Pekanbaru-Riau.

Wandira, Y. A., Kaskoyo, H., Febryano, I. G., and Yuwono, S. B. 2020. Implementasi Kemitraan Hutan pada Kesatuan Pengelolaan Hutan Produksi Way Terusan. *Jurnal Hutan Tropis* 8(3): 244–250. DOI: 10.20527/jht.v8i3.9622

Wulandari, C. and Kurniasih, H. 2019. Community Preferences for Social Forestry Facilitation Programming in Lampung, Indonesia. *Journal of Forest and Society* 3(1): 114–132. DOI: 10.24259/fs.v3i1.6026

Wulandari, C., Fitriana, Y. R., Febryano, I. G., Herwanti, S., Kaskoyo, H., and Putra, H. J. 2021a. Complexity of Unsolved Forest Tenurial Conflict: A Case of Way Terusan Forest Management Unit, Lampung Province, Indonesia. *Jurnal Manajemen Hutan Tropika* 27: 21–31. DOI: 10.7226/jtfm.27.te.21

Wulandari, C., Budiono, P., and Iswandaru, D. 2021b. Importance of Social Characteristics of Community to Support Restoration Program in Forest Protection. *Indonesian Journal of Forestry Research* 8(2): 173–186. DOI: 10.20886/ijfr.2021.8.2.173-186

Yamin, S. 2023. *Olahdata Statistik: SmartPLS 3, SmartPLS 4, AMOS dan STATA*. PT. Dewanga Energi Internasional. Bekasi, Indonesia.

Yanita, N. W. A., Jayanegara, K., and Kencana, I. P. E. N. 2015. Pemodelan Struktural dari Emosi Positif sebagai Pemediasi terhadap Pembelian Tidak Terencana. *E-Journal of Mathematics* 4(3): 104–109. DOI: 10.24843/mtk.2015.v04.i03.p096

Zande, R. and Mzuza, M. K. 2022. An Investigation of the Factors Influencing Community Participation in Forest Management: A Case of Balaka District, Malawi. *Journal of Geoscience and Environment Protection* 10(3): 84–95. DOI: 10.4236/gep.2022.103007

Zuhdi, Z., Suharjo, B. and Sumarno, H. 2016. Perbandingan Pendugaan Parameter Koefisien Struktural Model melalui SEM dan PLS-SEM. *Jurnal Matematika dan Aplikasinya* 15(2): 11–22. DOI: 10.29244/jmap.15.2.11-22