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Determinant *residential real estate* of millennial generation in adapting housing microfinance case Indonesia chapter

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Abstract

Purpose – This study aims to analyze the variables that affect residential real estate demand by millennials based on hedonic demand functions.

Design/methodology/approach – The method of analysis in this study is robust regression ordinary least square using cross-sectional data from Indonesian Family Survey Wave 5 (IFLS-5) with a sample of 1.672 households of male married millennials.

Findings – The aspect of millennial generation characteristics is significant on the variables of income, number of dependents, education level and presence of millennial generation in urban and rural areas. While the variable of age of the millennial generation does not significantly influence expenditure for residential real estate. All aspects of the millennial generation's spending behavior consisting of spending on food consumption, education, health, telephone and internet, transportation, recreation and the variable of the presence of urban and rural millennial generations significantly affect the spending of the millennial generation for residential real estate with the assumption of *ceteris paribus*.

Research limitations/implications – The implication of this study brings together the characteristics of the millennial generation with the aspect of behavior to expenditure for residential real estate assets relevant to the needs of the housing microfinance market.

Practical implications – In this study, it was found that the character and behavior of the millennial generation towards spending on residential real estate can be factors in determining policies by both the government and financial institutions that will serve the millennial generation through housing microfinance.

Social implications – This implication study, it was found that the needs and behavior of the millennial generation towards the demand for housing microfinance principles according to their character and behavior.

Originality/value – The difference between the results of this study and previous studies is possible because previous studies did not differentiate the unit of analysis for the millennial generation.

Keywords Indonesia, Residential, Real estate, Housing market analysis, Residential property, Housing microfinance, Millennial generation, Market analysis

Paper type Research paper

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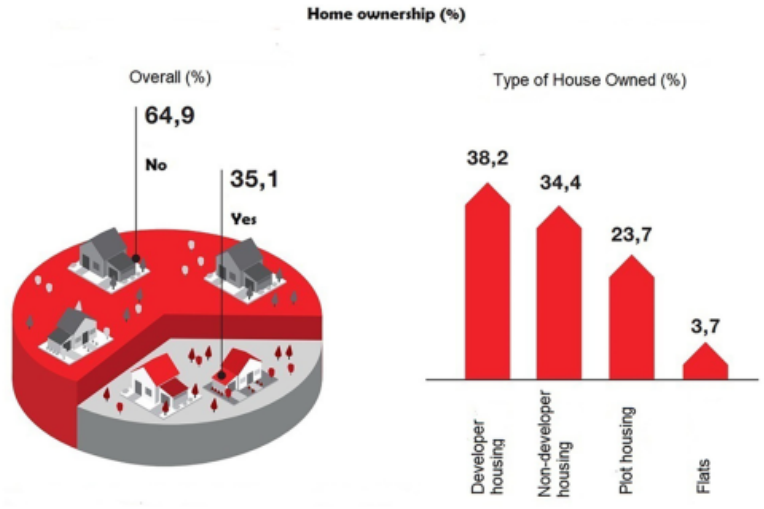
Introduction

Residential real estate refers to housing that includes personal property, or public-owned (government) or corporate-owned property, that functions as the primary need of the community as a place to live, not least for the younger generation or what is often called the millennial generation or generation Y. Millennials are those in the age group between 20 and 35 years old (Research Institute, I., 2019). According to the National Development Planning Board (BAPPENAS) in 2018, there were 63 million millennials, and as predicted by the Central Statistics Agency, will have increased to 23.77% of the total population of Indonesia by 2019.

The millennial generation is an active technology generation. Technological developments will facilitate access for the younger generation to explore creatively while at the same time shape decision-making behavior to obtain the desired place to live (Tantangan and Mata, 2019). Thus, understanding of financial concepts and financial management skills for the millennial generation is fundamental. If they lack appropriate skills in their financial management, it will encourage poor and ineffective financial management, including in terms of fulfilling the primary needs of residential real estate (Ningtyas, 2019).

High income that is ineffectively spent or poorly managed will reduce the effectiveness of the proportion of household expenditures, especially the fulfilment of residential real estate needs. The increase in consumption expenditure that is not proportional to the increase in annual income will result in some allocations of expenditures being shifted by considering the primary needs of the millennial generation. High consumption spending shows that the priority for residential real estate ownership spending has declined. The Sarana Multigriya Finansial Annual Report (2018) in its research results found that millennials who live in big cities are more likely to face problems with residential real estate ownership than those who live in rural areas. Constraints such as the consumption expenditure of millennials in urban areas that are higher than those living in rural areas and the increase in wages and housing loan interest rates that are not comparable to the increase in residential real estate prices in urban areas add to the obstacles for the millennial generation, especially in urban areas, to obtain residential real estate for them. Thus, observing the millennial generation's lifestyle in their consumption is interesting, especially in association with the millennial generation's residential real estate ownership.

The Indonesia Millennial Report found that the lifestyle of the millennial generation greatly determines their consumption behavior, both food and non-food (Research Institute, I., 2019). Mitchell and Sparke (2016) in their research stated that the government should intervene in the spending of the millennial generation (Habitat for Humanity, 2013; Goodman *et al.*, 2015; Merrill and Merrill, 2009), because it will affect the development and implementation of micro market transformation and at the same time compensate macro market failure. The millennial generation has the demand for rental and purchase of starter homes. The real estate ownership behavior of millennials is optimistic and realistic. They basically expect to own residential real estate with extra space, privacy and predictable monthly costs. As a comparison, nearly 9 out of 10 millennials in America hope to match or exceed their parents' economic level. As many as 21% of American millennials (total sample 78.6 million) still live with their parents or other older sibling (Lachman and Brett, 2015); meanwhile, millennial generation residential real estate ownership in Indonesia is much higher than in America, with 35.1% of the Indonesian millennial generation already owning residential real estate (Research Institute, I. 2019). The majority of millennials own residential real estate with the type of developer housing (38.2%) and non-developer housing (24%). In detail, the millennial generation's residential real estate ownership in Indonesia can be seen in Figure 1.



Source: IDN Research Institute, processed, 2019

Figure 1. Millennial generation residential real estate ownership in Indonesia

The infrastructure development strategy in the Medium-Term Development Plan (RPJMN) of the Republic of Indonesia for 2020–2024 includes basic service infrastructure including access to decent, safe and affordable housing and settlements, access to sustainable safe ground water and raw water, access to drinking water and access to proper and safe sanitation. The 2020–2024 RPJMN sets a target that by 2024, 70% of households will occupy decent housing with all dwellings having access to proper drinking water and 90% of dwellings having access to proper sanitation (*Katalog: 3302001*, 2019).

To reach the target of housing development in Indonesia, a strategy is needed, especially in targeting the users and owners of housing and settlements. Entering the target market of the millennial generation as part of current demographic bonus in Indonesia, this needs attention on two sides, namely, the demand factor and the supply factor [KP3A dan Biro Pusat Statistik (BPS), 2018] (Ingram, 1997). Understanding the behavior of the millennial generation with regard to their housing needs is part of the study from the demand side, whereas understanding the financial service provider towards the target market carried out by housing microfinance is part of the study from supply side (Habitat for Humanity, 2013).

The millennial generation in Indonesia, from the financial aspect, is included in the classification of microfinance targets (Subagyo, 2015), because the average income is less than USD$2.5/day. So that financial institutions that provide access to financing to the millennial generation are included in the housing microfinance target. The sustainability of microfinance itself is largely determined by the economies of scale of the business (Ledgerw, 1998). In accordance with the character of microfinance, which has a low credit ceiling but has a large number of debtors, expanding the target range through housing finance to the millennial generation is a priority for future microfinance targets.

Based on this background, research on the residential real estate determinants of the millennial generation through housing microfinance in Indonesia is interesting. In this study, millennial generation residential real estate is seen from the influence of variables from aspects of the characteristics of the millennial generation and aspects of millennial generation spending behavior in Indonesia based on hedonic demand functions.

Literature review

Millennial generation

Millennials are a group of Indonesian residents aged between 20 and 35 years. The millennial generation is often also referred to as generation Y. In the USA, research on how young people view housing found that as many as 60% of the millennial generation (a total of 78.6 million) are tenants of residential real estate, in the form of apartments or townhouses; 40% rent single-family or mobile homes. Based on their income, on average they cannot afford to pay rent in urban areas (the average rent is $925 per month), so only 13% of millennials can live in or near the city center, 21% live at home and 14% still live in homes with a household containing three generations of family members (Lachman and Brett, 2015).

In Indonesia, based on data from the National Development Planning Agency (Bappenas), there are 63 million millennials, all of whom in the productive age. The Central Statistics Agency (BPS) projects that the millennial generation will be the majority generation in the demographic structure in Indonesia. The population of Indonesia over the next few years will continue to increase, from 265 million in [illegible] to 282 million in 2024 and reaching 317 million in 2045. This shows that the millennial generation in Indonesia has an economic potential and needs to be considered for their residential real estate needs as their primary need (*Katalog: 3302001*, 2019).

The millennial generations in Indonesia are well known for their consumption, because they get bored easily and like things that are fast and instant. The development of technology, particularly the internet, supports this generation to get what they desire quickly. Besides, the need for traveling and entertainment also increased. Thus, most of their income is allocated for consumptive activities, rather than to meet residential real estate needs. For Indonesia's millennial generation, as much as 51.1% of their income is used up for their routine needs. Meanwhile, the income saved was only 10.7%, and only 3.3% was used for paying instalments such as residential real estate. In detail, the percentage of the millennial generation's monthly expenditure can be seen in Figure 2 (Research Institute, I. 2019).

Fulfilment of housing needs through financial institutions (bank/non-bank) is likely to be common in the financial market. However, it remains a challenge for the

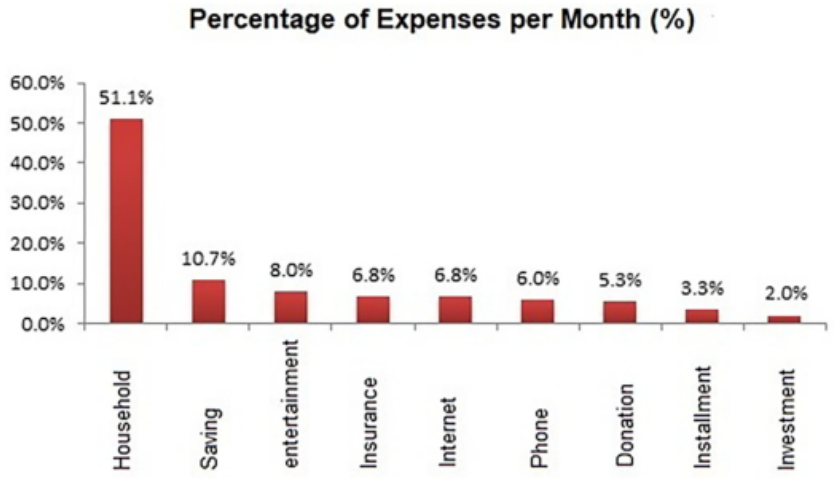
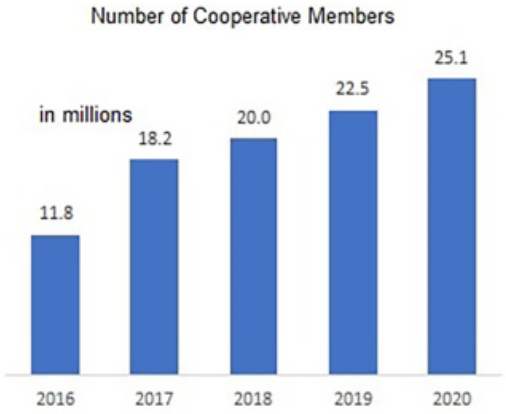


Figure 2.
Percentage of expenses per month of millennials

Source: IDN Research Institute, processed, 2019

millennial generation as a group to be capable of financing itself, through self-owned financial institutions, namely, saving and loan cooperatives (SLCs). An SLC is a micro finance actor based on membership (Nilsson, 1996). Almost a quarter of Indonesians are members of cooperatives, either employee cooperatives, producing cooperatives or SLCs, with a total membership of more than 25 million persons with more than 127,000 cooperatives throughout Indonesia (Kementerian Koperasi dan UKM, 2020) (Figure 3).

In America, the millennial generation is characterized by being tech-savvy, coming from diverse races and ethnicities, more educated and marrying not at a young age and delaying the desire to own residential real estate (Goodman *et al.*, 2015). Residential real estate ownership, especially for the millennial generation, is one of the important things in the long term (Jung *et al.*, 2018), failure or delay of residential real estate ownership can exacerbate inequality among the millennial generation. Further, Jung *et al.* (2018) explained that the behavior and views of the millennial generation in terms of fulfilling residential real estate needs have different characteristics and preferences from the previous generation. The level of ownership of residential real estate of minority groups (almost 15% of the millennial generation are Black) is lower than whites. The number of millennials with higher education experience a 5 percentage point decline than the previous two generations, millennials are more likely to delay marriage and childbearing, and they tend to be happier to live with their parents, and they prefer to live in high-cost urban areas, where the supply of residential real estate is inelastic (home prices are rising higher than in the surrounding area). There has been a shift in geographical preferences among millennials with higher education in America, and this has become an obstacle to the internal characteristics of the millennial generation in their efforts to own residential real estate. Thus, an understanding of financial literacy for the millennial generation is important in realizing residential real estate ownership. The more they understand financial concepts for the millennial generation, the more they will be able to manage their finances well (Ningtyas, 2019). If the millennial generation understands financial literacy and is able to manage their finances, it is possible to make residential real estate ownership efforts more quickly and precisely.



Source: Ministry of Cooperatives and SMEs of the Republic of Indonesia, processed

Figure 3.
Development in cooperative membership in Indonesia

Housing microfinance

Microfinance for housing is a form of microfinance, designed to meet the housing needs of low-income people, especially those who are not bankable and do not have access to the formal financial sector. Microfinance for housing is designed for poor households who wish to own, expand or upgrade their residence or build a house in stages, relying on small loans in installments (Merrill and Merrill, 2009). Residential real estate is a building that is used as a place for living, or housing, in the form of: house or housing complex, flats, apartments, student dormitory buildings, condominiums and villas (Masyita, 2017). Housing microfinance is a well-adjusted response of the microfinance industry to the vast and largely untapped housing market, serving low-income or very low-income communities.

There is a more comprehensive understanding of microfinance, namely, the formal and informal financial sector that provides microsaving, microcredit and microinsurance financial services provided to microeconomic actors (Seibel, 2006). Microfinance according to the above definition can take the form of non-bank microfinance institutions located in the regions or bank financial institutions that have financial services to serve micro-enterprises located nationally.

There are several microfinance principles that form the basis for achieving success in practicing microfinance, including as mentioned by Subagyo (2022) and Robinson (2010) as well as Ledgerw (1998):

- the scale and depth of financing reach;
- sustainability; and
- empowerment (social intermediatory).

The legal form of microfinance institution in Indonesia is dominated by the cooperative that is as many as 182 units, while those in the form of limited liabilities companies only number 44 units. Microfinance institutions (MFIs) are spread over 23 provinces and are concentrated on the island Java, with as many as 174 MFIs, namely, 29 in Central Java and West Java each and 24 in East Java.

Sharia microfinance institutions in the form of cooperatives serving the housing sector for the low-income population in Indonesia is still very limited. Only one has a specific housing financing product, namely, *Koperasi Syariah Benteng Mikro Indonesia*, which has around 196,892 members, and having constructed more than 200 houses through fundraising from its members.

Understanding of the character of the millennial generation is an important part in developing housing microfinancing products. Studies on residential real estate generally use hedonic demand functions or models, because residential real estate is closely related to consumer characteristics. So the hedonic demand functions have the assumption that there is only one type of residential real estate commodity bought or rented. The hedonic demand functions theory was first expressed by Court (1941) and Tinbergen (1956) who explained the dependence of the characteristics and parameters of the utility function, in this case the utility of residential real estate, as can be seen from the hedonic parameters (characteristics of goods and consumers of these goods). The hedonic parameters in this study are seen from the characteristics of residential real estate consumers among the Indonesian millennial generation.

Data and methods

This study uses the hedonic demand theory, that is an approach to demand based on characteristics of the consumers. The technique of analysis is multiple regression of the technical influence of the independent variables to the dependent variables.

The data in this study are secondary data sourced from the Indonesian Family Survey Wave 5 (IFLS-5), with the unit of analysis of millennial generation households throughout Indonesia. The samples used were Indonesian households with the head of the households aged in the millennial generation, namely, 20–35 years, with a male gender and married status and answering all questions as has been determined in the research objectives. Based on these provisions, this study obtained a sample of 1,672 millennial households spread across Indonesia.

The analytical method used was ordinary least square (OLS) or robust multiple regression. The purpose of these methods is to analyze the variables that are consistently significant in two multiple regression models (Newton *et al.*, 2009). The measurement of each variable is adjusted to the characteristics of each research variable, either the dependent variable or the independent variable. Each household expenditure variable is calculated by the proportion of the share of each expenditure variable to the overall household expenditure in one month. The dependent variable in this study is the expenditure of the head of household for residential real estate (*dxhouse* = *dxhouse_millennial*), namely, the proportion of monthly rental expenses for tenants and the estimated monthly rental price of residential real estate owners of millennial households in Indonesia.

The analysis of the variables that affect the millennial generation residential real estate is divided into two aspects, namely, the characteristics of the millennial generation and the behavioral aspects of the millennial generation. The aspect of the characteristics of the millennial generation consists of: the income variable of the millennial generation head of household which is calculated based on the proportion of the wages of the household head to the total costs and expenses, both consumption of food and non-food without rent (*dincome*), the number of people who are dependents of the head of the household. family (*hhsize*), the age of the head of the household between the ages of 20–35 years (*hhage*), the length of education of the head of the family (*hheduc*), and the existence of housing or rent for urban and rural (*urban*) millennials in the form of dummy binary of houses or rentals in the urban or rural area. The behavioral aspects of the millennial generation consist of consumption expenditures for food (*dfood*), expenditures for education (*deduc*), expenses for household health (*dmedical*), telephone and internet expenses in the household (*dtelpinter*), transportation expenses in the household (*dtransport*) and household entertainment expenses (*drecreat*).

The econometrics specification of the research model can be made as in the model equation (1).

$$dxhouse = \beta_0 + \beta_4 dincome - \beta_1 hhsize - \beta_2 agekk - \beta_3 educkk + D_1 urban - \beta_5 dfood - \beta_6 dxeduc - \beta_7 dxmedical - \beta_8 dxtelpinter - \beta_9 dxtransport - \beta_{10} dxrecreat + \quad (1)$$

In which:

- hhsize = Number of people who are dependents of the head of the family (persons);
- agekk = Age of the head of the family aged between 20 and 35 years (years);
- educkk = Length of education of the head of the household (years);
- dincome = Proportion of income of the head of household's to spending on residential real estate (%);
- dfood = Proportion of household food consumption expenditure (%);
- dxeducall = Proportion of education expenditures (%);
- dxmedical = Proportion of expenditure on health in the household (%);
- dxtelpinterl = Proportion of telephone and internet expenditures in household (%);
- dxrecreat = Share of household entertainment expenditure (%); and
- urban = Existence of housing or rent for urban and rural millennial generations; (1 = city; 0 = village).

To obtain the correct estimation results, the classical assumption test is carried out. A multicollinearity test is used find out multicollinearity problems between the independent variables. Meanwhile, heteroscedasticity testing will show whether the variance of the errors terms are constant or not. If the results of the heteroscedasticity test is not constant, in the next process, the data would be processed using robust standard error in the OLS regression model (Wooldridge, 2022).

Results and discussion

The millennial generation in Indonesia are people aged 20–35 years. The millennial generation currently dominates the labor force in Indonesia (IDN Research Institute, I. 2019). With the income they get every month, they really hope to be able to have residential real estate as they expected. However, the Indonesian millennial generation is not expected to be able to quickly own residential real estate (KP3A dan BPS, 2018). This is because the increase in the income of the Indonesian millennial generation on average is only 10%, unable to offset the increase in residential real estate prices of at least 20% annually.

Based on the results of the total of 1,672 samples of this study, it was found that the average income of the Indonesian millennial generation was IDR 1,874,631 per month. The average monthly total expenditure of the millennial generation sample was IDR 3,098,588, with the largest average monthly expenditure for food of IDR 1,994,648 and the lowest expenditure for entertainment of IDR 66,580. Meanwhile, the average individual expenditure for residential real estate is IDR 435.893. In detail the statistical description of the research variables can be seen in Table 1.

Classic assumption test results

In data testing using the classic assumption test, it was found that the independent variables do not show multicollinearity, however data distribution was not normally distributed, and the heteroscedasticity test confirmed positive. Thus, for the regression analysis, the OLS formulation or robust regression is used.

There is no multicollinearity because the variance inflation factor (VIF) value does not equal 10. Analysis of Results: based on the VIF results obtained from each independent

Table 1. Statistical description of variables of determinants on residential real estate of Indonesia's millennial generation

	Econometric result			
Independent variable	Coefficient	*p*-value	Robust Standard error (SE)	Conclusion
Dincome	0.04808***	0.000	−0,0047	Significant 1%
Hhsize	−0.00708***	0.000	−0,0017	Significant 1%
Hhage	−0.00055	0.345	−0,0006	Not Significant
Hheduc	−0.00122*	0.031	−0,0006	Significant 1%
Urban	−0.01293**	0.003	−0,0043	Significant 1%
Dfood	0.26172***	0.000	−0,0422	Significant 1%
Deduc	−0.15497***	0.001	−0,0464	Significant 1%
Dmedical	−0.31852***	0.000	−0,0456	Significant 1%
Dtelpinter	−0.40400***	0.000	−0,0571	Significant 1%
Dtransport	−0.31441***	0.000	−0,0333	Significant 1%
Drecreat	−0.39325***	0.000	−0,0436	Significant 1%
_cons	0.06078*	0.024	Significant	Significant 1%

Source: IFLS5, processed

variable on the dependent variable, it was found that the VIF values are less than 10, meaning that the model does not have multicollinearity. Because the regression equation model does not contain multicollinearity, it means that there is no correlation between the independent variables.

Heteroscedasticity is found because Ho (constant variance) is rejected. Analysis of Results: the symptom of heteroscedasticity will be indicated by the regression coefficient of each independent variable on the absolute value of the residual (e). If the probability value is greater than the alpha score (0.05), it can be concluded that the model does not contain heteroscedasticity.

Residual is not normally distributed, because Ho (normally distributed) is rejected. Analysis of Results: The value of Z = 10,918 is above 1.97, so it can be said that there is a difference between the theoretical distribution and the empirical distribution, meaning that the data are not normally distributed. Further, data processing is conducted using robust OLS regression.

Estimated results of the robust OLS regression of millennial generation households are shown in Table 2.

From Table 2, the following estimation results are obtained as follows:

$$dxhouse = 0.0608 + 0.0481dincome - 0.00708hhsize - 0.00055hhage - 0.00122hheduc + 0.0129urban - 0.262dfood - 0.155deduc - 0.319dmedical - 0.404dtelpinter - 0.314dtransprt - 0.393drecreat + \quad (2)$$

Analysis of the variables that affect spending on residential real estate of millennials in the first aspect (the characteristics of the millennial generation) found that income and number of dependents are significant at 1% significance level, education level is significant at 10% significance level and the presence of urban and urban millennial generations. Rural areas is

Table 2. Results of data processing of determinants on residential real estate of Indonesia's millennial generation

Econometric results				
Independent variables	Coefficient	*p*-value	Robust Standard error (SE)	Conclusion
income	0.048 08***	0.000	−0.0047	Significant at 1%
hhsize	−0.00708***	0.000	−0.0017	Significant at 1%
hhage	−0.0005 5	0.345	−0.000 6	Not significant
hheduc	−0.00122*	0.031	−0.000 6	Significant at 10%
urban	0.01293**	0.003	−0.0043	Significant at 5%
dfood	−0.26 172***	0.000	−0.0422	Significant at 1%
deduc	−0.15 497***	0.001	−0.0464	Significant at 1%
dmedical	−0.31 852***	0.000	−0.0456	Significant at 1%
dtelpinter	−0.404 00***	0.000	−0.0571	Significant at 1%
dtransport	−0.314 41***	0.000	−0.0333	Significant at 1%
dream	−0.393 25***	0.000	−0.0436	Significant at 1%
_cons	0.060 78*	0.024	−0.0269	Significant at 1%

Notes: n = 1,672; R^2 = 0.328; Adj R^2= 0.324; Rmse = 0.0759. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. ***Significant at 1%; **Significant at 5%; *Significant at 10%

Source: IFLS-5 Data

significant at the 5% significance level. The variable of gradation level of the millennial generation does not significantly affect spending on residential real estate.

The variable of number of family members significantly negatively affects spending on residential real estate for the millennial generation, in line with research conducted by previous studies, for example Ingram (1997), Rapaport (1997), Wilhelmsson (2002) and Choudhury (2012). However, these studies do not differentiate for the millennial generation. The age level variable did not significantly affect the residential real estate expenditure of the millennial generation in this study, in line with the research of Wang *et al.* (2015), but in contrast to Ingram (1997), Delauney *et al.* (2011), Wilhelmsson, (2002) and Gibler *et al.* (2009).

The variable of the education level of the head of the family has a significant and negative effect on spending for residential real estate of the millennial generation. The results of this study are in line with Walcott (1987), Firdaus (1997), Rapaport (1997), Fujita (2004), Spinler *et al.* (2009) and Fahirah (2012). The variables of the existence of urban and rural millennial generations are significant, indicating that there is a difference between the behavior of the millennial generation in urban areas and the millennial generation in rural areas. The results of this study are in line with the research of Dengah *et al.* (2014) and Wilhelmsson's (2002) research, which used the distance between residential real estate and urban centers.

Research conducted by Halim and Malelak (2021) found that the generation aged 21–28 years or what is referred to as *junior millennials*, forms expenditure patterns ranging from food and drinks, education, personal items, mobile phone and internet and entertainment, in contrast to the generation aged 29–36 years or so-called *senior millennials* who form spending patterns in the food and beverage sector, education, entertainment, personal effects and, finally, mobile phone and internet. This study did not test for significance, only difference. However, the determinant factors seem to correspond with this study, although Halim did not find a significant connection between behavior to expenditure of the millennial generation.

The second aspect (the spending behavior aspect of the millennial generation) found that variables that significantly affect spending on residential real estate of the millennial generation are expenditures on food consumption, education, health, telephone and internet, transportation, recreation and the variable of presence of urban and rural millennial generation with the same significance level of 1%.

The effect of the variables from the expenditure aspect on spending on residential real estate of the millennials in this study shows that food consumption expenditure, education expenditure, health expenditure, telephone and internet expenditure, transportation expenditure and recreation expenditure significantly affect spending on millennial generation's spending for residential real estate with different levels of coefficients. The telephone and internet expenditure variable has the biggest influence on millennial generation's spending for residential real estate, followed by recreation, health, transportation, food consumption and education. Thus, it can be said that the telephone and internet expenditures of the millennial generation is the most dominant variable affecting spending on residential real estate. The income of millennials affects spending on residential real estate with a significant but weak correlation. This study is in line with the research results of Jung *et al.* (2018) and Mitchell and Sparke (2016). The difference between the results of this study and previous studies is possible because previous studies did not differentiate the unit of analysis of millennial generation (Brief, 2006). Thus, there are differences in the behavior of millennials pertaining to demand for housing in developing countries with developed countries. This is because the behavior and treatment of housing are different between the two country types. In developing countries, especially countries that have strong social characteristics, housing is not only a place to stay in but also a source of social interaction and cultural life for the people. On the other hand, the millennials generally find the rise of house

prices greater than the increase in their income, so a source of financing for millennials in housing ownership is still very much needed (Syari *et al.*, 2020). Thus, housing ownership policies for millennials need to be considered by the policy holder authorities (government) through various policy schemes.

Generation Z (29%) and millennials (36%) choose living costs (e.g. housing, transportation, bills, etc). as their greatest concern (Deloitte, 2022). The tendency of the millennial generation to be concerned with and in need for housing is not in line with their behavior, which actually prioritizes their spending on communication, transportation and recreational needs based on the findings in this study.

Merrill *et al.* explained that microfinancing for housing must pay attention to the long-term ability to repay the loan of its customers. The behavior of the millennial generation who allocates much of their income for telephone and internet is in line with the results of Sugiarto's research (Sugiarto *et al.*, 2017). In this study, the researcher explained that the growth of transactions in the capital market was significantly influenced by the use of mobile phones.

Implications of study results

The results of the analysis in this study can be used as a reference in developing housing microfinance products, especially financing the housing sector for the millennial generation. Increasing access to finance for low-income people can be done through product development (World Bank, 2010). An effective product development strategy would bring together the needs from the demand side with financial services from the supply side (Banking Sector Reforms In India, 2020).

In this study, it was found that the character and behavior of the millennial generation toward spending on residential real estate can be factors in determining policies by both the government and financial institutions that will serve the millennial generation through housing microfinance.

Based on the research results, some information related to the character of the millennial generation are obtained, including:

- age between 20 and 35 years (Habitat for Humanity, 2013);
- average income of IDR1,994,648 (below minimum wage) (results of IFLS 4.0 analysis);
- mostly living in urban areas (SKNI, 2019); and
- spending behavior for the millennial generation, among others, the telephone and internet expenditure variable has the biggest influence on spending on residential real estate for millennials, followed by spending on recreation, health, transportation, food consumption and education (results of IFLS 4.0 analysis).

The implications for housing microfinance products that are the basis for consideration are as follows:

- low down payments, according to (Joanna Ledgerwood, 1999) and (Goodman *et al.*, 2015);
- affordable mortgage installments in line with (Robinson, 2010) and (Ingram, 1997);
- located in urban areas with a choice of apartments/flats as stated (Jung *et al.*, 2018) and the real conditions of urbanization development (SKNI, 2019); and
- the use of digital technology applications both in marketing and payment transactions as a medium between microfinance institutions and their customers, in accordance with the development of microfinance institutions that are heading toward digitalization (Novak, 2022).

Conclusion

The characteristics of residential real estate ownership by the millennial generation in Indonesia are in accordance with the general characteristics of the millennial generation in several countries to different degrees. This makes it interesting to analyze the factors that influence the residential real estate demand by the millennial generation in Indonesia. This study examined the determinants of millennial generation residential real estate in Indonesia using the hedonic demand functions approach and the robust multiple regression method. The estimation results showed that all aspects of the characteristics of the millennial generation are significant except for age, whereas the variables of aspects of the millennial generation's spending behavior all significantly affect the residential real estate of the millennial generation in Indonesia, assuming *ceteris paribus*. Further, research is needed to observe comparatively between the millennial generation and the colonial generation on the determinants of residential real estate demand in Indonesia. This research can have implications for the development of housing microfinance products to match the housing needs of the millennial generation through affordable microfinance services and to suit their behavior.

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