



Double Burden Trap: Poverty of Sandwich Households in Bengkulu Province

Guntur Nugroho^{1*}, Nurlatifah²

BPS-Statistics Bengkulu Selatan Regency, Indonesia^{1*}

Education and Training Center of BPS-Statistics Indonesia, Indonesia²

Email: guntur.nugroho@bps.go.id*, ifah@bps.go.id

Abstrak

Keywords:

Bengkulu;
Double Burden;
Household;
Multinomial Logistic Regression;
Poverty;
Sandwich

The phenomenon of sandwich households those bearing dual economic burdens both upwards and downwards across generations has the potential to increase socio-economic vulnerability, yet remains underexplored in poverty-related studies. This research aims to analyze the characteristics of sandwich households and the factors influencing their poverty status in Bengkulu Province in 2024. Utilizing data from the 2024 National Socio-Economic Survey and a multinomial logistic regression approach, this study classified sandwich households into four economic status categories: poor, vulnerable-to-poverty, moving toward the middle-class, and middle-class. The findings reveal that households headed by individuals aged over 35, working as informal workers, having more than four dependents, and receiving social-economic assistance are more likely to fall into the poor and vulnerable-to-poverty groups. In addition, the low educational attainment of the household head significantly increases the risk of falling into the vulnerable category. These results indicate that there are opportunities for targeted policy interventions focusing on these at-risk groups through skills training, improved access to formal employment, and better-targeted social-economic assistance programs. Moreover, enhancing educational quality represents a vital long-term strategy to break the cycle of intergenerational economic vulnerability within sandwich households.

INTRODUCTION

The sandwich generation phenomenon is gaining increasing attention in household welfare studies because the intergenerational care structure they bear presents complex economic and emotional pressures (Ardiyanto et al., 2024; Pratita Rari & Nurokhmah, 2022; Putri et al., 2024; Rachmawati et al., 2024). This group generally consists of individuals of productive age who are simultaneously responsible for the living needs of their children and their parents, who are no longer productive. This dual responsibility further burdens households with limited access to basic services such as education, healthcare, information technology, and social protection (Alburez-Gutierrez et al., 2021). This scenario can increase the risk of exclusion from welfare schemes. Often, although not statistically recorded as poor, sandwich households experience high consumption pressure and real economic vulnerability due to a heavy dependency structure and limited adaptive capacity (Putri et al., 2024; Rachmawati et al., 2024).

With the double burden they face, there are several socio-economic vulnerabilities that occur for them. Research by Rachmalia (2024) shows that sandwich generation individuals

face a significant double financial burden, often leading them to be in debt and struggle to save for the future. Additionally, Rabi & Mansor (2024) revealed that this generation receives low social protection, forcing them to rely on personal resources to meet the care and financial needs of their parents and families. On the other hand, these conditions contribute to the deteriorating psychological health of the sandwich generation, as noted by Owsiany et al. (2023), who found high levels of burnout and depression in this generation, ultimately impacting their well-being and happiness and increasing their vulnerability to poverty.

This condition becomes increasingly relevant to study in the context of Bengkulu Province, which shows an anomaly between its natural resource wealth and weak welfare indicators. BPS-Statistics Bengkulu Province (2022), in its publication, "Analysis of the Population Profile of Bengkulu Province: A Demographic Bonus Review", states that Bengkulu Province has economic potential from sectors such as oil palm plantations, coal mining, and gold. However, Bengkulu Province recorded the second-lowest per capita GRDP on Sumatra Island and the second-highest poverty rate, which was 13.56 percent in 2024 (BPS, 2024d, 2024b). Furthermore, the unemployment rate, which is the lowest in Sumatra Island at 3.11 percent, actually indicates the dominance of the informal sector, which does not provide a guarantee of fixed income or job protection (BPS, 2024f, 2024c). Nearly two-thirds of workers in this province are employed in the informal sector, which directly affects the ability of households, especially sandwich households, to maintain economic resilience given their large number of dependents.

Demographically, Bengkulu is currently in a period of demographic bonuses, but structural pressures are increasing. This is marked by a dependency ratio that continues to increase from 44.34 to 45.02 between 2020 and 2024 (BPS-Statistics Bengkulu Province, 2024a). Similarly, the total fertility rate increased from 2.2 to 2.44, and life expectancy rose from 72.59 to 73.31 years (BPS-Statistics Bengkulu Province, 2022, 2024b). The increasing number of children and elderly in households extends the period of dependency on the productive-age head of household, thus increasing expenditure burdens, hindering asset accumulation, and reducing social mobility capacity. When sandwich households experience this situation, the economic pressure they face becomes more complex due to its simultaneous and long-term nature.

Besides structural and demographic factors, the limited education of household heads also weakens their ability to adapt to economic pressure. Low levels of education limit formal employment opportunities, reduce access to productive resources, and restrict the ability to use modern technological and financial instruments (World Bank, 2021). On the other hand, disparities in the distribution of administrative data-based social-economic assistance often leave households with hidden vulnerabilities untouched by social protection policies (Alatas et al., 2016). This sandwich household might not be statistically classified as poor but has a high dependency burden, putting it in a vulnerable position that is not administratively visible.

Furthermore, digital transformation should open up new economic opportunities, including for vulnerable households. However, sandwich households often lag behind in digital access and literacy, as they bear economic responsibilities towards both older and younger generations (Holmarsdottir, 2024). This situation makes it difficult for them to take advantage of online job opportunities, digital marketing, and technology-based public services (OECD, 2021). This digital divide deepens socioeconomic inequality and reinforces the cycle of

vulnerability faced by this group, reducing their chances of escaping the poverty trap.

It is in this context that sandwich households become a highly vulnerable group but are less studied in Indonesian poverty literature. Although various studies have identified classic determinants of poverty such as education, employment, asset ownership, and access to basic services (Azali & Harsanti, 2022; Beribe & Budyanra, 2023; Faujan & Agustina, 2023; Kause & Fithriyah, 2024; S. K. Sari & Projo, 2025). However, very few studies have examined how intergenerational burden affects household economic status. Most of the research on the sandwich generation found is still limited to descriptive analysis, measuring its relationship with happiness levels, financial ability, and psychological perspectives (Ardiyanto et al., 2024; Khusaini et al., 2024; MN & Elizabeth, 2023; Pratita Rari & Nurokhmah, 2022; Putri et al., 2024; Rachmawati et al., 2024). In Bengkulu Province, where poverty rates are still relatively the highest on the island of Sumatra, the sandwich household structure presents a dual challenge: complex economic vulnerability and isolation from the reach of policy interventions.

Additionally, referring to the BPS's concept, poverty cannot be simply categorized as poor and non-poor. BPS itself groups society based on welfare levels, ranging from the poor, vulnerable to poverty, moving toward the middle class, the middle class, and the upper class (BPS, 2025). However, much of the research in Indonesia on poverty studies still tends to use a binary logistic regression approach, which divides the population into only two categories: poor and non-poor. However, this approach does not fully reflect the complexity of the actual poverty status, which ideally could be accommodated by multinomial logistic regression, allowing for classification into more than two categories (Hosmer et al., 2013). The use of multinomial logistic regression in poverty research in Indonesia is also still relatively rare, thus opening opportunities for a more comprehensive approach, especially in the context of societies with diverse economic strata, such as the sandwich generation, who are vulnerable to poverty and layered economic vulnerability.

Unfortunately, to date, no study has been found that explicitly analyzes the relationship between sandwich household structure and poverty status, either at the national level or in Bengkulu Province. The available literature has not yet treated sandwich households as a separate unit of analysis, despite the increasing importance of this phenomenon in demographic and social policy discourse (Albertini et al., 2022; Alburez-Gutierrez et al., 2021). Therefore, this study aims to fill this gap by analyzing the characteristics and determinants of sandwich household poverty in Bengkulu Province based on National Socioeconomic Survey of March 2024 data. Specifically, this research will identify the socioeconomic variables that influence their poverty status and estimate the magnitude and direction of the influence of these variables on the likelihood of households falling into the poor or vulnerable-to-poverty categories. With this approach, the study is expected to provide empirical contributions to the formulation of more inclusive and responsive social protection strategies for the burden of intergenerational caregiving.

RESEARCH METHODOLOGY

The area covered in this study was Bengkulu Province, with data from 2024. The data used is microdata from the National Socioeconomic Survey of March 2024 (Susenas) obtained from the Integrated Statistical Service of BPS-Statistics Indonesia. As for the unit of analysis

used, it is sandwich households that meet a number of specific criteria. First, the head of household must be in the productive age group, which is 15-64 years old and employed with an income. Specifically for household heads who are family workers or unpaid, they were not included as an analysis unit. Second, the household must have at least one biological/stepchild and the parents/in-laws of the household head who are unemployed or not working, including those who are employed but are family workers or unpaid and are therefore still dependents of the household head. In addition, households with at least one grandchild living with the household head are also included in the analysis unit if the grandchild is unemployed/not working and both parents are deceased or unemployed, making them dependents of the household head.

Based on the criteria mentioned earlier, 240 units of analysis were obtained from the microdata National Socioeconomic Survey of March 2024. For further clarity, the selection diagram of the units of analysis is presented in Figure 2:

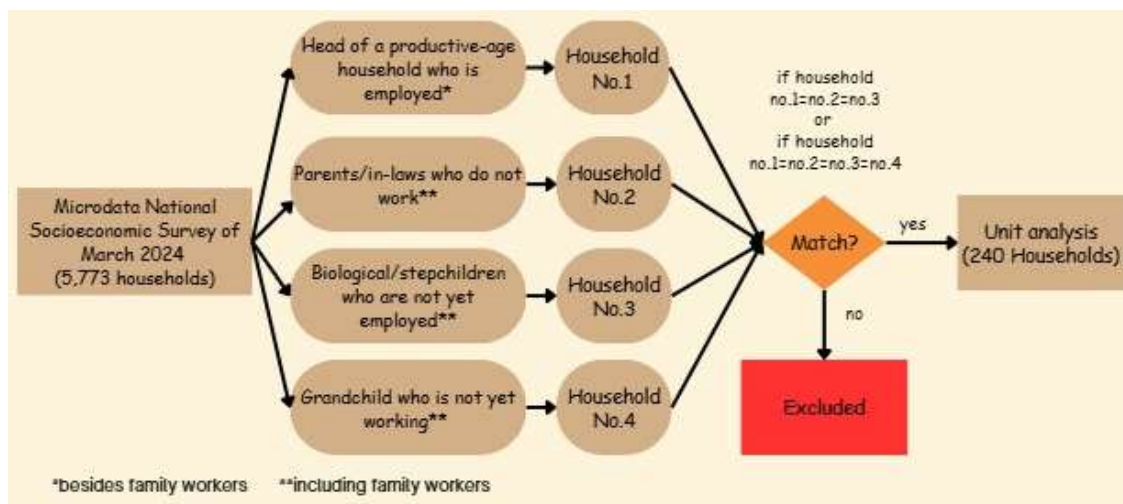


Figure 1. Analysis unit selection diagram

Source: Processed by the author (2024)

In principle, National Socioeconomic Survey data are designed to represent the entire population through complex survey weights. However, the present study does not analyze the full population captured by National Socioeconomic Survey. Instead, the unit of analysis is restricted to a specific subpopulation, namely sandwich generation households, which are identified through several filtering criteria as shown in Figure 2. As a result, the original survey weights constructed to reflect the distribution of all households in the population—no longer align with the post-selection subpopulation structure. Applying the original weights in this filtered dataset could lead to biased or distorted estimates, because the weights were not recalibrated to represent the targeted subpopulation. Therefore, the analysis is conducted without applying the original National Socioeconomic Survey weights, and the descriptive patterns reported should be interpreted as unweighted characteristics of the sandwich household subpopulation. The subsequent multinomial logistic regression will then be used to examine whether these observed patterns hold statistically within this specific group.

Research Variables

Based on the literature review and relevant previous studies, the research variables are determined as follows in Table 1:

Table 1. Operational definition of research variables

Variable	Note	Category	Dummy
(2)	(3)	(4)	(5)
Response Variable			
Poverty Status of Sandwich Households	Y	Poor	1
		Vulnerable Poor	2
		Moving Towards the Middle Class	3
		Middle Class*	4
Explanatory Variable			
Age of Household Head	-	> 35 years*	0
	Age	≤ 35 years	1
Education of Household Head	-	≥ Senior High School*	0
	Edu	< Senior High School	1
Main Job of Household Head	-	Formal*	0
	Job	Informal	1
Technology Usage by Household Head	-	Using*	0
	TI	Not Using	1
Number of Dependents in the Household	-	≤ 4 members*	0
	Num	> 4 members	1
Social and Economic Assistance Received by Household	-	Receiving*	0
	Assist	Not Receiving	1
Classification of Residential Area	-	Urban*	0
	Area	Rural	1

*Reference Category

Source: Prepared by the author based on a literature review

As shown in the Table 1, the response variable in this study is the poverty status of sandwich households, which consists of four categories: poor, vulnerable poor, moving towards the middle class, and middle class. This categorization refers to the BPS's classification of poverty, which actually consists of five groups (BPS, 2025). However, the data exploration results showed that no upper class was found in the sample of sandwich households analyzed, so the response variable in this study only consists of four categories. Meanwhile, seven explanatory variables were used, namely the individual and household characteristics (age, education, main job, technology usage, and number of dependents) and structural characteristics (social-economic assistance received by household, and classification of residential area).

The age of the head of the household refers to the concept used in the National Socioeconomic Survey of March 2024, which is the age recorded at the time of data collection based on the head of the household's last birthday (BPS, 2024e). The variable of the head of the household's age here is divided into two categories, namely > 35 years (older productive

heads of households) and ≤ 35 years (younger productive heads of households) (Rosmika, 2021). Similarly, the education of the head of the household refers to the highest level of education completed based on the possession of a diploma/Certificate of Completion. This variable is divided into two categories: $<$ Senior High School and $\geq$ Senior High School. This division refers to the average length of schooling in Bengkulu Province in 2024, which is 9.04 years (BPS, 2024a). Next, for the main job variable of the head of the household, it is divided into two categories: formal workers and informal workers. In the context of this research, formal workers are those who are employed as laborers/employees/staff or who work with the help of permanent laborers and are paid for their work; any other status falls into the category of informal workers (BPS, 2024e).

In this study, the variable of technology usage by the head of the household is also utilized, specifically the status of whether the household head uses technology or not. The operationalization follows the official concepts of the National Socioeconomic Survey of March 2024. An individual is considered to use a mobile phone if he/she utilizes it for communication, even if assisted by another person and the device does not need to be personally owned. On the other side, a person is considered to own a mobile phone if they have at least one active SIM card for personal use within the last three months, and is considered proficient in using a mobile phone if they are able to operate it continuously and independently. Furthermore, an individual is classified as using the internet if they spend time accessing internet services for any purpose—such as searching for information, communication, email, social media, online games, or other online activities. Thus, this binary dummy variable (technology usage) captures the digital capability of the household head through combined indicators of mobile phone usage/ownership/proficiency and internet usage, reflecting access to and engagement with basic information technology.

Then there is also the variable of the number of dependents of the household head, which refers to the number of household members (including the household head) living together in one household. This variable is divided into two categories, namely ≤ 4 members and > 4 members. This categorization refers to the concept used by National Population and Family Planning Board regarding the ideal size of a nuclear family (I. H. Sari, 2022).

Not only that, this research also accommodates the variable of social-economic assistance received by household. The social and economic assistance referred to here is limited to all types of assistance asked in the National Socioeconomic Survey of March 2024 questionnaire, namely the family hope program, the non-cash food assistance program, village direct cash assistance, cash-for-work assistance, government food assistance, land certification assistance program, including assistance from local governments, both regular and irregular (BPS, 2024e). In this study, households are said to receive social-economic assistance if they have received at least one type of social-economic assistance in the past year. Finally, this study also uses a variable for classifying residential areas, divided into two categories: urban and rural. This categorization refers to the classification conducted by BPS-Statistics as available in the National Socioeconomic Survey of March 2024 (BPS, 2024e).

Analysis Method

This research uses descriptive analysis and inferential analysis methods. Descriptive analysis was conducted to answer the first research objective, which was to generally describe

the characteristics of sandwich households in Bengkulu Province. The results of the data processing are then presented in the form of pie charts and two-way tables to facilitate descriptive analysis. Meanwhile, inferential analysis using multinomial logistic regression will be conducted to address the second and third objectives of this study, namely, to identify the variables that influence the sandwich household poverty status and the magnitude of the effect of each significant variable on the sandwich household poverty status. To assist with the data processing in this study, SPSS and Microsoft Excel software were used.

Multinomial logistic regression was chosen because the response variable is measured on a nominal scale consisting of more than two categories (Hosmer et al., 2013). The analysis steps using multinomial logistic regression include model building, testing model goodness-of-fit, testing the significance of parameters simultaneously, and testing the significance of parameters partially.

In this study, the response variable has four categories, with the "middle class" category serving as the reference. Therefore, the form of the multinomial logistic regression with four categories can be defined as follows:

$$\pi_j(\mathbf{x}) = P(Y = j|\mathbf{x}) = \frac{e^{g_j(\mathbf{x})}}{1 + \sum_{k=1}^3 e^{g_k(\mathbf{x})}} \quad (1)$$

Where $g_j(\mathbf{x}) = \beta_{j0} + \beta_{j1}x_1 + \beta_{j2}x_2 + \dots + \beta_{jp}x_p$; $\pi_j(\mathbf{x})$ is the probability; $j = 1, 2, 3, 4$ which $j = 1$ refer to poor category, $j = 2$ refer to vulnerable-to-poor, $j = 3$ refer to moving-toward the middle class, and $j = 4$ refer to middle class; $\mathbf{x} = x_1, x_2, \dots, x_p$ are explanatory variables as shown in Table 1 ($x_1 = \text{Age}$; $x_2 = \text{Edu}$, $x_3 = \text{Job}$, $x_4 = \text{TI}$, $x_5 = \text{Num}$, $x_6 = \text{Asssist}$, $x_7 = \text{Area}$). Next, using the logit transformation, we will obtain three logit functions, as follows:

Poor ($Y=1$) vs Middle Class ($Y=4$)

$$\begin{aligned} g_1(\mathbf{x}) &= \ln \left(\frac{P(Y = 1)}{P(Y = 4)} \right) \\ &= \beta_{10} + \beta_{11}\text{Age} + \beta_{12}\text{Edu} + \beta_{13}\text{Job} + \beta_{14}\text{TI} + \beta_{15}\text{Num} \\ &\quad + \beta_{16}\text{Asssist} + \beta_{17}\text{Area} \end{aligned} \quad (2)$$

Vulnerable to Poor ($Y=2$) vs Middle Class ($Y=4$)

$$\begin{aligned} g_2(\mathbf{x}) &= \ln \left(\frac{P(Y = 2)}{P(Y = 4)} \right) \\ &= \beta_{20} + \beta_{21}\text{Age} + \beta_{22}\text{Edu} + \beta_{23}\text{Job} + \beta_{24}\text{TI} + \beta_{25}\text{Num} \\ &\quad + \beta_{26}\text{Asssist} + \beta_{27}\text{Area} \end{aligned} \quad (3)$$

Moving Toward the Middle Class ($Y=3$) vs Middle Class ($Y=4$)

$$\begin{aligned} g_3(\mathbf{x}) &= \ln \left(\frac{P(Y = 3)}{P(Y = 4)} \right) \\ &= \beta_{30} + \beta_{31}\text{Age} + \beta_{32}\text{Edu} + \beta_{33}\text{Job} + \beta_{34}\text{TI} + \beta_{35}\text{Num} \\ &\quad + \beta_{36}\text{Asssist} + \beta_{37}\text{Area} \end{aligned} \quad (4)$$

RESULT AND DISCUSSION

Descriptive Analysis

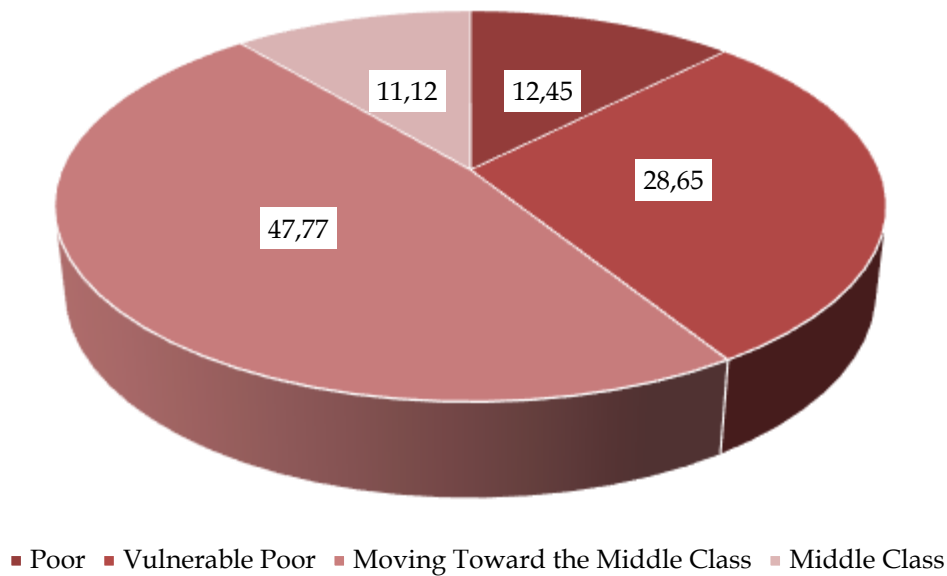


Figure 2. Percentage of sandwich generation households by poverty status in Bengkulu Province, 2024

Source: National Socioeconomic Survey, March 2024 (processed)

Based on Figure 3, the majority of sandwich households in Bengkulu Province fall into the moving towards the middle class category, accounting for 47.77 percent. This is followed by the vulnerable poor group at 28.65 percent and the poor group at 12.45 percent. Meanwhile, only 11.12 percent of sandwich households are classified as middle class, and none are present in the upper class category.

Table 2. Characteristics of Sandwich Generation Households by Poverty Status in Bengkulu Province (percent), 2024

Variable	Category	Poverty Status (percent)			
		Poor	Vulnerable poor	Moving Towards the Middle Class	Middle Class
(1)	(2)	(3)	(4)	(5)	(6)
Age of Household Head	0: > 35 years*	12.3	32.4	47.7	7.6
	1: ≤ 35 years	12.5	26.5	47.8	13.2
Education of Household Head	0: ≥ Senior High School*	10.5	19.5	51.9	18.1
	1: < Senior High School	14.5	38.4	43.4	3.7
Main Job of Household Head	0: Formal*	11.9	26.4	39.6	22.1
	1: Informal	12.8	29.9	52.3	5.0
Technology Usage by Household Head	0: Using*	9.4	27.1	50.3	13.2
	1: Not Using	24.1	34.5	38.1	3.3

Number of Dependents in the Household	0:	≤ 4 members*	10.7	17.3	52.1	19.9
	1:	> 4 members	13.1	32.7	46.2	8.0
Social and Economic Assistance Received by Household	0:	Receiving*	14.6	33.7	49.6	2.1
	1:	Not Receiving	9.6	21.8	45.3	23.3
Classification of Residential Area	0:	Urban*	15.8	33.8	34.5	15.9
	1:	Rural	11.2	26.7	52.7	9.4

*Reference Category

Source: National Socioeconomic Survey, March 2024 (processed)

According to Table 2, 13.2 percent of young-headed households are in the middle category, which is higher than the 7.6 percent recorded for households headed by individuals aged over 35. In contrast, young-headed households comprise 26.5 percent of those in the vulnerable poor category, lower than the older-headed group at 32.4 percent. Furthermore, households whose heads have an education level below high school are predominantly found in the poor (14.5 percent) and vulnerable (38.4 percent) categories, whereas those with at least a high school education are concentrated in the moving towards the middle class (51.9 percent) and middle (18.1 percent) categories.

A similar tendency is evident in terms of the main job of the household head. Households with heads working as informal workers are more likely to be categorized as poor (12.8 percent) and vulnerable (29.9 percent), while those who working as formal workers exhibit a higher percentage in the middle class (22.1 percent). The use of information technology by the head of household also indicate differentiates welfare conditions, with non-users predominately in the poor (24.1 percent) and vulnerable (34.5 percent) groups, while users are more likely to be in the moving towards the middle class (50.3 percent) and middle (13.2 percent) groups.

Households with more than four dependents show a greater percentage in the poor (13.1 percent) and vulnerable (32.7 percent) categories, whereas those with four or fewer dependents are more concentrated in the moving towards the middle class (52.1 percent) and middle (19.9 percent) groups. Likewise, households receiving social-economic assistance appear more often in the poor (14.6 percent) and vulnerable (33.7 percent) categories compared to non-recipients, who are more commonly situated within the middle class (23.3 percent).

Spatially, sandwich households residing in rural areas are more likely to be classified as moving towards the middle class (52.7 percent) than those in urban areas (36.4 percent). Conversely, urban households have a higher proportion in the middle class (15.9 percent) compared to their rural counterparts (9.4 percent). Additionally, the poor and vulnerable categories are more prevalent among urban sandwich households, providing an initial indication that urban residence may heighten the risk of poverty among households with multigenerational responsibilities.

Result of Multinomial Logistic Regression

As per the analysis procedure mentioned in the methodology section, the first step in analysis using multinomial logistic regression is model building. Here is the design of the model that will be formed:

Poor vs Middle Class

$$\ln\left(\frac{P(\hat{y} = 1)}{P(\hat{y} = 4)}\right) = \hat{\beta}_{10} + \hat{\beta}_{11}Age + \hat{\beta}_{12}Edu + \hat{\beta}_{13}Job + \hat{\beta}_{14}TI + \hat{\beta}_{15}Num + \hat{\beta}_{16}Assist + \hat{\beta}_{17}Area \quad (5)$$

Vulnerable to Poor vs Middle Class

$$\ln\left(\frac{P(\hat{y} = 2)}{P(\hat{y} = 4)}\right) = \hat{\beta}_{20} + \hat{\beta}_{21}Age + \hat{\beta}_{22}Edu + \hat{\beta}_{23}Job + \hat{\beta}_{24}TI + \hat{\beta}_{25}Num + \hat{\beta}_{26}Assist + \hat{\beta}_{27}Area \quad (6)$$

Moving Toward the Middle Class vs Middle Class

$$\ln\left(\frac{P(\hat{y} = 3)}{P(\hat{y} = 4)}\right) = \hat{\beta}_{30} + \hat{\beta}_{31}Age + \hat{\beta}_{32}Edu + \hat{\beta}_{33}Job + \hat{\beta}_{34}TI + \hat{\beta}_{35}Num + \hat{\beta}_{36}Assist + \hat{\beta}_{37}Area \quad (7)$$

After the model is formed, the next step is to evaluate the model by testing its goodness of fit and looking at the pseudo R-squared value. The results of the goodness-of-fit model test can be seen in Table 3.

Table 3. Results of model goodness-of-fit testing

	Chi-Square	df	Sig.
(1)	(2)	(3)	(4)
Pearson	167.620	195	0.923
Deviance	152.562	195	0.989

Source: SPSS (processed)

The goodness-of-fit test in multinomial logistic regression aims to assess how well the regression model fits the data used. The test results show in Table 3, that the Pearson Chi-Square value is 167.620 (df = 195; sig. = 0.923) and the Deviance is 152.562 (df = 195; sig. = 0.989). Since the significance values (sig.) for both tests are far above $\alpha = 0.05$, it can be concluded that there is no significant difference between the values predicted by the model and the actual data. This means the model is considered a good fit or suitable for explaining the relationship between the explanatory variables and the poverty status of sandwich households. These results support the use of the model in further analysis because they do not reject the null hypothesis that the model fits the data (Hosmer et al., 2013).

Table 4. Pseudo R-Square Model Values

	Value
(1)	(2)
Cox and Snell	0.282
Nagelkerke	0.312
McFadden	0.141

Source: SPSS (processed)

The pseudo R-squared value, as shown in Table 4, also supports the strength of the model formed. The Cox & Snell value of 0.282 reflects that approximately 28.2 percent of the variation in sandwich household poverty status can be explained by the explanatory variables in the model, which is considered quite adequate in socio-economic studies. The Nagelkerke value of 0.312, which is a modification of Cox & Snell with a range of 0 to 1, also indicates

moderate to good model strength, consistent with the general interpretation in socio-economic research that a value around 0.3 already signifies an informative model (Sarjono et al., 2017). While the McFadden value of 0.141 is numerically lower, it is still considered quite good in the context of a socio-economic logistic regression model. Thus, the overall pseudo R-squared for this model indicates that the model adequately explains the differences in sandwich household poverty status using the variables used.

Table 5. Results of simultaneous parameter significance testing

Model	-2 Log Likelihood	Likelihood Ratio Tests		
		Chi-Square	df	Sig.
(1)	(2)	(3)	(4)	(5)
Intercept only	344.146			
Final	264.621	79.526	21	< 0.001

Source: SPSS (processing)

The results in Table 5 show that the final model has a -2 log likelihood of 264.621, which is much smaller than the model without predictors (intercept only), which is 344.146. The very small significance value (< 0.001) indicates that adding explanatory variables to the model simultaneously significantly improves the model's predictive quality compared to using only the intercept. This indicates that the model has good predictive power for the poverty status of sandwich households and is suitable for further interpretation of each parameter.

Given that the variable for sandwich household poverty status has four categories, three different models will be generated: poor versus middle, vulnerable poor versus middle, and moving towards the middle versus middle. Here are the results of the partial testing for each model:

**Table 6. Results of Partial Parameter Significance Test for the Poor Category
Compared to the Middle Category**

Poor vs. Middle Class	$\hat{\beta}$	SE	Wald	df	Sig.	OR
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	0.134	1.125	0.014	1	0.905	
Age of Household Head						
≤ 35 years	-1.633	0.769	4.512	1	0.034	* 0.195
Education of Household Head						
< Senior High School	1.161	0.777	2.229	1	0.135	3.192
Main Job of Household Head						
Informal	1.424	0.718	3.935	1	0.047	* 4.156
Technology Usage by Household Head						
Not Using	1.685	1.016	2.752	1	0.097	5.392
Number of Dependents in the Household						
> 4 members	2.134	0.759	7.905	1	0.005	* 8.448
Social and Economic Assistance Received by Household						
Not Receiving	-2.408	0.752	10.243	1	0.001	* 0.090

Classification of Residential Area						
Rural	-0.606	0.704	0.740	1	0.390	0.546

*significant at the 5 percent significance level
Source: SPSS (processed)

In the poor vs middle-class model as shown in Table 6, the significant variables include the age of the household head ($p = 0.034$), main job ($p = 0.047$), number of dependents ($p = 0.005$), and social-economic assistance received by household ($p = 0.001$). Meanwhile, the variables of education, technology usage, and classification of residential area were not statistically significant ($p > 0.05$).

Table 7. Results of Partial Parameter Significance Test for the Vulnerable Poor to Middle Category

Vulnerable Poor vs. Middle Class	$\hat{\beta}$	SE	Wald	df	Sig.	OR
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	1.374	0.935	2.161	1	0.142	
Age of Household Head						
≤ 35 years	-1.887	0.674	7.847	1	0.005	* 0.152
Education of Household Head						
< Senior High School	1.488	0.685	4.721	1	0.030	* 4.430
Main Job of Household Head						
Informal	1.575	0.616	6.526	1	0.011	* 4.829
Technology Usage by Household Head						
Not Using	1.189	0.949	1.571	1	0.210	3.284
Number of Dependents in the Household						
> 4 members	1.914	0.606	9.985	1	0.002	* 6.779
Social and Economic Assistance Received by Household						
Not Receiving	-2.283	0.656	12.133	1	< 0.001	* 0.102
Classification of Residential Area						
Rural	-0.720	0.601	1.437	1	0.231	0.487

*significant at the 5 percent significance level
Source: SPSS (processed)

In the vulnerable poor vs. middle-income model as shown in Table 7, it was found that the age of the household head ($p = 0.005$), the education of the household head ($p = 0.030$), the main job ($p = 0.011$), the number of dependents ($p = 0.002$), and the social-economic assistance received by household ($p < 0.001$) significantly influenced the likelihood of households being in the vulnerable poor category. As for the technology usage and classification of residential area variables, they are not significant.

Table 8. Results of Partial Parameter Significance Test for the Category Moving Towards the Middle Class Compared to Middle Class

Moving Towards the Middle Class vs. Middle Class	$\hat{\beta}$	SE	Wald	df	Sig.	OR
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	1.783	0.864	4.254	1	0.039	*
Age of Household Head						
≤ 35 years	-1.251	0.630	3.936	1	0.047	* 0.286
Education of Household Head						
< Senior High School	0.778	0.644	1.462	1	0.227	2.178
Main Job of Household Head						
Informal	1.657	0.559	8.789	1	0.003	* 5.242
Technology Usage by Household Head						
Not Using	0.451	0.908	0.247	1	0.619	1.570
Number of Dependents in the Household						
> 4 members	1.179	0.536	4.846	1	0.028	* 3.252
Social and Economic Assistance Received by Household						
Not Receiving	-1.883	0.610	9.524	1	0.002	* 0.152
Classification of Residential Area						
Rural	0.192	0.543	0.125	1	0.724	1.212

*significant at the 5 percent significance level

Source: SPSS (processed)

In the model of moving towards the middle class compared to middle class as shown in Table 8, the variable household head age ($p = 0.047$), main job ($p = 0.003$), number of dependents ($p = 0.028$), and social-economic assistance received by household ($p = 0.002$) were also recorded as significant predictors. Conversely, education, technology usage, and classification of residential area did not show statistical significance. Here are the three final models that were formed:

Poor vs Middle Class

$$\ln\left(\frac{P(\hat{y} = 1)}{P(\hat{y} = 4)}\right) = 0.134 - 1.633Age + 1.161Edu + 1.424Job + 1.685TI + 2,134Num - 2,408Assist - 0,606Area \quad (8)$$

Vulnerable to Poor vs Middle Class

$$\ln\left(\frac{P(\hat{y} = 2)}{P(\hat{y} = 4)}\right) = 1.374 - 1.887Age + 1.488Edu + 1.575Job + 1.189TI + 1.914Num - 2.283Assist - 0.720Area \quad (9)$$

$$\text{Moving Towards the Middle Class vs Middle Class} \quad (10)$$

$$\ln\left(\frac{P(\hat{y} = 3)}{P(\hat{y} = 4)}\right) = 1.783 - 1.251\text{Age} + 0.778\text{Edu} + 1.657\text{Job} + 0.451\text{TI} \\ + 1.179\text{Num} - 1.883\text{Assist} + 0.192\text{Area}$$

Overview of Sandwich Household

Sandwich households in Bengkulu Province predominantly occupy socioeconomic positions characterized by economic vulnerability. While they are not entirely categorized as absolutely poor, they similarly lack sufficient financial resilience to be considered part of the upper-middle class, which is typically more stable. The moving towards the middle class group reflects a fragile economic transition that is highly susceptible to shocks arising from income fluctuations, the burden of dependents, and limited coping capacity. In the context of sandwich households, this transitional position is critical because multigenerational expenditure pressures have the potential to push these households into poverty in the absence of adequate economic safety nets.

The relatively high proportion of households categorized as vulnerable poor reinforces the view that sandwich households experience significant structural vulnerability in both monetary and multidimensional spheres. Applying Sen's capability approach, these households not only contend with limitations in income or consumption but also face capability deprivation in accessing basic services such as education, healthcare, and social protection (Alkire & Foster, 2011; Mitra et al., 2024). Consequently, intergenerational dependency structures, elevated caregiving costs for the elderly, and educational expenses for children are non-monetary constraints that severely limit the socio-economic mobility of these households.

Descriptively, the data pattern indicates that demographic characteristics, education, employment, technology use, and spatial conditions appear to be related to the level of economic vulnerability of sandwich households. The proportion of sandwich households in the poor or vulnerable category is higher among households with a head of household over 35 years old, less than high school education, working in the informal sector, not using technology, having more than four dependents, receiving socio-economic assistance, and residing in urban areas. Meanwhile, only a small fraction of sandwich households reach middle-class status, indicating that upward mobility toward more stable economic conditions is relatively limited amidst multi-directional financial pressures. These patterns provide an initial indication of the factors that may play a role in shaping the socioeconomic position of sandwich households. However, to determine the extent to which these characteristics significantly and independently influence the outcome, further analysis using multinomial logistic regression is required.

Variables that influence the Poverty Status of Sandwich Households

The results of the multinomial logistic regression analysis show that the age variable of the household head ≤ 35 years has a significant influence on all three poverty categories: poor ($p = 0.034$), vulnerable to poverty ($p = 0.005$), and moving towards the middle class ($p = 0.047$), compared to the middle class reference category. Consistent negative coefficients indicate that households with young heads of household are less likely to be in a lower socioeconomic position. Specifically, households with heads of household aged ≤ 35 years are 80.5 percent less likely to be classified as poor (odds ratio = 0.195), 84.8 percent less likely to be classified as vulnerable to poverty (odds ratio = 0.152), and 71.4 percent less likely to be classified as

moving towards the middle class (odds ratio = 0.286), compared to households with heads of household over 35 years old. This finding is the opposite of research by Azali & Harsanti (2022), which showed that young household heads are more vulnerable to poverty due to limited work experience, social capital, and low asset accumulation. However, this finding reinforces the view of Ardiyanto et al. (2024) that the productive age supports economic resilience through flexible work capacity, adaptation to modern job opportunities, and optimal physical energy. On the other hand, young people also tend not to be fully burdened financially by the two generations they support in the sandwich generation structure, as children do not yet demand significant costs and parents are still relatively independent (Rachmawati et al., 2024).

Furthermore, the main job type variable of the household head was also significant in all three categories compared to the middle class, namely among the poor ($p = 0.047$), vulnerable poor ($p = 0.011$), and those moving towards the middle class ($p = 0.003$). This positive coefficient indicates that informal workers are more likely to be in the poor or vulnerable-to-poverty group. Quantitatively, household heads working as informal workers are 4.16 times more likely to be classified as poor (odds ratio = 4.156), 4.83 times more likely to be classified as vulnerable to poverty (odds ratio = 4.829), and 5.24 times more likely to be classified as moving towards the middle class (odds ratio = 5.242), compared to household heads as formal workers. This indicates that although the informal sector provides flexibility, it has not yet been able to guarantee income stability and social security, which is crucial for sandwich households. This finding aligns with the studies by Nurul et al. (2022), Sugiharti et al., (2022), and Taufiq (2022), which emphasize that the informal sector is often a cause of chronic poverty due to limited access to labor protection and welfare programs. Furthermore, in sandwich households, multigenerational economic needs exacerbate dependence on uncertain income.

The variable of number of dependents in the household was also proven significant in all three models: poor ($p = 0.005$), vulnerable poor ($p = 0.002$), and moving towards the middle class ($p = 0.028$). The consistent positive direction of the relationship indicates that the more household members are dependents, the greater the household's tendency to be in a lower socioeconomic position. Households with more than four members are 8.45 times more likely to be classified as poor (odds ratio = 8.448), 6.78 times more likely to be classified as vulnerable to poverty (odds ratio = 6.779), and 3.25 times more likely to be classified as moving towards the middle class (odds ratio = 3.252), compared to households with ≤ 4 dependents. These results are consistent with the findings of Azali & Harsanti (2022), Faujan & Agustina (2023), and Sugiharti et al. (2022), who emphasize that the burden of non-productive household members increases pressure on the household's economic capacity. In the sandwich household structure, the burden of expenditure occurs simultaneously for two generations, both children and the elderly, making the presence of dependents a crucial factor in the reproduction of poverty.

On the other hand, the social-economic assistance received by household variable was also significant in all three models: poor ($p = 0.001$), vulnerable poor ($p < 0.001$), and moving towards the middle class ($p = 0.002$). The negative regression coefficient indicates that households not receiving social-economic assistance have a lower risk of poverty. Specifically, households not receiving social-economic assistance are 91 percent less likely to be classified as poor (odds ratio = 0.090), 89.8 percent less likely to be classified as vulnerable to poverty

(odds ratio = 0.102), and 84.8 percent less likely to be classified as moving towards the middle class (odds ratio = 0.152), compared to households receiving social-economic assistance. This indicates that the government's social-economic assistance programs have already reached the most vulnerable groups, as shown by Faujan & Agustina (2023) and Sari & Projo (2025). However, the fact that most recipients remain in the poor and vulnerable-to-poverty categories also indicates the limited transformative effect of the aid. Therefore, social programs need to be complemented with economic empowerment strategies such as skills training or business mentoring. MN & Elizabeth (2023) emphasize that financial literacy and capacity-building policies for households are essential to ensure that assistance is not only a short-term consumption support but also a means of long-term economic mobility.

In addition to these four variables, the highest education level of the household head was found to be significant specifically in the vulnerable poor vs. middle-income model ($p = 0.030$). Households with a low-educated household head were 4.43 times more likely to be classified as vulnerable poor compared to those with at least a high school education (odds ratio = 4.430). This finding aligns with prior research indicating that lower educational attainment significantly increases the risk of poverty. For instance, Beribe & Budyanra (2023), Kause & Fithriyah (2024), Nurul et al. (2022) highlighted the inverse relationship between education level and poverty status. In the sandwich household structure, the role of education is very strategic because the head of the household must manage the complex financial needs of two generations. The study by Fadila & Utomo (2020) reinforces this finding by showing that low levels of household head education also impact children's chances of experiencing intergenerational poverty. Additionally, low education is often associated with limited access to formal employment, digital literacy limitations, and dependence on the informal sector, which provides neither social security nor opportunities for advancement.

On the other hand, the variable of technology usage by household head did not show significance in influencing the poverty status of sandwich households, which can be explained by previous findings that access to and utilization of digital technology in the context of poor communities does not always have a direct and significant impact on poverty alleviation in the short term. A study by Huang et al. (2023) shows that although technology and the internet can support poverty reduction efforts by opening access to information and economic opportunities, these positive effects often depend on other supporting factors such as education levels, infrastructure, and adequate social support, which can limit the impact of technology and make it statistically insignificant for poverty status. Additionally, the results of other studies also show that technological transformation has a positive but not directly significant impact on poverty reduction (Muchdie, 2016).

The variable for the classification of residential area, such as urban and rural, is also not significant in this model, even tho theoretically, settlements in urban areas usually have higher economic opportunities compared to rural areas. This variable sometimes appears insignificant because of uneven economic development across regions or because the regional variable is too broad in scope, making it impossible to detect the heterogeneous effects within it (for example, rural areas near city centers may have better economic conditions than remote rural areas). Studies in regions with high spatial heterogeneity found that geographical isolation and the level of infrastructure development are highly determinant of poverty levels, making regional classification itself less representative of these variables without being accompanied

by other more specific indicators (Xu et al., 2020).

CONCLUSION

This study found that most sandwich households in Bengkulu Province are categorized as moving toward the middle class (47.77%), followed by vulnerable poor (28.65%), poor (12.45%), and middle class (11.12%). Households with informal employment, low education levels of the household head (below senior high school), limited use of technology, more than four dependents, and those receiving social-economic assistance are more likely to fall into the poor and vulnerable categories. The multinomial logistic regression results indicate that four key variables consistently influence poverty status: age of the household head, type of employment, number of dependents, and receipt of social assistance. Additionally, lower education levels specifically increase the likelihood of households being classified as vulnerable to poverty. Thus, households with heads aged over 35, working in informal sectors, having many dependents, and receiving assistance are more prone to lower economic status. Based on these findings, poverty alleviation efforts should prioritize households with informal employment, low education, and large family burdens. Strengthening skills training and expanding access to formal employment are essential, especially for productive-age individuals in the informal sector. Furthermore, social assistance programs need to be more targeted and supported by accurate, up-to-date data to ensure effectiveness. Improving education also remains a crucial long-term strategy to break the cycle of poverty. However, this study is limited by its use of a monetary poverty approach. Future research should adopt a multidimensional poverty framework and examine the specific impacts of different types of government assistance programs to provide more comprehensive and policy-relevant insights.

REFERENCES

- Alatas, V., Banerjee, A., Hanna, R., Olken, B. A., Purnamasari, R., Wai-Poi, M., Bai, J., Chairunissa, T., Ilmma, A., Jo, D., Kodir, C., Kreindler, G., Yang, H., Zucker, A., & Zucker, G. (2016). Self-targeting: Evidence from a field experiment in Indonesia. *Journal of Political Economy*, 124(2), 371–427. <https://doi.org/10.1086/685299>
- Albertini, M., Tur-Sinai, A., Lewin-Epstein, N., & Silverstein, M. (2022). The older sandwich generation across European welfare regimes: Demographic and social considerations. *European Journal of Population*, 38(2), 273–300. <https://doi.org/10.1007/S10680-022-09606-7>
- Alburez-Gutierrez, D., Mason, C., & Zagheni, E. (2021). The “sandwich generation” revisited: Global demographic drivers of care time demands. *Population and Development Review*, 47(4), 997–1023. <https://doi.org/10.1111/padr.12436>
- Alkire, S., & Foster, J. (2011). Understandings and misunderstandings of multidimensional poverty measurement. *The Journal of Economic Inequality*, 9(2), 289–314. <https://doi.org/10.1007/s10888-011-9181-4>
- Ardiyanto, D., Asbari, M., & Ristanto, M. R. (2024). Tantangan dan solusi generasi sandwich: Mengelola tekanan finansial dan emosional. *Jurnal Ilmu Sosial, Manajemen, Akuntansi dan Bisnis*, 1(2), 31–34. <https://doi.org/10.70508/GYV06536>
- Azali, R., & Harsanti, T. (2022). Analisis determinan status kemiskinan rumah tangga sektor pertanian di Nusa Tenggara Timur tahun 2020. *Seminar Nasional Official Statistics*,

- 2022(1), 873–884. <https://doi.org/10.34123/semnasoffstat.v2022i1.1256>
- Beribe, K. E., & Budyanra. (2023). Determinan kemiskinan multidimensi rumah tangga di Provinsi Banten tahun 2020. *Jurnal Kependudukan Indonesia*, 18(1). <https://doi.org/10.55981/jki.2023.1695>
- BPS. (2024a). *[Metode baru] Rata-rata lama sekolah (tahun)*, 2024. <https://www.bps.go.id>
- BPS. (2024b). *Persentase penduduk miskin (P0) menurut kabupaten/kota*. <https://www.bps.go.id>
- BPS. (2024c). *Persentase tenaga kerja formal menurut provinsi*. <https://www.bps.go.id>
- BPS. (2024d). *Produk domestik regional bruto per kapita atas dasar harga berlaku menurut provinsi (ribu rupiah)*, 2024. <https://www.bps.go.id>
- BPS. (2024e). *Buku 4 konsep dan definisi Survei Sosial Ekonomi Nasional Maret 2024*. <https://www.silastik.bps.go.id>
- BPS. (2024f). *Tingkat pengangguran terbuka menurut provinsi*. <https://www.bps.go.id>
- BPS. (2025). Memahami perbedaan angka kemiskinan versi Bank Dunia dan BPS. <https://www.bps.go.id/id/news/2025/05/02/702/memahami-perbedaan-angka-kemiskinan-versi-bank-dunia-dan-bps.html>
- BPS-Statistics Bengkulu Province. (2022). *Analisis profil penduduk Provinsi Bengkulu*.
- BPS-Statistics Bengkulu Province. (2024a). *Jumlah penduduk menurut kelompok umur dan jenis kelamin di Provinsi Bengkulu*.
- BPS-Statistics Bengkulu Province. (2024b). *Umur harapan hidup (hasil LF SP2020)*.
- Fadila, K. N., & Utomo, A. P. (2020). Determinan status kemiskinan anak pada rumah tangga KRT perempuan di Provinsi Bengkulu 2018. *Seminar Nasional Official Statistics*, 2020(1), 616–626. <https://doi.org/10.34123/semnasoffstat.v2020i1.453>
- Faujan, L. O., & Agustina, N. (2023). Analisis faktor-faktor yang memengaruhi status kemiskinan ekstrem rumah tangga di Provinsi Maluku tahun 2021. *Seminar Nasional Official Statistics*, 2023(1), 343–352. <https://doi.org/10.34123/semnasoffstat.v2023i1.1639>
- Holmarsdottir, H. (2024). The digital divide: Understanding vulnerability and risk in children and young people's everyday digital lives. In *Understanding the everyday digital lives of children and young people*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-031-46929-9>
- Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed.). John Wiley & Sons.
- Huang, W., Ding, S., Song, X., Gao, S., & Liu, Y. (2023). Long-term effects of internet information behavior on poverty alleviation. *Heliyon*, 9(9), e19174. <https://doi.org/10.1016/j.heliyon.2023.e19174>
- Kause, J., & Fithriyah, F. (2024). Analisis determinan kemiskinan multidimensi di Indonesia. *Jurnal Riset Ilmu Ekonomi*, 4(2), 115–127. <https://doi.org/10.23969/jrie.v4i2.98>
- Khusaini, M., Finuliyah, F., Lestari, A. M., & Yuwan, A. S. (2024). Career or caregiving: The dilemma faced by women in the sandwich generation. *Society*, 12(2), 428–441. <https://doi.org/10.33019/society.v12i2.683>
- Mitra, A., Putri, R., Hakimi, M., Shafiai, M., & Ismail, A. G. (2024). A systematic review on multidimensional poverty measurement. *Journal of Ecohumanism*, 3(8), 3879–3891. <https://doi.org/10.62754/joe.v3i8.5041>

- MN, N., & Elizabeth, E. (2023). Generasi sandwich: Penyebab stres dan pengaruhnya terhadap keputusan keuangan. *Jurnal Ekonomi*, 28(1), 20–41.
- Muchdie. (2016). The impact of technological change on poverty alleviation in Indonesia. *International Multidisciplinary Conference Proceedings*.
- Nurul, M., Hasyim, A., & Veriyanto, A. (2022). Analisis determinan rumah tangga miskin di Kalimantan Utara. *Jurnal Ekonomika*, 13(1), 117–130.
- OECD. (2021). *Understanding the digital divide*. <https://doi.org/10.1787/236405667766>
- Owsiany, M. T., Fenstermacher, E. A., & Edelstein, B. A. (2023). Burnout and depression among sandwich generation caregivers. *International Journal of Aging and Human Development*, 97(4), 425–434. <https://doi.org/10.1177/00914150231183137>
- Pratita Rari, F., & Nurokhmah, P. (2022). Perbandingan tingkat kebahagiaan antara generasi sandwich dan non-generasi sandwich. *Jurnal Litbang Sukowati*, 6(1), 1–13.
- Putri, J. A., Johan, I. R., & Yuliati, L. N. (2024). Financial vulnerability in sandwich generation families. *International Journal of Economics*, 3(2), 1061.
- Rabi, A., & Mansor, N. (2024). *The sandwich generation: A consumption-based contributory pension*.
- Rachmalia, A. (2024). Beban ganda generasi sandwich terhadap konsumsi dan tabungan. *Journal of Advances in Accounting, Economics, and Management*, 2(2), 1–7.
- Rosmika, N. (2021). Kemiskinan rumah tangga sektor informal di Aceh. *Jurnal Ekombis*, 7(1), 65–74.
- Sari, I. H. (2022). Family life welfare guarantees in marriage law. *International Conference Proceedings*, 1(1), 34–47.
- Sari, S. K., & Projo, N. W. K. (2025). Variables affecting extreme poverty in agricultural households. *Jurnal Ekonomi dan Studi Pembangunan*, 17(1), 1–16.
- Sarjono, S., Hartoyo, S., & Hakim, D. B. (2017). Strategi penanggulangan kemiskinan di Jakarta Timur. *Jurnal Manajemen Pembangunan Daerah*.
- Sugiharti, L., Purwono, R., Esquivias, M. A., & Jayanti, A. D. (2022). Poverty dynamics in Indonesia. *Journal of Population and Social Studies*, 30, 423–447.
- Taufiq, N. (2022). Penciri kemiskinan ekstrem di 35 kabupaten prioritas. *Seminar Nasional Official Statistics*, 2022(1), 895–904.
- World Bank. (2021). *World development report 2022: Finance for an equitable recovery*.
- Xu, J., Song, J., Li, B., Liu, D., Wei, D., & Cao, X. (2020). Land use changes and poverty. *Journal of Rural Studies*, 76, 163–172.