

Multinomial Logit Modeling of Financial Inclusion and Financial Literacy of Women MSMEs in Tangerang



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ABSTRACT: This research will examine the determinants of financial literacy and inclusion using sociodemographic variables of women MSMEs in Tangerang. The sociodemographic variables used are education, age, length of business, turnover, source of financing, type of savings, type of credit, credit ceiling, financial literacy score (OJK) and financial inclusion score (OJK). In Indonesia, there has been a lot of research on socio-demographic factors as determinants of financial literacy with mixed and unsatisfactory results, making it less reliable as a research reference. Some of the errors in previous research were that the respondents were not precise enough, for example only students or MSMEs at random. These two things result in the results of entering sociodemographic data being less reliable and ineffective when tested with categorical equation models from the simplest, namely logit, probit and tobit as well as binary logistic to the most complex models such as multinomial logit. Logit, probit and tobit and binary logistics models generally only use two categories of dependent variables, namely 0 if there is no decision or certain condition and 1 if there is a certain decision or condition. Preliminary research data before the Covid 19 pandemic, namely 150 women MSMEs who had unique characteristics in terms of socio-demographic factors as well as levels of literacy and financial inclusion, can be tried to prove empirically that these three variables will play an important role in each other through the multinomial logit categorical equation model according to Bayar et research procedures. al. (2020). The important result to be achieved is that the researcher wants to prove the business potential of women MSME actors in Tangerang, which so far has not been exposed enough to BI UMKM as one of the common market places for all MSME actors in Indonesia. There is a stigma that the low literacy and financial inclusion (OJK) scores of MSME players are a negative effect of less exposure to the business potential of MSME players in the local area. The results of this research succeeded in describing the socio-demographic profile of female MSMEs in Tangerang with several distinctive characteristics, namely the predominance of those with a productive age of 40 - 55 years, the majority having a tertiary education; have a turnover of more than 10-25 million per month and most of them use access to bank and non-bank financial institutions, usually pawnshops, for storage purposes and credit applications. Furthermore, this research succeeded in proposing a categorical equation model with multinomial logistic regression using STATA 13.0 software referring to the research model from Bayar et.al. (2020) and managed to find that socio-demographic variables of financial institutions are always a determining factor in financial inclusion and literacy. The implication is that individual women MSME actors in Tangerang can make financial decisions more quickly considering that they are so close to access to existing financial institutions.

KEYWORDS: Sociodemographic Factors, Financial Literacy & Inclusion, Women MSME in Pacitan, Multinomial Logit Model

I. INTRODUCTION

Geographically, the location of Tangerang Regency is part of the administrative region of Banten Province, which is between 6°0' - 6°20' South Latitude and 106°20' - 106°43' East Longitude. Tangerang Regency has a fairly large area, consisting of 29 sub-districts, 28 sub-districts and 246 villages with an area of 95,961 Ha. The administrative area of Tangerang Regency borders several regencies/cities and the surrounding stretches of sea, namely: to the north it borders the Java Sea, to the east it borders South Tangerang City, Tangerang City and DKI Jakarta. To the south it borders Bogor Regency and to the west it borders Serang

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Regency and Lebak Regency. The population of Tangerang Regency is 2,94,969 people, with a sex ratio of 103.97. The number of MSMEs in Tangerang Regency is 41,155, which are micro businesses spread throughout the Tangerang Regency area. Tangerang Regency has a strategic geographical position because it is close to DKI Jakarta and West Java. This position makes the Tangerang Regency area an alternative for DKI Jakarta which already has a dense population. In terms of transportation, Tangerang Regency is traversed by the Serang-Jakarta highway, and the Merak-Jakarta toll road, the Jakarta-Rangkas Bitung railway double track, as well as alternative access to Soekarno-Hatta International Airport. In terms of human resources, Tangerang Regency has a population growth of 2.43 percent, with a recorded population of 2,794,969 people. The impact of this abundance of human resources has encouraged the growth of employment opportunities which absorb the number of workers.

The area of Tangerang Regency is 959.61 km², located in the eastern part of Banten Province, with coordinates 106020 - 106043' East Longitude and 6000-6020" South Latitude. Tangerang Regency is one of the areas that is part of the Banten Province. Located in a fairly strategic geographical position with boundaries; to the north it borders the Java Sea, To the east it borders South Tangerang City, Tangerang City and DKI Jakarta, to the south it borders Bogor and Lebak Regencies, to the west it borders Serang and Lebak Regencies. The distance between Tangerang Regency and the center of government of the Republic of Indonesia is around 30 km, both are connected by the Jakarta-Merak freeway, which is the main economic traffic route between Java and Sumatra Island.

The geographical position that borders the DKI Jakarta Province is one of the potentials for Tangerang Regency to develop into a buffer area for the capital city of Jakarta. This closeness gives rise to interactions that have an impact on regional growth and synergistic relationships. Tangerang Regency is the area with the largest area in Banten Province, whose development progress is relatively fast with the availability of infrastructure, shopping centers, shops, housing development in new areas, as well as other supporting infrastructure. Based on data released by the Central Statistics Agency, the population of Tangerang Regency in 2019 was 3,800,787 people with a growth rate of 2.93 percent, while according to the Population and Civil Registration Service, the recorded population was 2,794,969 people, consisting of 1,424,661 men. men and 1,370,308 women. The annual population growth rate within one year is 2.43 percent.

From this data, it can be seen that the potential of women is no less than that of men. The economic potential in Tangerang Regency is getting better, if seen from the role of women in helping the family economy. There are many small and medium businesses run by women in Tangerang Regency. Based on data from the Central Bureau of Statistics of Banten Province, there were 1,277 cooperatives in Tangerang Regency in 2019. Of this number, 942 cooperatives are active cooperatives and are capable of absorbing 2,420 employees. The total number of registered members in these cooperatives is 614,261 people. Based on their capital, cooperatives in Tangerang Regency, more capital is used from outside than its own capital. The total assets owned by cooperative companies reach 527 billion rupiah with a business volume of 728 billion rupiah. This cooperative operates in various fields, including savings and loan cooperatives, production cooperatives, cooperatives agriculture, and others.

MSMEs in Tangerang Regency play a large role and contribute to regional income in general and improve the family economy in particular. Based on 2019 BPS data, the number of MSMEs in Tangerang Regency is 41,155. These MSMEs operate in various kinds of products which are superior in each area. each sub-district. These superior products include shoes, bags, batik, woven, culinary and recycled products. MSMEs make a big contribution to the region, namely absorbing labor, increasing regional income and promoting regional tourism media. This can be seen from statistical data for the contribution of MSMEs.

During the period from 2016 to 2019, the provision of credit to MSME players also increased. This shows that there is an increase in the number of MSMEs established in society and the development of existing MSMEs. Provision of credit provided by Commercial Banks and BPRs to businesses MSMEs in Tangerang Regency in 2019 for micro businesses amounted to 2,015,957 million, the largest credit was given to medium businesses amounting to 11,737,272 million. The following is data regarding the position of MSME credit that has been distributed by Commercial Banks and BPRs in Tangerang Regency over a period of 4 years.

From the credit distribution provided by the Bank, not all MSMEs can enjoy it. This is due to several things, for example the lack of understanding by MSME actors regarding providing credit funds, their lack of understanding regarding how to apply for credit and several other things. This can be understood, after we saw the results of initial observations carried out in 2019. Where, there are still many MSME players, especially women, who still lack knowledge and understanding regarding financial inclusion and financial literacy. This can be seen from the conclusions of the data processing that we carried out.

Even though Tangerang Regency is an urban area, there are still many MSME players, especially women, who still do not understand the facilities and products offered by bank and non-bank financial services. They only use banks, only for depositing and withdrawing funds. When they are faced with banking technology or banking products other than savings, they are still afraid and hesitant to use it. In fact, they should be able to use all kinds of facilities and products offered by financial institutions in this

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country to speed up their business financial transactions. So, it would be a shame if they did not take advantage of all the conveniences and advancements offered by banking institutions.

Likewise, with their understanding of financial literacy, many were still hesitant when answering the questions the research team asked. Especially related to literacy in the insurance and investment fields. Most of them only understand insurance limited to BPJS health insurance, vehicle insurance, but do not understand insurance other than that. Although there are some MSME players who already understand other types of insurance. However, insurance can also be used by them as an investment tool. There are still fears and concerns they have regarding insurance products. Likewise other investment products, especially mutual funds. All MSMEs that the research team used as respondents did not understand what is meant by mutual funds. So far, they have only invested in three things, namely savings, land and gold. They understand that these three media are trusted and profitable as investment vehicles [see to Netalissa, et.al. (2024)].

Based on the results of this previous research from Mouna & Anis (2017), Abel, et.al. (2018), Lubis & Irawati (2022), it is clear that the financial understanding of women MSMEs in Tangerang Regency is still low. The value that the research team obtained was only around 30%, far from the standard imposed by Bank Indonesia, which is around 80%. This ultimately makes them experience obstacles in developing the products they have or expanding their product market share. The dominant thing that hinders them is financial management and their understanding of financial products and services. Limited information related to financial products and financial institutions will hinder them in applying for loans or managing assets and investments. Apart from that, there are concerns when they are caught in illegal loans. Based on the problem of low financial inclusion and literacy of women in MSMEs in Tangerang Regency, the aim of the research is to find out and analyze women's understanding of financial inclusion in financial decision making. Continuing Lusardi & Mitchell (2014) and Lusardi's (2019) study, this research will map the understanding of inclusion, financial literacy and financial capabilities of women who play MSMEs in Tangerang Regency. The final result is a financial decision making model and concept that is suitable for the financial attitudes of women MSME actors in Tangerang Regency as a manifestation of understanding inclusion and financial literacy, namely whether financial intentions will also have a very important role.

This research poses a problem, namely the search for a categorical model of the determinants of literacy and financial inclusion of women in Tangerang MSMEs which actually still have a sociodemographic profile that supports business development. Thus, there are still sociodemographic profile items that need to be explored in order to provide new evidence that there is still potential for increasing financial literacy and inclusion through a categorical model that will be built.

II. RESEARCH METHODS

In this research, the population is female MSME actors in Tangerang. These include snack makers, traders, craftsmen and others. The number of samples taken refers to Grohman, et.al. (2018), Lusardi (2019), Anshika & Mallik (2021), and Putri & Setyawan (2024) according to the multivariate technique, the minimum was 100 and the research team of writers used 150 respondents. In selecting respondents to be surveyed, the method used was the snowball sampling method.

This research uses two types of variables, namely 1) Sociodemographic consisting of education, age, turnover and accessibility of financial institutions. 2) Financial Behavior consists of financial inclusion, financial intentions and financial literacy. The four sociodemographic variables are categorical variables with a scale of 0 and 1, namely Education (0 = below high school, 1 = high school or above), Age (0 = 55 years and above, 1 = below 55 years), Turnover (0 = below 10 million, 1 = 10 million and above) & Access to Financial Institutions (0 = Banks only; 1 = Banks & Others). Meanwhile, the three financial behavior variables: inclusion, intention and financial literacy are also measured with categorical variables on a scale of 2, 1 & 0, namely (0 = value of inclusion, intention and low financial literacy, 1 = value of inclusion, intention and financial literacy is medium & 2 = value inclusion, intention and high financial literacy. Selection of a scale of more than two categories considering that the financial behavior variable is the dependent variable of the research model which will be analyzed using multinomial logistic regression.

The research model is to answer the study objectives, namely what a model of the determinants of financial literacy and inclusion will look like with categorical equations. The determining factors will consist of 1) Sociodemographic variables are none other than the descriptive profile of female MSME respondents in Tangerang. 2) Financial behavior variables, namely intention, inclusion and financial literacy, are the results of previous research surveys. The categorical equation model with logistic multinomial is displayed as follows:

$$\text{FIN.LIT} = \alpha + \beta_1 * \text{FIN. INC} + \beta_2 * \text{FIN.INTENTION} + \beta_3 * \text{EDUCATION} + \beta_4 * \text{AGE} + \beta_5 * \text{OMZET} + \beta_6 * \text{ACCESSES OF FIN. INST} + \epsilon \dots (1)$$

$$\text{FIN.INC} = \alpha + \beta_1 * \text{FIN. LIT} + \beta_2 * \text{FIN.INTENTION} + \beta_3 * \text{EDUCATION} + \beta_4 * \text{AGE} + \beta_5 * \text{OMZET} + \beta_6 * \text{ACCESSES OF FIN. INST} + \epsilon \dots (2)$$

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Model equations 1 and 2 refer to Bayar, et.al. (2020), Grable & Joo (2004) and Setyawan, et.al. (2023), then it will be tested at three levels of low, medium and high attributes. The feasibility of models 1 & 2 is the LR-Test and Pseudo R² which must be significant.

III. RESEARCH RESULTS AND DISCUSSION

III.1. Demographic Profile of Women MSMEs in Tangerang

The age referred to in this research is the age of the women who were research respondents at the time the survey and interview were conducted. For the age distribution of respondents in Tangerang Regency, the following results were obtained: the majority of respondents in Tangerang Regency were aged around >40 years-55 years. Then in second place in the age category > 55 years and third position is in the age category > 25 years - 40 years. So it can be seen that the largest proportion are respondents aged >40 years-55 years, namely 66%, and the lowest are respondents aged >25 years-40 years, amounting to 10%.

The education referred to in this research is the last education of the women who were respondents in this research. Meanwhile, for respondents in Tangerang Regency, different results were obtained in terms of the distribution of the proportion of education levels. The final education that dominates respondents in Tangerang Regency is a bachelor's degree at 55%, the second position is a high school/vocational school graduate at 37% and the least is a junior high school graduate at 8%. Meanwhile, for elementary school graduates, there were no respondents in this study. The length of work referred to in this research is the length of time they have had from starting their business/working until the time this research was conducted. The length of time most respondents in Tangerang have worked in this study is almost directly proportional to their current age. The older the respondent, the longer they work.

The monthly income referred to in this research is the monthly net income that respondents receive from the business they do. Income is something that is very private for a person, so sometimes respondents will not answer it definitively, only in the form of the average they earn each month. Ultimately, researchers must convince respondents that the data obtained is confidential and will not be shared with the public.

The majority of respondents in Tangerang have a monthly income of >10 million to 25 million rupiah, the proportion is 92%. Then followed by respondents who have an income of <10 million rupiah per month with a proportion of 5%. Apart from that, the smallest proportion was 3% for respondents who had a monthly income of > 25 million rupiah to 100 million rupiah. Below is presented the distribution of income per month for respondents in Tangerang Regency. The use of financial institutions as a source of financing in this research is the financial institutions used by research respondents as a source of financing for their businesses. Based on the results of research on respondents, the results obtained were that all respondents used bank financial institutions as a source of financing for their businesses. Apart from that, they also use pawnshop financial institutions as an alternative source of business financing other than banks. Respondents in Tangerang Regency view pawnshops as a financial institution that can help them find additional capital for business development. Respondents in Tangerang Regency consider that pawnshops make it easier for respondents to obtain fresh funds for additional capital, by pawning their assets temporarily at the pawnshop. The fast process and easy payment method make some respondents in Tangerang Regency comfortable using this financial institution.

The financial institutions for storing funds referred to in this research are several financial institutions, namely cooperatives, Baitul Mall, BPR, Banks and others which are used by respondents to store the excess funds they have. All respondents in Tangerang use the Bank as a financial institution that they trust to store their excess funds. Almost all respondents stated that they consider banks to be trusted, safe and easy financial institutions to help them carry out financial transactions. The credit repayment period in this study is related to the length of time respondents take to pay off their loans to the bank. Based on the research results, almost all respondents have a credit repayment period of at most 3 years. This is related to the size of the loan they make and the respondent's ability to repay the loan.

The credit ceiling received in this study is related to the maximum size of the loan they make. Based on the research results, it can be seen that the credit ceiling received by respondents is adjusted to the respondents' ability to pay, adjusted to the income they earn each month. Almost all respondents have a credit repayment period of 24 months. Only a small portion have more than 24 months to repay their credit. Especially when respondents have consumer credit. Respondents who are in Tangerang Regency are used to making transactions at banks, so there are no obstacles at all. The next obstacle faced by respondents in accessing banking services is that they are not used to using cellphones to carry out banking transactions. This was especially true for respondents aged over 55 years. They still find it difficult to understand the use of applications on cellphones to make it easier for them to carry out financial transactions. There are still doubts and fears about using the application incorrectly. So many respondents prefer to come directly to the bank and be accompanied by a bank officer.

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All respondents considered that they needed to have financial planning, and considered that this financial understanding was useful for them. Some respondents think that land is an asset that is easy to sell, while the majority of respondents stated that land is not an asset that is easy to sell. This can be seen, that the respondents' understanding is quite good, stating that land is an asset that is not easy to sell. Because land is a non-current asset, it takes a long time to sell it. Respondents' understanding of wealth is also good. This can be seen from the research results, where respondents stated that net assets were the difference between their debts and their wealth. Respondents already understand that the value of their debts should not be more than the wealth they own. Respondents also have a good understanding of the sales results which constitute income for them. And respondents already understand that paying loan interest is an expense for them.

When respondents were faced with cases of financial surplus problems, various results were obtained. And almost the majority answered that when there is a financial surplus, they will save. Although there were also some respondents who answered that the surplus, they experienced would be diverted to purchasing gold. Savings is a financial product used by all respondents. It is considered the easiest to use and the easiest to withdraw funds whenever they need it. The fast withdrawal and deposit process of funds using an ATM card makes savings considered a product that is easy for them to use when there is a financial surplus. Purchasing gold is also an activity that is easy for them to do when there is a financial surplus, because they can go to a gold shop and make transactions there. For most people, gold is an attractive investment, apart from being able to use it to decorate themselves, they can also sell it if financial problems arise. Gold investment is also an easy transaction to carry out, because it does not require administrative data like when opening a savings account at a bank.

When respondents were faced with cases of financial deficit, they also answered variously, according to their habits when experiencing financial shortages. For respondents who usually save, they will withdraw money from their savings. And for respondents who usually invest in gold when there is a surplus, they will sell or pawn their gold to cover the financial shortfall they experience. Pawnshop is an alternative financing institution used by respondents.

All respondents have the same understanding regarding the advantages of investing in land compared to deposits. This is in accordance with the public opinion that the selling price of land can double in less than five years. Not to mention if the location or location is very strategic, it will result in a very high selling price. Apart from that, investing in land also does not require special maintenance, as is the case when we invest in a house or apartment. Land can also be used as agricultural land, especially in rural areas, where the land can be used as plantation land. Deposits are still poorly understood by the public, even though placing funds in deposits also promises profits in the form of regular monthly income from the bank. For several respondents in Tangerang Regency, some have placed their excess funds in deposits. Most respondents in Tangerang Regency prefer to invest in gold and shophouses. Gold is a tempting investment, because apart from being easy to convert into liquid funds, the price of gold is also very good at any time of its movement. Shophouse investment is also sought after by respondents in Tangerang Regency, because they can rent it out or use it for their business activities. Shophouse rental prices are increasingly soaring, which is one of the attractions for respondents to use shophouses as an investment alternative.

When given alternative means of investment in financial products, it turned out that respondents in Tangerang were interested in investing in savings. They think investing in savings will be safer if they get excess funds in a short time. Savings is an effective alternative for them to store the excess funds they receive, safely and can be withdrawn at any time if they need it. When their savings are sufficient, they will use it to invest in land. Gold is still used as an attractive investment vehicle, because apart from the price continuing to rise, gold is also easy to exchange for cash, namely by reselling.

Respondents' ability in financial management was assessed from their responses regarding whether or not they needed to make financial planning and financial management planning. And all respondents stated that they had carried out budget planning and asset management during this time. This is quite encouraging, because it means that respondents have been able to assess their financial capabilities and manage their business and family finances.

III.2. Hypothesis Testing

Based on the examination of the determining factors of inclusion and financial literacy in table 1, the most determining factor is the age of the female respondents who are MSMEs in Tangerang. This indicates that the more mature the female respondents who are MSME actors in Tangerang, the better they are at making decisions in the financial sector. They are increasingly effective in financial inclusion, namely choosing the most suitable community to gain access to financial institutions, both bank and non-bank, and at the same time increasing the level of financial literacy by becoming more familiar with bank and non-bank financial products for storage purposes and requests for related credit types & limits.

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Table 1. Categorical Equation Model of Determinants of Financial Inclusion & Financial Literacy

Determinant factors	Financial Inclusion		Financial Literacy	
	Coefficient	Z-test	Coefficient	Z-test
0 = Low				
Financial Literacy	-	-	-	-
Financial Inclusion	-	-	-17.82	-0.01
Financial Intention	-	-	15.51	0.01
Education	-	-	0.31	0.18
Age	-	-	15.04	0.00
Omzet	-	-	-15.71	-0.00
Financial Institution Access	-	-	-29.21	-0.00
Intercept	-	-	-	-
1 = Middle				
Financial Literacy	-1.53	-3.16***	-	-
Financial Inclusion	-	-	-1.12	-1.86*
Financial Intention	-1.91	-3.42***	-1.57	-2.79***
Education	0.45	0.72	0.27	0.46
Age	-0.92	-1.33	0.16	0.23
Omzet	-1.27	-1.14	17.75	0.01
Financial Institution Access	2.32	1.77*	2.31	1.75*
Intercept	6.05	3.21	-14.98	-0.01
LR-Test	38.03***		37.23***	
Pseudo R ²	0.264		0.245	

Source: data analysis (2023) ***: significant at 1% level, **: significant at 5% level, *: significant at 10% level

In aggregate, the model of determinants of financial literacy has stronger predictive power than the model of determinants of financial inclusion. This means that women MSMEs in Tangerang no longer need access to selected communities and ongoing mentoring programs so that their financial capabilities increase rather than building financial literacy independently. Individually, female MSMEs with high financial literacy can make financial decisions more quickly than just joining mentoring or certain communities, as evidenced by the significance of the financial intention variable. These results support Bayar, et.al. (2020), Tubastuvi & Puwidiarti (2023) and Wijaya & Setyawan (2024).

IV. CONCLUSIONS AND SUGGESTIONS

IV.1. Conclusion

The results of this research succeeded in describing the socio-demographic profile of female MSME actors in Tangerang with several distinctive characteristics, namely the predominance of those with a productive age of 40 - 55 years, the majority having a tertiary education; has a turnover of more than 10-25 million per month and most of them use access to bank and non-bank financial institutions, usually pawnshops, for storage purposes and credit applications. Furthermore, this research succeeded in proposing a categorical equation model which was analyzed using multinomial logistic regression referring to the research model of Bayar et.al. (2020) and succeeded in finding that the sociodemographic variable access to financial institutions was a determining factor in the multinomial logistic regression model for financial inclusion and literacy. These results indicate that female MSME respondents in Tangerang do have greater access to financial institutions, making it easier and faster for them to make financial decisions independently.

IV.2. Suggestions

This research has not included the risk tolerance aspect in the logistic multinomial regression model as in Bayar et.al. (2020) remember that it is not easy to instill an understanding of risk tolerance among women MSMEs in Tangerang. In general, almost all women MSMEs in Tangerang are still risk averse, meaning they will not dare to take the risk of starting a business that they are not interested in and are not skilled at. A risk averse condition that is close to 100% means that financial inclusion and literacy modeling will not be effective.

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Another thing is to better recognize the socio-demographic profile of women MSME actors by carrying out active interactions through various MSME assistance. Active interaction will be able to explore more deeply the actual operational definition of literacy, inclusion and even the financial intentions of local MSME players. This definition is important for measuring levels of financial literacy and inclusion to provide more valid information if the OJK's SNKI (National Survey of Financial Inclusion) continues to be rolled out and requires information from research results to obtain much more accurate financial literacy and inclusion index values.

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