



## Impact of community empowerment in the development of coffee areas located in Bengkulu Province, Indonesia

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**ABSTRACT:** The planning for developing coffee-growing regions has been carried out in various areas, involving multiple stakeholders as part of agricultural development efforts. Similarly, in the planning process for these coffee-growing regions, it is crucial to involve local communities as the owners of coffee farmland. However, preliminary surveys indicate that community involvement in planning remains significantly limited. This study analyzes how community empowerment contributes to the planning and development of coffee-growing regions. The research was conducted in Kepahiang Regency and Rejang Lebong Regency, Bengkulu Province, as these two regencies are the largest coffee producers in the province and have established development plans for their coffee-growing regions. The study employs a mixed-methods approach, combining interactive analysis with quantitative tools such as Likert scale weighting and Structural Equation Modeling (SEM) using Partial Least Squares (PLS). The findings reveal that community empowerment has a significant positive effect, with a t-value of 19.069 (greater than the critical value of 1.96). The impact magnitude is 0.611 (61.1%), indicating that empowerment positively influences the success of coffee region development planning by 61.1%. This underscores the critical role of community empowerment in ensuring the effective implementation of development plans that align with their objectives.

**Keywords:** agricultural development; local communities; structural equation modeling; partial least squares.

## Impacto do Empoderamento da Comunidade no Desenvolvimento de Áreas de Café Localizadas na Província de Bengkulu, Indonésia

**RESUMO:** O planejamento para o desenvolvimento de regiões de cultivo de café foi realizado em várias áreas, envolvendo várias partes interessadas como parte dos esforços de desenvolvimento agrícola. Da mesma forma, no processo de planejamento para essas regiões de cultivo de café, é crucial envolver as comunidades locais como proprietárias das terras de cultivo de café. No entanto, pesquisas preliminares indicam que o envolvimento da comunidade no processo de planejamento permanece significativamente limitado. Este estudo visa analisar até que ponto o empoderamento da comunidade contribui para o planejamento e desenvolvimento de regiões de cultivo de café. A pesquisa foi conduzida em Kepahiang Regency e Rejang Lebong Regency, província de Bengkulu, pois essas duas regências são as maiores produtoras de café da província e estabeleceram planos de desenvolvimento para suas regiões de cultivo de café. O estudo emprega uma abordagem de métodos mistos, combinando análise interativa com ferramentas quantitativas, como ponderação de escala Likert e Modelagem de Equações Estruturais (SEM) usando Mínimos Quadrados Parciais (PLS). As descobertas revelam que o empoderamento da comunidade tem um efeito positivo significativo, com um valor t de 19,069 (maior que o valor crítico de 1,96). A magnitude do impacto é de 0,611 (61,1%), indicando que o empoderamento influencia positivamente o sucesso do planejamento do desenvolvimento da região cafeeira em 61,1%. Isso ressalta o papel crítico do empoderamento da comunidade em garantir a implementação eficaz dos planos de desenvolvimento em linha com seus objetivos.

**Palavras-chave:** desenvolvimento agrícola; comunidades locais; modelagem de equações estruturais; mínimos quadrados parciais.

### 1. INTRODUCTION

The development process is shaped by both physical and non-physical conditions within a society, which explains why the pace of development varies across nations. Successful development promotes growth, equity, and sustainability (Hapsoro; Bangun, 2020; Fadilla et al., 2022) while also

improving the quality of life (Akbar, et al., 2003) and meeting the aspirations of all citizens (SUKINO, 2014; AKBAR et al., 2018). True development arises from community-driven processes supported by training, empowerment, and the active roles of stakeholders (GREGOLIN et al., 2018).

The development spans multiple sectors, including agriculture, where coffee plantations play a significant role. Careful planning is essential to achieve development goals, considering all relevant factors (CHETTIPARAMB, 2019; SPATARU et al., 2020). Effective planning begins with identifying potential opportunities and challenges (BUDIANTA, 2010; ROSITASARI; MULYADI, 2022). Planning directs efforts toward achieving goals and delivers positive regional impacts (SIMAMORA; SUPRIADI, 2013; TARIGAN, 2016). Moreover, crafting strategies to ensure the success of planned objectives is crucial (BARAMBAE; ELVISENI, 2019). Planning outcomes are most effective when strategies are well-executed, and all stakeholders collaborate in alignment with their roles and responsibilities (SUSANTO, 2016; OLIVEIRA; HERSPERGER, 2018). Community involvement and other key actors are integral to this process (STARICCO; VITALE BROVARONE, 2018). Thus, Thoughtful planning becomes a cornerstone for structured development (Fadlina et al., 2013; Kaehe et al., 2019) and sustainable human advancement (RUSTIADI et al., 2018; SUPARMOKO, 2020).

Coffee, a major export commodity in Indonesia, significantly contributes to the economy, with Bengkulu Province being one of the country's leading coffee producers. However, the Central Statistics Agency (BPS) data shows that large-scale coffee plantations have shrunk over the past three years. This decline is partly due to land-use changes, with coffee farms being converted to other crops like Tomato, which farmers find more profitable (SELIANI; NURLIANTI, 2019).

Nationwide, coffee plantation areas decreased by 4.57% in 2020 and 3.80% in 2021. Similarly, private plantation areas dropped by 3.03% in 2020 and 10.15% in 2021 (STATISTICS, 2021). Productivity also showed an overall decline of -0.47% between 2017 and 2021.

In response to this, the government has identified specific zones for coffee development under Minister of Agriculture Decree No. 830/KPTS/R.C.40/12/2016, later updated with Decree No. 472/KPTS/R.C.040/6/2018. These decrees provide guidelines for developing coffee agricultural zones. Following these directives, provincial governments have developed master plans, while district governments have prepared action plans to guide coffee zone development. These documents serve as key references for implementing coffee-related initiatives.

The planning of these documents involves teams at multiple levels. At the national level, a central advisory team oversees technical teams responsible for planning and executing agricultural development initiatives. Similarly, provincial-level advisory teams guide provincial technical teams, while district-level advisory teams supervise district-level efforts.

A crucial question arises regarding the extent of community involvement, particularly farmers, in planning agricultural development zones. Despite being key stakeholders, many farmers remain unaware that their coffee farms are part of these designated development zones. As emphasized in community development initiatives, empowerment approaches advocate for transforming marginalized communities from passive recipients of government-driven programs into active participants in decision-making and planning (MARGOLANG, 2018).

As Bakar et al. (2024) described, community empowerment refers to individuals' capacity to harness collective strength. This involves initiatives by the community, with or without external support, to improve their living conditions based on their own resources (MARDIKANTO; SOEBIATO, 2015). Empowered communities are better equipped to adapt, grow, and achieve progress (HADI, 2015; KANDATI et al., 2019).

The development of agricultural zones, including coffee regions, must prioritize community involvement. However, existing government programs for agricultural zone development have not fully empowered farmers. Limited participation in planning and implementation remains a significant challenge (Suhardiman et al., 2019), with community involvement often being symbolic rather than substantive (LOVRIĆ; LOVRIĆ, 2018). Minimal evidence supports the notion that community-based empowerment is integral to agricultural zone planning. This study aims to assess the role of empowerment in planning coffee agricultural development zones and to provide recommendations for enhancing the planning process to achieve the desired outcomes.

## 2. METHODS

This research was conducted in Kepahiang and Rejang Lebong Regencies in Bengkulu Province from January 2023 to June 2023. The study primarily focused on the Kabawetan and Sindang Dataran Districts, which are pivotal in developing coffee regions. It specifically targeted the creation of Coffee Villages in Bengkulu Province. The choice of these locations was deliberate, given that Kepahiang and Rejang Lebong are the largest coffee-producing regencies among the nine in the province.

The research utilized a mixed methods approach, combining qualitative and quantitative techniques to gather comprehensive data. Respondents included various stakeholders such as farmers, local government officials from BAPPEDA, the Plantation Office, the Agriculture Office, and the Central Statistics Agency (BPS). Additionally, the study involved community members residing around the targeted development areas, non-governmental organizations (NGOs), and private sector representatives, specifically planning consultants.

The sampling method for farmers was simple random sampling, ensuring that every individual had an equal chance of being selected. The number of respondents was determined using a random table, as Sugiyono (2017) suggested, with a 5% margin of error. This approach ensured that the sample was representative of the population. For each district, samples were collected as follows:

Table 1. The number of samples taken.

Tabela 1. O número de amostras coletadas.

No	Subdistrict	Population	Sample
1.	Kabawetan	159	110
2.	Sindang Dataran	615	227
Total			337

Additionally, data collection was carried out by key informants selected for their ability to provide detailed accounts and narratives, not only about themselves but also regarding other individuals, situations, conditions, or events

related to the planning process for the development of coffee areas in Kepahiang Regency and Rejang Lebong Regency. The selection of informants in this study was conducted purposively and through a snowball sampling method, based on the consideration that these individuals possessed the skills and understanding of the processes, situations, and conditions of coffee area development planning. This approach was tailored to align with the research objectives,

with the number of informants increasing as the research focus became more directed (SATORI DJAMAN; KOMARIAH, 2020). The criteria for selecting informants were based on their ability to meet the research needs. Key informants were specifically used to complement qualitative data, leveraging their experiential knowledge, with interviews conducted as follows:

Table 2. Research participants.

Tabela 2. Participantes da pesquisa.

Research Participants	Number
Secretary of the Provincial Agriculture Office of Bengkulu.	1
Head of the Plantation Division, Provincial Agriculture Office of Bengkulu.	1
Secretary of the Regional Development Planning Agency (Bappeda) of Kepahiang Regency.	1
Secretary of the Regional Development Planning Agency (Bappeda) of Rejang Lebong Regency.	1
Head of the Agriculture and Plantation Office of Kepahiang Regency.	1
Head of the Agriculture and Plantation Office of Rejang Lebong Regency	1
Head of Kabawetan Subdistric	1
Head of Sindang Dataran Subdistrict	1
Agricultural Extension Officer of Kabawetan Subdistrict	1
Agricultural Extension Officer of Sindang Dataran Subdistrict	1
Village Head in Kabawetan Subdistrict	6
Village Head in Sindang Dataran Subdistrict	6
Community Leader	6
Total	28

Qualitative analysis in this study involves an interactive approach, where the data and information collected are described based on the phenomena observed in the field. Quantitative analytical tools include the Likert scale weighting method and Partial Least Squares Structural Equation Modeling (SEM-PLS). SEM is a multivariate analytical technique developed to address the limitations of earlier analytical models commonly applied in statistical research. This study employs a mixed-methods approach using a concurrent embedded strategy, where the secondary

method enhances and reinforces the primary method (CRESWELL, 2009). The analytical models referenced include regression analysis, path analysis, and confirmatory factor analysis (HOX; BECHGER, 1998, *apud* in DEPERIKY et al., 2021). Each stage and process of the PLS model evaluation must undergo systematic assessment, encompassing both the outer model evaluation and the inner model evaluation. The description of the variables is shown in Table 3.

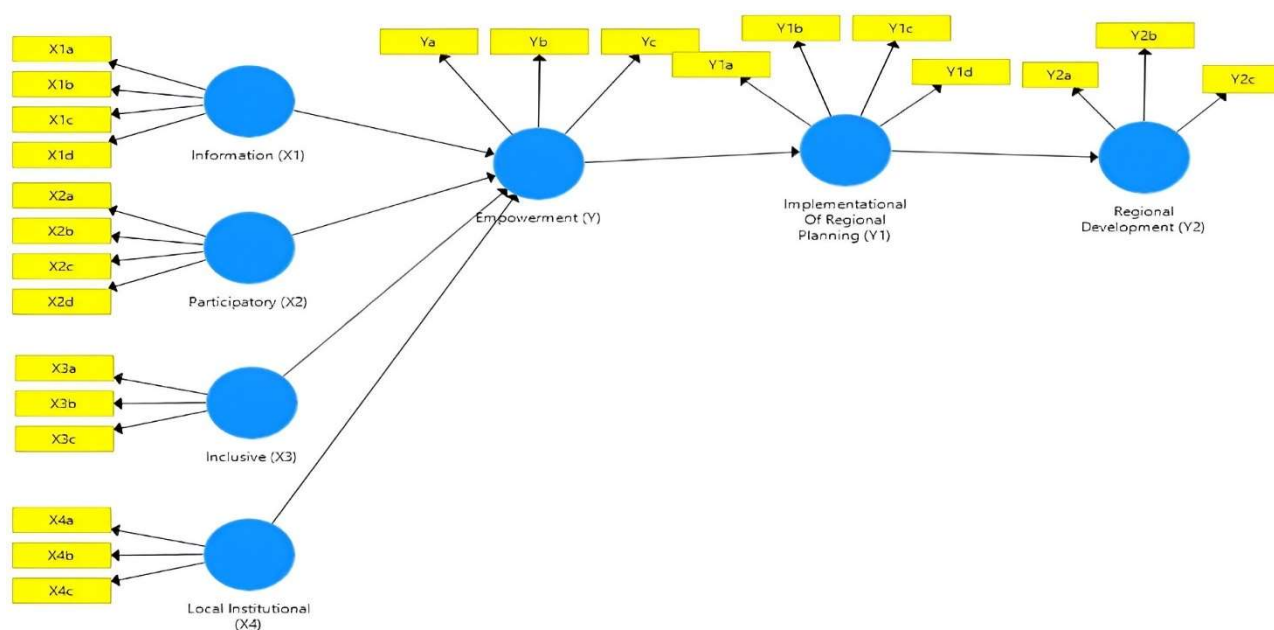


Figure 1. Initial Stage Research Model

Figura 1. Modelo de pesquisa em estágio inicial.

### 3. RESULTS

#### 3.1. Validity Test

This validity test aims to determine the extent to which the questionnaire items can represent the variables being measured. The validity testing utilized the loading factor from PLS calculations, revealing that all questionnaire items met the recommended values, thereby confirming the validity of the indicators used to measure the variables in this study.

Indicators with high loading factor values indicate a strong relationship with the latent variable, thus supporting high reliability. From the data run, indicators with a loading factor less than 0.5 (X1b, X1c, X3b, and X4a) were dropped. The resulting model output is as follows Figure 2. Based on the Figure, the obtained loading factor values on the output of the Outer Loadings running Model are presented as follows:

Table 3. Description of Variables in the SEM PLS Model.

Tabela 3. Descrição das variáveis no modelo SEM PLS.

Variable	Description	Measurement Criteria
Access to information	Accessibility of information	Ordinal scale
Participatory	Participation in planning meetings and active involvement	Ordinal scale
Inclusive	Openness to diversity, tolerance, and ease of interaction	Ordinal scale
Local Institutional Capacity	The ability of local institutions to actively engage and support coffee area development planning	Ordinal scale
Empowerment	The form of active community involvement in the planning process, reflected by their presence, role, and understanding of the goals and processes in the planning stages	Ordinal scale
Implementation of Area Planning	The application of area planning stages in developing coffee area planning	Ordinal scale
Success of Area Development	The success of a coffee area development plan, marked by the competitiveness of coffee farmers, bargaining power in price determination, and sustainable land use without converting land to other commodities	Ordinal scale

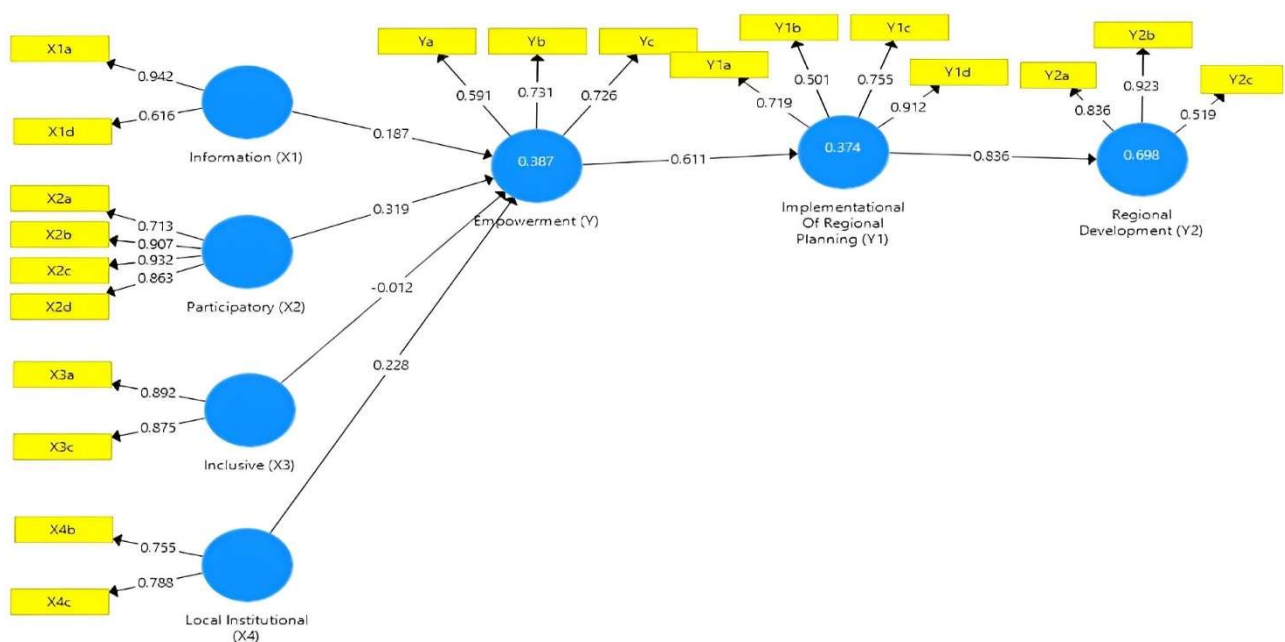


Figure 2. Results of the analysis of the Stage\_2\_Model (PLS\_Algorithm).

Figura 2. Resultados da análise do Stage\_2\_Model (PLS\_Algorithm).

Based on Figure 2, Table 4 presents the obtained loading factor values for the output of the Outer Loadings running Model.

In the Model Stage\_2 depicted in Figure 2, no values below 0.5 were identified. Thus, at this stage, Model Stage\_2 is considered a good or fit model and can proceed to the next analysis stage. Factor loadings greater than 0.5 indicate that all indicators exhibit good convergent validity, confirming their validity in measuring their respective latent variables. To test for potential high correlations between key variables (multicollinearity), a Collinearity Statistics analysis was conducted using the Variance Inflation Factor (VIF), with the results presented in Table 5.

The analysis reveals that the Variance Inflation Factor (VIF) values are consistently below the threshold of 10, suggesting that multicollinearity does not pose a substantial concern. This finding implies that the intercorrelation among the key variables under study remains moderate, ensuring that the analytical process operates effectively within acceptable parameters. As a result, the parameter estimates derived from the model can be deemed both valid and credible for further interpretation.



Table 4. The factor loading values from the outer loadings output are as follows:

Tabela 4. Os valores de carga fatorial da saída de cargas externas são os seguintes:

Indicator	Empowerment (Y)	Implementation of Regional Planning (Y1)	Inclusive (X3)	Information (X1)	Local Institutional (X4)	Participatory (X2)	Regional Development (Y2)	Notice
X1a				0.942				Valid
X1d				0.616				Valid
X2a						0.713		Valid
X2b						0.907		Valid
X2c						0.932		Valid
X2d						0.863		Valid
X3a			0.892					Valid
X3c			0.875					Valid
X4b					0.755			Valid
X4c					0.788			Valid
Y1a		0.719						Valid
Y1b		0.501						Valid
Y1c		0.755						Valid
Y1d		0.912						Valid
Y2a							0.836	Valid
Y2b							0.923	Valid
Y2c							0.519	Valid
Yes	0.591							Valid
Yb	0.731							Valid
Yc	0.726							Valid

Source: Research Results, 2023 (Processed Data).

Table 5. Variance Inflation Factor (VIF) analysis results.

Tabela 5. Resultados da análise do fator de inflação de variância (VIF).

	VIF
X1a	1,192
X1b	1,109
X1c	1,029
X2a	1,530
X2b	3,300
X2c	4,027
X2d	2,467
X3a	1,477
X3b	1,017
X3c	1,459
X4a	1,015
X4b	1,049
X4c	1,040
Y1a	1,541
Y1b	1,108
Y1c	1,829
Y1d	2,360
Y2a	1,692
Y2b	1,632
Y2c	1,156
Ya	1,109
Yb	1,221
Yc	1,109

Source: Research data processed (2024).

### 3.2. Reliability Test

Reliability testing, or instrument reliability testing, assesses the consistency and stability of an instrument's measurement scores in capturing specific constructs and evaluates its adequacy as a measurement tool. This study verified data quality by analyzing composite reliability scores obtained through Partial Least Squares (PLS) for each variable.

Based on the guidelines outlined by SINGH et al (2024), a composite reliability score ( $\rho_c$ ) above 0.8 signifies strong reliability, while values exceeding 0.6 are considered acceptable. Additionally, the Average Variance Extracted (AVE) must exceed 0.50, and Cronbach's alpha should surpass the threshold of 0.70 to confirm the instrument's reliability (SINGH et al., 2024). The outcomes of the reliability analysis for all research variables are summarized in the table below.

Based on the reliability testing results, it can be concluded that all variables are suitable as measurement indicators, as the values for Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) meet the required thresholds. It is important to note that not all criteria in reliability testing must be satisfied. As long as one of the three criteria - Cronbach's Alpha, Composite Reliability, or AVE - is met, the reliability of the measurement can be considered acceptable.

Table 6. Cronbach's Alpha, Composite Reliability and Average Variance Extracted (AVE) Test.

Tabela 6. Alfa de Cronbach, Confiabilidade Composta e Teste de Variância Média Extraída (AVE).

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Empowerment (Y)	0.442	0.725	0.470
Implementation of Regional Planning (Y1)	0.713	0.820	0.543
Inclusive (X3)	0.718	0.876	0.780
Information Access (X1)	0.481	0.768	0.633
Local Institutional Capacity (X4)	0.321	0.746	0.596
Participatory (X2)	0.878	0.917	0.736
Regional Development Success (Y2)	0.687	0.815	0.606

Source: Research Results, 2023 (Processed Data).

### 3.3. Evaluating the Inner Model and Structural Model

The inner model, also known as the structural model, is assessed to examine the relationships between variables, their significance levels, and the R-square values of the research model. The structural model is evaluated using the R-square values of the dependent variables.

Tabel 7. Analysis of R-Square.

Tabela 7. Análise do R-quadrado.

Variabel	R Square
Implementation Regional Capacity (Y1)	0.374
Regional Development Succes (Y2)	0.698
Empowerment (Y)	0.387

Source: Research findings, 2023 (data processed)

Table 7 above illustrates that the R-square value for the variable of Planning Implementation is 0.340, meaning that the variability in the Implementation of Regional Planning explained by Community Empowerment is 37.4%. This indicates that Community Empowerment influences the implementation of regional planning by 37.4%. The better the empowerment efforts, the more effective the planning implementation will be, which is expected to positively impact the success of agricultural development. In the process of regional development implementation, community involvement and participation are crucial for achieving the goal of human development and improving quality of life. Community involvement in the planning process is carried out through community empowerment by including them in every stage of the planning process, gathering information, and understanding their needs and desires, which serve as a shared goal to be achieved in

regional agricultural planning for sustainable development. This is in line with Susanto (2016), who asserts that development should focus on fulfilling basic human needs and environmental sustainability to ensure the continuity of sustainable development.

The variable of Regional Development Success has an R-square value of 0.698, meaning that the Planning Implementation variable can explain 69.8% of the variability in Regional Development Success. Meanwhile, the Community Empowerment variable has an R-square value of 0.387, indicating that the variables of Access to Information, Participatory Approach, Inclusivity, and Local Institutional Capacity can explain 38.7% of the variability in Community Empowerment. The higher the R-square value, the greater the ability of the independent variables to explain the dependent variable, thus improving the structural equation. This is consistent with the findings of Maryani et al. (2019), who identified key factors influencing the success of empowerment, including the support of local government bureaucracy for social development, the education level of the community, access to information regarding programs, and community participation.

### 3.4. Hypothesis Testing

Hypothesis testing is based on the values obtained from the structural model analysis. The t-value and the standardized path coefficient determine the significance level of the path coefficient. The threshold for hypothesis testing is that the factor loadings (t-values) must be greater than the critical value ( $\geq 1.96$ ).

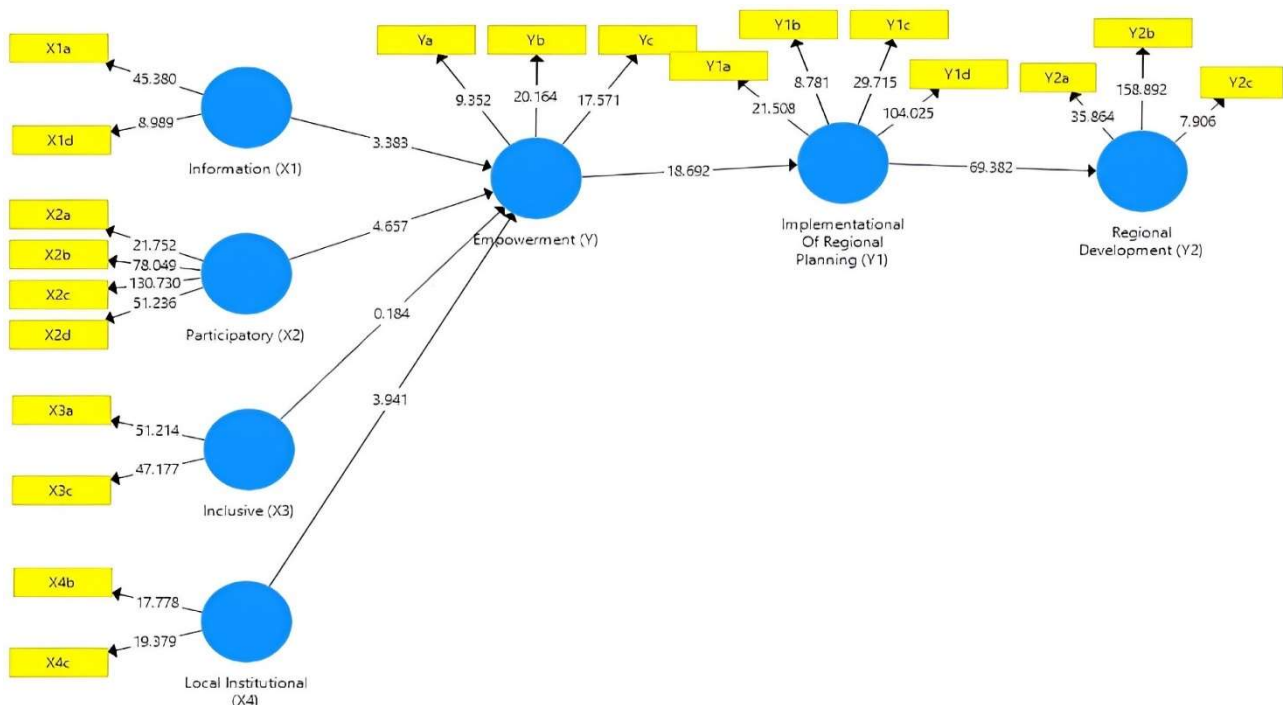


Figure 3. Results of the analysis of the Model Stage\_2\_(PLS\_Bootstrapping).

Figura 3. Resultados da análise do Model Stage\_2\_(PLS\_Bootstrapping).

## 4. DISCUSSION

Based on the data analysis presented in Table 8 (Path Coefficients), it was found that Community Empowerment

plays a significant positive role with a t-value of  $18.692 > 1.96$  and a p-value of  $0.000 < 0.05$ . The effect size is 61.1%, indicating that community empowerment influences the

regional development planning process. The success of regional planning is affected by the existence of community empowerment.

The findings reveal that the implementation of regional development planning also plays a positive role, with a t-value of  $69.382 > 1.96$  and a p-value of  $0.000 < 0.05$ . The effect size is 0.836 (83.6%). This suggests that when regional planning is implemented with community empowerment in the planning process, the resulting plans reflect the needs of the community based on the existing potential and problems and with the full awareness that the plans are part of their goals. This approach aims to enhance agricultural development in the region, ultimately improving the welfare and livelihoods of the community, particularly the farmers, who are the main subjects in regional agricultural development.

The variable of Inclusivity does not play a positive role, with a t-value of  $0.184 < 1.96$  and a p-value of  $0.854 > 0.05$ .

The effect size is -0.0129 (-1.2%), indicating that inclusivity does not significantly contribute. This suggests that not all segments of society have benefited from implementing the regional development planning for coffee cultivation. The lack of positive impact indicates that the planning process has not involved all societal groups.

Access to Information plays a positive role in community empowerment, with a t-value of  $3.83 > 1.96$  and an effect size of 18.7%. This means that information received by the community, particularly farmers - whether from group leaders, peers, or agricultural extension workers - is crucial for farmers to understand and be motivated to participate in regional planning. The awareness that the coffee regional development plan is vital and addresses their needs arises when farmers comprehend the activity's goals, as informed by group leaders or other community representatives during socialization and FGD sessions to develop the Master Plan and Action Plan.

Table 8. Path Coefficient and P-value (Direct Effect).

Tabela 8. Coeficiente de caminho e valor P (efeito direto).

Part Coefficient	Original Sample (O)	Sample Mean (M)	Standard Deviation (ST Dev)	T Statistics (IO/ST Dev)	P Values
Empowerment (Y) > Implementation of Regional Planning	0.611	0.613	0.033	18,692	0,000
Implementation of Regional Planning (Y) > Regional Development Success (Y2)	0.836	0.837	0.012	69,382	0,000
Inclusive (X3) > Empowerment (Y)	-0.012	-0.012	0.068	0.184	0.854
Information Access (X1) > Empowerment (Y)	0.187	0.187	0.055	3,383	0,000
Local Institutional Capacity (X4) > Empowerment	0.228	0.229	0.058	3,941	0,000
Participatory (X2) > Empowerment (Y)	0.319	0.320	0.068	4,657	0,000

Source: Research Results, 2023 (Processed Data).

Regarding Local Institutional Capacity, it plays a significant positive role, with a t-value of  $3.941 > 1.96$  and a p-value of  $0.000 < 0.05$ . The effect size is 22.8%. This indicates that the better the local institutions, the more effective community empowerment will be, as local institutions serve as a platform for the community to gather and engage in activities aimed at enhancing self-capacity, transforming the community from being mere objects of development into active subjects of development, as discussed by Margolang (2018).

Community Participation plays a significant positive role, with a t-value of  $4.657 > 1.96$  and a p-value of  $0.000 < 0.05$ . The effect size is 31.9%, meaning higher community participation leads to better community empowerment. This aligns with the research by Ababu et al. (2023), which states that women's participation in decision-making activities can enhance their empowerment. As a form of empowerment, participation is active involvement by the community, both physically and psychologically, not merely symbolic (ANWAS, 2014; LOVRIC; LOVRIC, 2018). Community participation in agricultural development can involve joint decision-making in all activities, collective learning, shared benefits, and joint monitoring and evaluation (CASTRO et al., 2016). According to TAMBAIP et al. (2023), the prerequisites for participation include (1) opportunities, (2) capabilities, and (3) willingness of the community.

## 5. CONCLUSIONS

Based on the data analysis, it can be concluded that community empowerment plays a significantly positive role, as evidenced by the t-value of 18.692, which exceeds 1.96, or the p-value of 0.000, which is less than 0.05. The effect size

is 58.3%, suggesting community empowerment notably impacts the planning process for developing coffee agricultural areas.

The active involvement of the community influences the success of this planning. Therefore, it is recommended that community participation and empowerment be prioritized throughout the development planning process.

This will ensure that the programs designed are closely aligned with the community's current needs and implemented with genuine enthusiasm and commitment, recognizing that the activities serve their interests rather than simply acting as executors of government policies.

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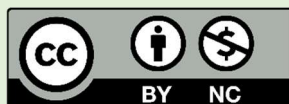
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