Do Household Financial Behaviors affect Poverty in Indonesia?: Evidence from Indonesian Family Life Survey

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Abstract

Poverty is a multidimensional phenomenon that can be measured by variety of approaches. The measurements of poverty based on consumption levels are not sufficient to explain various shortcomings faced by the poor. Household financial behavior that tends to be dynamic will indirectly affect household income patterns. Using data from the Indonesian Family Life Survey (IFLS) wave 5, this study aimed to identify the impact of household financial behavior on poverty in Indonesia. The results of analysis using Tobit Regression showed that the levels of financial vulnerability, financial literacy, education level, arisan or the rotating economy of savings and credit associations (ROSCAs), and total credit have a negative, significant relationship in influencing poverty. This means that when this variable increases, it will reduce poverty in Indonesia. Meanwhile, the location of residence, either in village or city, has a positive, significant relationship which implies that the location of residence has an impact on the poverty level in Indonesia.

Keywords: Poverty, Household Financial Behavior, Tobit Regression
JEL Classification: I32, G40, C39

INTRODUCTION

The results of development activities can be assessed in various ways and benchmarks by either an economic approach or non-economic approach. Measurement or assessment with an economic approach generally uses the level of income as a measurement. The benchmarks for the amount of income include income per capita, income distribution, and poor people income or poverty level (Todaro & Smith, 2020). On the other hand, Jayasinghe (2022) defines poverty as a condition other than food shortages, such as lack of nutrition, illiteracy, lack of civil liberties and democratic rights, discrimination, disease, and various forms of deprivation of private property rights. Wfith more concrete indicators, poverty is indicated by the absence of: (1) human resources (good health, education, and nutrition) (Jalilian & Kirkpatrick, 2005; Samer et al., 2015); (2) business capital (Hossen et al., 2019; Polloni-Silva et al., 2021); (3) Infrastructure (roads, electricity, clean water, sanitation, environmental protection and other public facilities) (Dhrifi, 2013; Haughton & Khandker, 2009); (4) natural capital (Schrieder & Sharma,

1999); (5) public institutional capital (Arifin & Ghofur, 2020; Ndlovu & Toerien, 2020); and (6) knowledge capital (Bernards, 2021; Gennetian & Shafir, 2015).

The diversity of measurement of poverty is directed to produce more accurate measurements (Malhotra, 2018; Schubert, 2020). Moreover, there are facts that the characteristics of rural and urban areas are spatially different which result in different costs of living (Bansal & Bansal, 2012; Samer et al., 2015). Poverty can appear in various dimensions, due to the impact of natural (Hallegatte et al., 2020), remoteness of an area (Abosedra et al., 2015), dependence and limited ability to access various basic social services such as education (Seven & Coskun, 2016) and health (Azeem et al., 2017; Li et al., 2019; Mohammed et al., 2017), to household financial behavioral problems such as financial literacy (Ayyagari et al., 2019; Mushtaq & Bruneau, 2019; Park & Mercado, 2015), financial inclusion (Erlando et al., 2020; Mohammed et al., 2017; Ratnawati, 2020; Trianto et al., 2018), arisan or the rotating economy of savings and loan associations (ROSCAs) (Kharisma et al., 2020), and loans (Banerjee & Jackson, 2017; Yadav et al., 2018).

Household financial behavior that seeks to increase individual ownership of financial transactions, ownership of savings accounts, payment facilities, and access to credit, will have an impact on the welfare of individuals and households through the increased tendency to start a business, financial empowerment, investment in education and health, and risk management (Churchill & Marisetty, 2019; Dupas & Robinson, 2013; Zhang & Posso, 2017). In terms of welfare, household financial behavior is widely recognized as having the capacity to reduce weakness (Mohammed et al., 2017; Park & Mercado, 2015) and vulnerability to poverty (Choudhury, 2014), as well as helping achieve the inclusive economic growth (Andrianaivo & Kpodar, 2011; Imai et al., 2010). Apart from these concepts and evidence, studies at the household level that focus on the relationship between household financial behavioral and poverty are interested to explore since a number of households that are currently not poor are likely at risk of experiencing poverty in the future (Ozughalu, 2016; Swamy, 2014). As shown by the results of Coulibaly's (2019) study, it is estimated that by the end of 2019, Africa is at risk of becoming home to 70 percent of the world's poor people and by 2030, 13 African countries are at risk of experiencing an increase in the proportion considered very poor.

The results of Ozughalu's (2016) study show that there is a positive, significant correlation between the level of non-food consumption, savings, and financial access and poverty vulnerability in Nigeria, although the correlation is not very strong. The same thing is also shown by the research by Churchill & Marisetty (2019) in India which found that financial behavior indicated by people's decisions to manage savings and financial inclusion was effective in reducing poverty.

An interesting finding from Imai et al. (2015) in Vietnam and India shows that access to non-agricultural jobs and their type of work significantly reduces vulnerability of poverty in both countries. This explains that household activities to the non-agricultural sector will reduce the risk. However, it has a quite negative, significant relationship in the rural poor community as they tend not to have easy access to non-agricultural work.

Research developed by Kharisma et al. (2020) on the effect of arisan or ROSCAs on poverty in Indonesia found that women's participation in ROSCA can reduce poverty significantly. Men's participation in ROSCAs can also reduce

poverty but not significantly. Other factors such as the age of the head of family, the family head's years of education, home ownership, access to water in the house, vehicle ownership, and households in rural areas also contribute to reducing poverty. Nevertheless, several variables such as marital status of the head of family, the number of family members and access to people's business credit, advance poverty in Indonesia.

The effect of household financial behavior as proxied by the level of financial inclusion on poverty in the African continent is shown by the research by Ndlovu & Toerien (2020). The results show the importance of access to finance on household financial behavior in Africa. In addition, their study suggests that in order to ensure effective poverty alleviation through increased access to finance, financial products need to be specifically designed to address household specific problems, such as consumption or household credit. Different things were found in the research by Wang & He (2020) in China's rural finance which shows that the increased access to formal services has a limited effect on the welfare conditions of the poor. This suggests that financial policy should focus on increasing access to non-formal services by the poor, such as microfinance products.

Based on the description that has been presented, poverty is a condition of a person or society unable to meet the minimum standard of living. The measurement of poverty level can be made by using a multidimensional approach (Alkire & Foster, 2011; Artha & Dartanto, 2018; Bourguignon & Chakravarty, 2003; Iqbal et al., 2015). Based on multidimensional approach, the measurement of poverty index in this study adopted the research conducted by Bourguignon & Chakravarty (2003) and Artha & Dartanto (2018), and then it was modified and explained through public financial behavior, health insurance ownership status, use of certificate of economically poor people, access to drink water, access to water for washing and sanitation. This measurement aims to provide an overview of the distribution of the poor in an area. Thus, the purpose of this study is to identify the impact of household financial behavior on poverty in Indonesia.

METHOD

The data used in this research are secondary data obtained from the Indonesia Family Life Survey (IFLS) wave 5 with a total sample of 11,497 observed households in Indonesia. Households in developing countries have a different concept from that applied in developed countries, where the household concept is based on the behavior and decisions of individuals/groups in providing food or their necessities of life (Wardhono, 2006). The data used in this study include data on ownership of health insurance, use of certificate of economically poor people, access to drinking water, access to water for washing, sanitation, home ownership status, income, food consumption, non-food consumption, number of arisan, total loans, financial literacy, financial access, loan status, education, employment status, household health conditions, household living conditions, ability to meet food consumption, marital status, and status of household residence.

Research Model Specification

This study refers to the model used by Purwono et al. (2021), Najitama et al. (2020), and Bah (2014) who examined the dynamics of poverty in Indonesia, which is then modified by research variables using 3 research models which aim to find

out the best research model used in identifying impact of financial behaviour on household poverty in Indonesia. The main difference of each research model is in the research variables. Model 1 uses all research variables used in this study (equation (1)). In second model, the research eliminates the variables of non-food consumption and loan status. Then in the third model, the researcher omitted the variables of income, marital status, and loan status. The research model is described as follows:

$$PI = f(FVI, own, edu, FL, job, ROSCAs, loc, c\_food, c\_nonfood, income,$$
$$marital, loan, health, loan\ status) \tag{1}$$

$$PI = f(FVI, own, edu, FL, job, ROSCAs, loc, c\_food, income, marital,\ loan, health) \tag{2}$$

$$PI = f(FVI, own, edu, FL, job, ROSCAs, loc, c\_food, c\_nonfood,\ loan, health) \tag{3}$$

Based on the functions of equations (1), (2), and (3), the equation is then transformed into econometric models as the following equations:

$$PI = \alpha_0 + \beta_1 FVI_i + \beta_2 own_i + \beta_3\ edu_i + \beta_4\ FL_i + \beta_5 job_i + \beta_6 ROSCAs_i + \beta_7 loc_i +$$
$$\beta_8 c\_food_i + \beta_9\ c\_nonfood_i + \beta_{10}\ income_i + \beta_{11} marital_i + \beta_{12}\ loan_i +$$
$$\beta_{13} health_i + \beta_{14}\ loan\ status_i + \varepsilon_i) \tag{4}$$

$$PI = \alpha_0 + \beta_1 FVI_i + \beta_2 own_i + \beta_3\ edu_i + \beta_4\ FL_i + \beta_5 job_i + \beta_6 ROSCAs_i + \beta_7 loc_i +$$
$$\beta_8 food_i + \beta_9\ income_i + \beta_{10} marital_i + \beta_{11}\ loan_i + \beta_{12} health_i + \varepsilon_i) \tag{5}$$

$$PI = \alpha_0 + \beta_1 FVI_i + \beta_2 own_i + \beta_3\ edu_i + \beta_4\ FL_i + \beta_5 job_i + \beta_6 ROSCAs_i + \beta_7 loc_i +$$
$$\beta_8 food_i + \beta_9\ nonfood_i + \beta_{10}\ loan_i + \beta_{11} health_i + \varepsilon_i) \tag{6}$$

The operational definitions of each variable used in equations (4), (5), and (6) are described in Table 1.

Table 1. Operational Definition

Symbol	Variable	Description
own	Home ownership status	The variable of home ownership status is an indication of whether the house in the place is one's own property or not (occupying/renting/contracting/other). The data are obtained from Book 2 section KR on question KR03. The data are grouped into 2, namely: • Category (0) not own property • Category (1) own property
income	household income	Income variable is the amount of income earned from working for the last 12 months. The data are obtained from Book K section AR on question AR15b.
edu	Highest level of education	The variable with the highest level of education indicates the last education taken by the household. The data are obtained from Book 3A in section DL06, which is grouped into 7, namely 1 = Elementary School/Equivalent 2 = Junior High School/Equivalent 3 = Senior High School/Equivalent 4 = College 5 = Pursue the package 6 = Islamic Boarding School 7 = Special school

Symbol	Variable	Description
ROSCAs	*Arisan*	The *arisan* variable is obtained from the data on the number of *arisan* followed by households. The data are obtained from book 3B in the question section PM01a.
FL	Financial literacy	The financial literacy variable is the respondent's understanding of financial products. The data are obtained from Book 2 section BH on question BH00. The data are grouped into two, namely: • Category (0) not knowing about loans • Category (1) knowing about loan
job	Occupation	The employment variable describes whether the household has a job or not. The data are obtained from Book 3A on the question section of RE02, which are categorized into 2, namely: • Category (0) not work • Category (1) work
Td	Total loan	The total number of loans owned by the household, obtained from Book 2 section BH in question BH28.
loc	Location	The location variable describes the location where the household lives in the city or in the village. The data are obtained from Book K in the question section of SC05, which is categorized into 2, namely: • Category (0) city • Category (1) village
C_food	Food consumption	The food consumption variable is the average total household food consumption for one week. The data are obtained from Book 1 of the question section KS04b.
C_nonfood	Non-food consumption	The non-food consumption variable is the average value of the total household non-food consumption for one month. The data are obtained from Book 1 of the question section KS07a.
health	Health condition	The health condition variable describes the health condition of the household. The data are obtained from Book 3B in the question section KK01, which are categorized into 4, namely: 1 = Very healthy 2 = Fairly healthy 3 = Less healthy 4 = Unhealthy
Loan status	Loan status	The loan status variable describes whether the household has ever borrowed money or goods. The data are obtained from Book 2 in the question section of BH02. The data are grouped into 2 categories, namely: • Category (0) no • Category (1) yes

Symbol	Variable	Description
marital	Marital status	The marital status variable explains whether the household is married or unmarried status. The data are obtained from Book 3A of the COV section on the COV4 question by grouping the data into 2, namely: • Category (0) unmarried • Category (1) already married

Source: RAND Corporation (2014)

The measurement of the poverty index (PI) aims to provide an overview of the distribution of the poor in Indonesia. Based on multidimensional approach, the measurement of the poverty index in this study adopted the research conducted by Bourguignon & Chakravarty (2003) and Artha & Dartanto (2018) and is then modified as follows:

$$PI = f(HA, CN, DW, AW, S) \qquad (7)$$

The explanation of each indicator used in measuring the poverty index in Indonesia is described in Table 2.

Table 2. Poverty Index Indicators

Symbol	Variable	Description
HA	Health insurance ownership	The variable of ownership of health insurance is obtained from Book 2 section KR on question KR26, which is explained by the following questions: Does this household have a health card/ JAMKESMAS/ BPJS/ JKN? 0 = No 1 = Yes
CN	Use of Certificate of Economically Poor People	The variable for the use of a Certificate of Economically Poor People is obtained from Book 2 part KR27a with the following questions: Does this household use/use the Certificate of Economically Poor People? 0 = No 1 = Yes
DW	Access to drinking water	The variable of access to drinking water is obtained from Book 2 in section KR13, with the following questions: 1 = Mineral water/Aqua 6 = Rainwater 2 = Plumbing 7 = River water 3 = Well/pump 8 = Pond 4 = Dipper/bucket well 9 = Reservoir 5 = Springs
AW	Access to water for washing	Variables of access to water for washing are obtained from Book 2 section KR17, with the following questions: Where is the main water source for other purposes such as bathing and washing clothes for this household? 1 = Plumbing 5 = Rainwater 2 = Well/pump 6 = River water 3= Dipper/bucket well 7 = Pond 4 = Spring 8 = Reservoir

Symbol	Variable	Description
S	Sanitation	The sanitation variable is obtained from Book 2 section KR20 obtained from the following questions: Where do most of these Household Members defecate? 1 = Own latrine with septic tank 2 = Own latrine without septic tank 3 = Shared latrine 4 = Public latrine 5 = River/ditch 6 = Garden/rice field 7 = Sewer 8 = Pond 9 = Cattle barn 10 = Sea/lake

Source: RAND Corporation (2014)

Then the measurement of financial vulnerability (FVI) is described as a form of inability to meet needs, cope with unexpected expenses, and or survive in the event of a shock (Anderloni et al., 2012; Daud et al., 2019; Noerhidajati et al., 2021). Measurement of FVI in this study adopted the research by Daud et al. (2019) and Anderloni et al. (2012) which is then modified as equation (8):

$$FVI = f(HC, CC, FA) \tag{8}$$

There are three questions used to measure FVI. The indicators used to measure FVI are described in Table 3.

Table 3. Description of Financial Vulnerability Index

Symbol	Variable	Description
HC	Household conditions	The household condition variable is obtained from Book 3A section SW03b which is obtained from the following questions: What is the current condition of the household? 1=not enough 2=just enough 3=more than enough
CC	Ability to consume household food	The ability variable for household food consumption is obtained from Book 3A section SW05 with the following questions: Is the household able to meet household food consumption? 1 = not enough for individual needs 2 = enough for individual needs 3 = more than enough for individual needs
FA	Financial access	The variable of access to finance is obtained from Book 2 section BH07, which is obtained from the following questions: Did you successfully get a loan? 0 = No 1 = Yes

Source: RAND Corporation (2014)

The calculation of PI and FVI is carried out using the principal component analysis (PCA) method which aims to reduce the dimensions of the original variable

into a new variable (which is referred to as the principal component) which is uncorrelated but has great information about the original variable. (Scholz, 2012; Tamonob et al., 2015). Principal component analysis is a weighted linear combination of the original variables which is able to explain the data maximally. The PCA method is one method that can solve the problem of choosing an arbitrary weighting scheme where the weighting problem is due to the mathematical determination of the correlation matrix (or covariance) of the original variable as the weight of the principal component which becomes a linear combination of the original variable with characteristic vector (de Senna et al., 2019; Shaukat et al., 2020; Shammi et al., 2021). Furthermore, the first principal component captures the largest proportion of the variation in the original set of variables, while the second principal component captures the largest proportion of variation that is not accounted for by the first principal component and so on. The number of selected variables is equal to the number of principal components associated with the characteristic root of the covariance matrix. Several principal components will capture most of the variation of the original variable if it is highly correlated. The characteristic roots were then divided by the sum of all characteristic roots to obtain the proportion of variation associated with a particular principal component (Doukas et al., 2012; Mainali et al., 2014; Sakyi et al., 2017).

Model of Analysis

This study used the Tobit regression model. The Tobit model is a type of econometric technique that is considered a censored regression model (Wooldridge, 2002). Deaton (1987) points out that the Tobit model has differences with the OLS model, namely the Tobit model tends to be biased upwards, while the OLS model tends to be biased downwards. The method used in estimating the regression coefficient of the research model is the maximum likelihood method.

In addition to using the maximum likelihood in the tobit model, the research model also identified descriptive statistics to determine the central tendency in the model. Thompson (2009) explains that descriptive statistics can be useful for identifying sample characteristics that can later influence conclusions. To produce the Best Linear Unbiased Estimator (BLUE) model, a robust check was carried out to ensure that the main results in each model used were not biased. This test is used to overcome the problem of heteroscedasticity by using a robust standard error that is resistant to the problem of heteroscedasticity (Arabmazar & Schmidt, 1981; Croux et al., 2003; Utomo et al., 2014).

RESULTS AND DISCUSSION

Economic growth can be described by uneven income levels that lead to poverty (Churchill & Marisetty, 2019). The issue of poverty continues to be a topic of discussion that continues to be studied because it is a problem that has not found an end point in any country. Poverty is defined as a lack of access to economic, social and cultural as well as political needs which are affected by financial factors, ownership of asset and employment (Hermawati et al., 2015; Suharto, 2003). The number of poor people is divided based on urban and rural areas.

According to OECD (2016), Bertolini & Pagliacci (2017), rural areas are still attached to the term underdevelopment because poverty in rural areas is still

quite high. People living in rural areas still experience higher rates of poverty than those living in urban areas (Bertolini et al., 2008; National Rural Health Alliance, 2017; USDA, 2018). Rural areas have the possibility of weak economic growth because they have more difficult access to services, especially in the fields of finance, education, health and job availability compared to urban areas (Bertolini, 2019). This is shown by the number of poor people in Indonesia from 2016 to 2020 based on the Central Statistics Agency (BPS) in Figure 1.
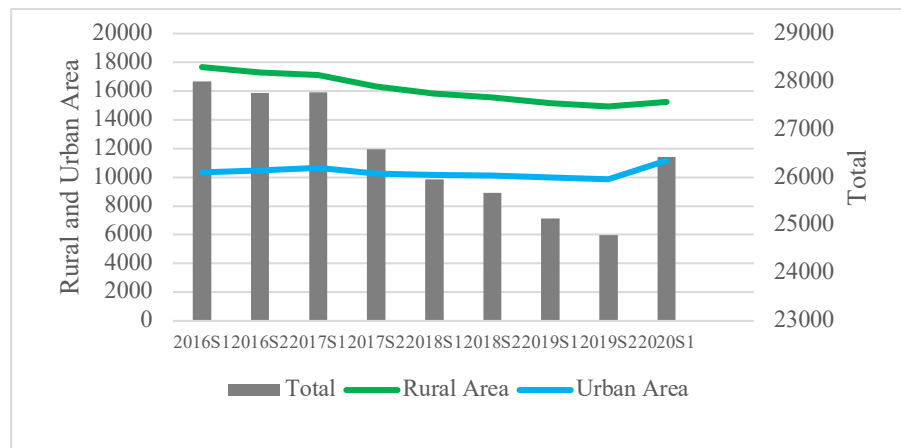

Figure 1. Number of Urban and Rural Poor People in Indonesia, 2016-2020
Source: BPS, 2022

Figure 1 shows that the number of poor people in rural areas is still higher than that in urban areas. In the first semester of 2016, the number of poor people in rural areas is 17,665.62 million and in the same year in the second semester it decreases to 17,278.68 million. The number of poor people in rural areas continues to decline until the second semester of 2019 with a total of 14,928.12 million. However, in the first semester of 2020, the number of poor people in rural areas increases to 15,262.06 million people.

Meanwhile in urban areas, the number of poor people in Indonesia tends to be more volatile compared to that in rural areas as shown in Figure 1. In the first semester of 2016, the number of poor people in urban areas is 10,339.77 million and increases in the second semester to 10,485.64 million population. The lowest number of poor people in urban areas is in the second semester of 2019, which is 9,857.75 million. However, the number of urban poor people increases again in the first semester of 2020 with a total of 11,161.96 million people. The figure further strengthens the statement that rural areas still have higher poverty rates than urban areas (Bertolini et al., 2008; Bertolini & Pagliacci, 2017; National Rural Health Alliance, 2017; OECD, 2016; USDA, 2018).

Seeing the phenomenon of poverty that is currently developing and followed by the development of household financial behavior, this research will examine the impact of household financial behavior on poverty in Indonesia based on the 5th IFLS data. Based on the results of descriptive statistical analysis (Table 1), the variable of house ownership status has an average value of 0.771 which indicates that the majority of the houses occupied are their own. The education variable shows that the highest education level of households in Indonesia is only up to

Junior High School/equivalent with an average score of 2,309. Meanwhile, the household financial literacy variable in Indonesia shows that the majority of households in Indonesia have understood the financial products indicated by the understanding of place to borrow money, the average value of which is 0.823. Furthermore, the employment status variable has an average of 0.757 which indicates that households in Indonesia already have a job.

Table 4. Summary of Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Household Ownership	0,771	0,419	0	1
Education	2,309	1,116	1	7
Financial literation	0,823	0,381	0	1
Job status	0,757	0,428	0	1
ROCAs	1,526	0,954	1	12
Location	0,409	0,491	0	1
Food consumption	17083,18	56536,9	0	950000
Non-food consumption	58394,53	1143344	0	95000000
Income	2250000	5010000	0	100000000
Marital status	0,658	0,474	0	1
Total loan	11200000	56500000	0	1000000000
Health condition	2,068	0,683	1	4
Loan status	0,963	0,187	0	1

Source: data processed (2022)

On the other hand, the ROCAs variable shows that the average number of arisan owned by each household in Indonesia is 1-2 for each household and maximally 12. The results of the location of household residence in Indonesia in this study indicate that the average majority of households both living in cities and in villages is 0.409. Food and non-food consumption variables have an average consumption expenditure of IDR 17083.18 and IDR 58394.53, respectively. Meanwhile, the average household income in Indonesia is IDR 2,250,000. The loan status variable shows that the majority of households in Indonesia have made loans, and based on the total loan variable, the loan average is IDR 11.200,000. The marital status variable shows that the average household in Indonesia is married. Then based on the position of the health level of Indonesian households, the average is 2,068. This shows that households in Indonesia are quite healthy.

The results of Tobit regression shown in Table 5 provide the findings that financial vulnerability has a negative and significant impact on poverty in Indonesia in model 3. This indicates that the lower the level of financial vulnerability at the household level, the higher the poverty will increase. This is in line with the results of Choudhury's (2014) research in Bangladesh. Empirical evidence shows that there is a close and interactive relationship between financial vulnerability to poverty. The financial vulnerability gap has a major impact on poor households in urban and rural Indonesia. They face financial exclusion in a number of services including payments, savings and loans. Wealthy households in rural areas may have access to banks, but they are less likely to do so due to distance. In addition, they are not eligible for microfinance services. This is a particular case for poor households who

have very little or no access to banking services. A possible solution to this financial gap is to make microfinance institutions open to the whole community and bring banking services in their capacity to the poor. This requires two main actions: bringing banking services to the doorsteps of poor households and making services friendly to poor households through microfinance institutions (e.g. entry requirements for financial institutions with affordable interest rates).

Table 5. Tobit Model Regression Results

Variable	Model 1 Coeff (Robust Std. Error)	Prob.	Model 2 Coeff (Robust Std. Error)	Prob.	Model 3 Coeff (Robust Std. Error)	Prob.
FVI	0, 142 (0,101)	0,197	0,081 (0,058)	0,138	-0,067** (0,024)	0,009
Household Ownership	0,510*** (0,175)	0,000	0,184*** (0,087)	0,000	-0,009 (0,002)	0,154
Education	0, 103 (0,172)	0,298	-0,124*** (0,053)	0,007	-0,092*** (0,020)	0,000
Financial literation	-0,746** (0,411)	0,025	-0,216 (0,174)	0,147	-0,240*** (0,085)	0,001
Job status	0,490** (0,239)	0,046	0,138 (0,082)	0,268	0,102* (0,049)	0,051
ROCAs	-0,086 (0,054)	0,159	-0,021** (0,006)	0,010	-0, 012*** (0,002)	0,000
Location	0, 707*** (0,358)	0,002	0,608*** (0,162)	0,000	0, 821*** (0,087)	0,000
Food consumption	-1,816 (2,006)	0,345	-1,896** (8,107)	0,028	1,957 (4,347)	0,634
Non-food consumption	9,337 (1,336)	0,353	-	-	7,438 (2,019)	0,246
Income	-3,189 (1,789)	0,186	-4,590 (1,329)	0,805	-	-
Marital status	0,036 (0,261)	0,843	0,060 (0,105)	0,553	-	-
Total loan	-8,189** (3,529)	0,012	-1,319 (1,229)	0,301	-1,429*** (1,390)	0,000
Health condition	-0,074 (0,197)	0,571	0,014 (0,082)	0,837	0,022 (0,033)	0,513
Loan status	0, 680 (0,439)	0,136	-	-	-	-
Prob > F	0,0000		0,0000		0,0000	
Pseudo R^2	0,2442		0,0940		0,0720	

Notes: *) Significant α 10%; **) Significant α 5%; ***) Significant α 1%
Source: data processed (2022)

By testing the significance of 1%, 5%, and 10%, the results show that Model 1 has a significant relationship with household poverty in Indonesia, including household ownership, financial literacy, job status, location, and total loan variables. Model 2, by eliminating 2 variables, there is a significant relationship, namely education, job status, ROCAs, and location. Meanwhile, Model 3 shows

that there is a significant relationship with household poverty in Indonesia, namely FVI, household ownership, education, financial literacy job status, ROCAs, location non-food consumption and total loan. In this case, it shows that the standard error indicates how accurate the average sample used for each model in the study is.

Furthermore, based on the results of a robust standard error (Table 5), which was carried out to ensure that the main results in each model used were not biased. This check is used to overcome the problem of heteroscedasticity by using a robust standard error that is resistant to the problem of heteroscedasticity (Arabmazar & Schmidt, 1981; Croux et al., 2003; Utomo et al., 2014). Robust standard errors, also known as Huber–White standard errors, adjust for model-based standard errors using the empirical variability of the model residuals. A strong standard error can sometimes provide a better assessment of sample-to-sample variability than the variation in the multiple-sample estimate quantified by the standard error. The results of the robust standard error test in Table 5 can be seen from the probability value of the F-statistic which is less than the critical value ($\alpha = 1\%$). Based on the results of robustness (Table 5), overall, the strong F-statistical value for each model indicated by the value of Prob > F is less than the critical value of 0.000. Strong F-statistical value indicates that the coefficient is statistically significant for each research model.

The findings on home ownership status in model 3 have contradictory implications with the study by (S. et al., 2017). The findings of this study indicate that households owning their own buildings or houses have no effect on poverty levels. The existence of financing for house repairs as well as housing ownership status has implications for the level of household expenditure in Indonesia. However, this does not affect the level of household poverty. Meanwhile, in models 1 and 2, the status of home ownership affects the poverty rate in Indonesia. Home ownership can affect poverty levels if financial behavior in managing home care or saving for rent cannot be managed properly. Seven & Coskun (2016) argue that the amount of income without proper financial management will make the level of poverty vulnerability occur in both poor and middle-income households.

The conditions of inclusion and financial literacy have proven to be able to reduce poverty in Indonesia. These results are in line with research conducted by Askar & Quattara (2020); Omar & Inaba (2020); Wang & He (2020). Research by Wang & He (2020) explains that financial inclusion can expand people's access to finance, and this has a large potential impact on various transmissions. Optimization of financial inclusion can pay attention to aspects of economic growth as stated by Omar & Inaba (2020) that economic growth is able to increase financial inclusion in order to reduce poverty levels. Good economic growth will be able to create demand for labor, so that real wages for low-skilled jobs will increase. These conditions encourage changes in the standard of living and the level of prosperity of a household. The transmission process surely needs the role of an inclusive financial system to encourage participatory investment. Askar & Quattara (2020) point out that financial literacy can be used as a way to improve and improve individual welfare. In addition, the study of Jappelli & Padula (2015) states that financial literacy has a significant positive relationship to wealth. Financial literacy needs to be owned by the community because it influences people's decisions in financial management and becomes a good navigator for the community

(Gathergood, 2012; Lusardi & Mitchell, 2014). Financial inclusion can be developed by improving the financial sector, regulation, and increasing public awareness related to financial literacy which can later be used to reduce poverty levels. (Wardhono et al., 2016, 2019). Thus, financial literacy has a positive role in improving people's welfare or reducing poverty levels.

This condition further emphasizes that education is an important variable in poverty alleviation (Awan et al., 2011). In models 1, 2, and 3, education and employment status variables have a negative relationship to poverty. That is, the higher the level of education of a person, the lower the poverty decreases. This is in line with the research by Quach et al. (2005) in Vietnam which confirms that the policy of increasing formal education and informal trainingis significantly able to reduce poverty in Vietnam. Individuals or households can meet all their needs from an increase in income. This is reaffirmed by Ijaiya et al. (2018) that the level of education can reduce the level of household poverty. Similarly, Khairati & Syahni (2020) explain that low levels of education are a source of household poverty. The higher the education level, the greater the opportunity to gain access to job information, markets, credit facilities, health and personal development. This is consistent with previous research which states that the higher the level of education, the higher the possibility of finding a job with a good income (Imai et al., 2010; Kimuyu, 1999; Yusuf et al., 2009). With a high level of education, people have the skills and broad opportunities to find work that creates the possibility to move away from poverty. Based on these conditions, education and financial literacy have an indirect effect on poverty alleviation efforts in Indonesia. Inclusive education can be a way out to lift themselves out of poverty. This needs changes in the value system of the importance of education, the importance of parental and state support to generate educational dynamism from within, and focus on improving the quality of education.

The type of domestic work is closely related to the individual's level of education because, in general, the higher the level of education, the greater the salary that will be received by workers. This is supported by the results of research showing that employment status has an effect and has a negative relationship with poverty. The higher the education level in a household, the more likely households work in the formal sector and result in an increase in income which later decrease the household poverty level. The research results are in accordance with the research of Khan et al. (2015) finding that employment has a significant impact on household poverty in rural areas. Furthermore, households that have jobs can reduce poverty. The opening of wider job opportunities and the existence of training and education programs for workers in improving work skills can reduce unemployment rates and can indirectly reduce household poverty levels.

In addition, the level of welfare can be seen from the ability of households to fulfill household food consumption (Backiny-Yetna et al., 2017; Rose et al., 2020). Household consumption can be divided into two, namely food consumption and non-food consumption. Non-food consumption has no significant effect on poverty because non-food expenditure has a relatively smaller frequency than food consumption. Food consumption is a primary expenditure that is always carried out by households while non-food consumption is a form of secondary/tertiary needs of households. Therefore, when non-food consumption increases, this will not directly reduce the level of household poverty. Other results show that, in model 2,

the relationship between food consumption and poverty has a significant negative relationship. The relationship between food consumption and poverty is related to the fulfillment of individual and household/group nutrition. In this case, health conditions and food consumption patterns can affect individual activities such as decreased work capacity and absenteeism from work. This causes a person or a household that has a low level of consumption to have a low level of productivity, so that individuals or households are unable to meet a decent standard of living. This is in line with Gibson (2016) research which shows that fulfilled household food consumption can reduce poverty.

Poverty is the main target of the Sustainable Development Goals (SDGs) program. Reducing the poverty rate continues to be the main focus of the government, including in Indonesia, so that the role of the government and society is needed in breaking the cycle of poverty. One effort to eradicate poverty is through access to formal and informal financial institutions. In Indonesia, there are still many people, especially in rural areas, who have difficulty in accessing formal financial institutions but prefer informal institutions as a means of access to saving and borrowing, which are commonly known as arisan or Rotating Saving and Credit Associations (ROSCAs). ROSCAs acts as a savings and loan facility and benefit for the poor to overcome urgent financial problems (Anggraeni, 2009; Yusuf et al., 2009).

Individuals or poor households in meeting their needs can do various ways, such as making loans or participating in arisan. The results in Table 5 show that participation in arisan (ROSCAs) is proven to be able to reduce the level of poverty in Indonesia. The results of this study are supported by the research by Kharisma et al. (2020) showing that arisan can be used as a tool to reduce poverty levels. Individuals or households can use the money earned from arisan (ROSCAs) for various purposes, such as adding assets, expanding business capital, etc. Acquah & Dahal's (2018) study also state that ROSCAs helped individuals and families to overcome financial problems during the 1998 economic crisis in Indonesia. ROSCAs have benefits for the welfare of society where ROSCAs money is used to pay for daily needs, so that they can get out of the poverty line (Imai et al., 2010; Kimuyu, 1999; Yusuf et al., 2009). Tayo et al. (2017) also confirm that loan funds can be used to meet other tertiary needs such as that of the Nigerian community, namely to finance funerals and wedding celebrations. The allocation of funds received can be adjusted to the needs of each individual. This condition explains that receiving funds from third parties and participating in arisan are able to provide additional funds to meet the necessities of life.

Koomson et al. (2020) explain that financial inclusion in Ghana can reduce poverty and poverty vulnerability which more commonly occur in rural areas than urban areas. This is in accordance with the problems that occur in Indonesia; that is, rural poverty is greater than poverty in urban areas. This confirms the results of this study that the location of residence also affects poverty alleviation efforts. On the other hand, the results of the study also explain that income has no significant effect on poverty. This can be because poverty is not only seen from the amount of income but also from a multidimensional approach, such as in the education aspect. Indeed, Indonesian people have a low level of education so that a development strategy is needed to enable individuals or households to manage their income well and not focus on one economic sector.

The household environment of low-income individuals and families creates a number of barriers and inconveniences that affect financial decisions and behavior (Haushofer & Fehr, 2014). Instead of being served by local bank branches, it turns out that households in low-income neighborhoods have more options for alternative financial services (Mani et al., 2013). The informal credit market, which includes lenders, pawnshops, and shop or house rentals, has higher interest rates and faces a greater limit to the amount of money that can be borrowed. For this reason, the liquidity of low-income households tends to be more constrained than that of households above the poverty threshold (Haushofer & Fehr, 2014). This becomes clear if the financial behavior of poor households will be able to support their lives and provide credit repayments mostly in the long term.

Living in a low-income neighborhood is also stressful (Chibba, 2009; Laajaj, 2017). Low-income areas are characterized by higher rates of violence and crime, poorer access to health care, and fewer and less comprehensive social support services. Therefore, it is necessary to improve the environment that is beneficial for family welfare, such as mental and physical health (Chetty et al., 2016). These findings indicate the possibility of programs in the social sector, such as vouchers or cash and non-cash transfer programs that are suitable to assist low-income families in building assets and being able to live in less-poor environments.

Poverty alleviation can also be addressed by developing the financial sector to enable the poor to access or expand their access to financial services such as credit (Jalilian & Kirkpatrick, 2005; World Bank, 2001). One of the main components of the government's poverty reduction strategy is ensuring the poor to have access to credit. Several empirical findings indicate that access to credit has a positive impact on household economic well-being (Khandhaker, 2003; Remenyi & Quinones, 2000; Wright, 2000). Another study from Quach et al. (2005), confirms that credit has a positive relationship with household welfare. In other words, it helps alleviate poverty.

Based on the results of the description, it is recommended that the government increase the level of household financial behavior, in this case financial literacy, by providing more resources to improve the regulatory and institutional framework that promotes poor households' access to the financial system. In addition, the government is encouraged to design policies that provide the necessary business environment for financial institutions to operate and extend services to more remote areas. The expansion of these services increases the provision of more supply-side indicators of household financial behavior, which also leads to improvement in demand-side indicators. By expanding services to reduce distances to financial institutions, current and future poverty risks are expected to decrease. This recommendation has indirectly been contained in the National Strategy for Indonesian Financial Literacy 2021-2025. The pillars used in the there are financial competence, wise financial attitudes and behavior, and access to finance. Each pillar has detailed programs that can be implemented to improve financial literacy. Financial literacy or this level of education is a financial behavior needed by the Indonesian people to reduce poverty levels. These results are in accordance with the results of research showing that financial literacy and education are variables that have a significant negative effect on poverty.

CONCLUSION

An economic phenomenon that has a multidimensional nature is poverty. Various kinds of poverty indicators have been studied. The results of this study indicate that the level of financial vulnerability, financial literacy, education level, arisan (ROSCAs), and total loans have a significant negative relationship in influencing poverty. That is, when this variable increase, it will have an impact on reducing poverty in Indonesia. Meanwhile, the location of residence in a village or city has a significant positive relationship which implies that the location of residence has an impact on poverty levels in Indonesia. Other findings show that health conditions, loan status, and type of consumption have no effect on poverty in Indonesia.

The behavior of household finances is the most important aspect in efforts to reduce poverty in Indonesia. Synergy between the government and financial institutions needs to be improved in order to increase public financial literacy and inclusion and as an effort to reduce financial vulnerability in poor households. The government has created the Indonesian Financial Literacy National Strategy 2021-2025 to increase the literacy level of Indonesian households. This optimal implementation is one of the government's efforts to improve the financial behavior of Indonesian households. Inclusive education can be a way out to lift themselves out of poverty. Thus, it requires changes in the value system of the importance of education, the importance of parental and state support to generate educational dynamism from within, and focus on improving the quality of education. The opening of wider job opportunities and the existence of training and education programs for workers in improving work skills can reduce the unemployment rate and can indirectly reduce the level of household poverty. In addition, a policy is needed to expand financial institutions to target poor households in providing capital for their business environment.

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