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THE ROLE OF LITERACY, BEHAVIOR, AND TECHNOLOGY ON FINANCIAL INCLUSION MEDIATED BY INTELLECTUAL CAPITAL

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Abstract

This study aims to make an important contribution to understanding the dynamics of financial inclusion among university students, particularly in the city of Surakarta. Focusing on the level of financial literacy, financial behavior and financial technology, this study aims to identify the extent to which these factors influence financial inclusion through intellectual capital. This study shows that financial literacy has a positive impact on financial inclusion, suggesting that a good understanding of financial concepts encourages more active participation in financial services. Financial behavior also plays an important role in building financial inclusion. Smart behavior in terms of spending, wealth management and investment decisions can improve students' access to financial services that meet their needs. The importance of financial technology in the context of financial inclusion is also apparent from the results of this study. The use of financial technology provides students with more effective and efficient access to financial services, thus expanding opportunities for financial inclusion in the digital age. The implications of these results can inform educational institutions, governments, and financial service providers to develop better strategies to improve student financial inclusion.

Keywords: Financial Literacy, Financial Behavior, Financial Technology, Intellectual Capital, Financial Inclusion

INTRODUCTION

In today's society, access to financial goods and services has become a very important necessity. Access to finance allows individuals and groups to conduct various financial transactions, both in terms of consumption and production. Quick access also allows transactions to be processed quickly, which can lead to an increase in the number of financial transactions. Because of its impact on people's welfare, financial inclusion should be the government's concern. An increase in the financial inclusion index in Indonesia indicates an increase in the welfare of the population (Parsa et al., 2023). The financial inclusion index in Indonesia reached 76.19% in 2019. There was a significant increase in 2022, when the index rose to 85.10% (Financial Services Authority, 2022). Some of the factors contributing to the increase in Indonesia's financial inclusion index in 2019-2022 are increased access to finance, accelerated access to formal financial services, and improved quality of financial services (Indonesia's Coordinating Ministry for the Economy, 2022).

In 2019, Indonesia's financial literacy rate only reached 38.03%, while in 2022 it increased to 49.68% (Financial Services Authority, 2022). Although Indonesia's

financial inclusion rate has increased significantly, there is a sharp difference with the financial literacy rate. Field data shows that there is a significant gap between the level of financial literacy and the level of financial inclusion, which means that there are still many users of financial products who face barriers to using available financial goods and services. In the theory presented by Sardiana (2018), the lack of access to the financial system can be observed through the supply and demand approach. From a demand perspective, lack of access to finance indicates one's inability to obtain financial goods and services. This may be due to a lack of financial knowledge, ignorance of the benefits and uses of financial products, or economic limitations that prevent them from participating in the financial system. From the supply side, lack of access to finance indicates that a person does not have many financial services accessible. These factors can affect the supply of high-quality financial goods and services available to people. In general, they limit the quantity and quality of financial products available to the public.

Financial inclusion plays an important role in addressing these challenges, as it offers many benefits to society, regulators, governments and the private sector. Financial inclusion is a term that refers to the contribution of finance to sustainable development. According to the World Bank (2014), financial inclusion is the ability of individuals or groups to access financial products and services. These financial services include formal, low-cost services that can meet the needs of the individual or group. According to Gardeva, A., & Rhyne (2011), financial inclusion can be defined as a condition where everyone has access to financial goods and services. According to the Financial Services Authority (2019), the availability of access to various financial institutions, products and services tailored to the needs and abilities of the community with the aim of improving their welfare can be defined as financial inclusion. Based on the various definitions above, it can be concluded that financial inclusion includes providing easy, convenient and safe access to various financial institutions, products and services.

Financial literacy is a person's ability to evaluate how to use and manage their money and make the right decisions. According to Cohen et al. (2011), financial literacy includes attitudes, knowledge and skills related to financial management. The Organization for Economic Co-operation and Development or OECD (2017), stated that financial literacy includes a person's ability and confidence to make smart financial decisions. The conceptual model of financial education developed by Huhmann, BA, & McQuitty (2009) consists of three main elements: skills, prior knowledge, and competencies. According to this model, financial education plays an important role in improving financial literacy. Financial education helps improve consumers' ability to learn, acquire and apply financial knowledge. Given the current economic challenges, the needs of individuals and families are increasing, thus increasing the demand for various financial products. Therefore, people with a good level of financial literacy enable them to make the right decisions in personal financial management (Mukharomah et al., 2023).

To achieve stability and security and reach long-term financial goals, it is important for people to understand and manage their financial behavior well. This includes implementing strategies to make smart financial decisions and developing sustainable financial habits. According to research by (Aryan et al., 2022), these steps are necessary

for one to successfully manage their financial resources and achieve their desired financial outcomes. Bhargava et al. (2022) suggested that financial behavior includes decisions, management patterns, and use of financial resources. Some behaviors, such as late payments, inadequate planning of future expenses, or choosing financial products without market research, can negatively affect one's financial situation, as described by Morgan, P. J., & Trinh (2019). Factors such as personal perceptions, attitudes, values, social and economic situations, and cultural conventions have a significant influence on financial behavior, as revealed by AL-Qudah et al. (2022). It is said that a person with good financial behavior is able to manage their money responsibly through activities such as budgeting, saving, controlling spending, investing, and paying debts on time.

Financial technology or fintech is the process of buying and selling financial products or services electronically through the integration of technology into the financial system. Freedman (2006) describes this concept as a combination of financial systems and technology that allows financial transactions to occur at different times and locations. The World Bank offers a broader definition and considers financial technology as a sector consisting of several companies that use financial sector technology to improve the efficiency of financial systems and services (Nizar, 2017). Fintech includes various methods such as electronic payments, money transfers, lending, fundraising, and asset management (Anindyastri et al., 2022). The growth of fintech caused by the interest and trend of using technology has the potential to improve the financial service process because fintech offers comfort and convenience for its users (Putu et al., 2023). In addition to increasing efficiency, fintech innovation can also create new business models (Feyen et al., 2021). Therefore, fintech not only facilitates electronic financial transactions, but also opens the possibility for significant changes in the way financial services are delivered and accessed.

This study shows differences from various previous studies, including those of Telukdarie & Mungar (2022), Hasan et al. (2021), and Fitriah. & Ichwanudin (2020). The difference in this study is due to adding intellectual capital variables as intermediate or intervening variables, an aspect that has not been considered in previous studies. Intellectual capital, which includes intellectual property and experiential learning, is considered a key factor of future readiness (García-meca et al., 2005). This intellectual concept is related to financial inclusion which illustrates that through coaching or training conducted by the government or educational institutions, people who fall into the unbanked category can understand financial services and eventually escape the category of non-bank entities. The addition of intellectual capital variables in this study adds a new and deeper dimension to the understanding of factors affecting financial inclusion and enriches the contribution of this study to the existing literature.

METHODS

This research can be categorized as quantitative research that aims to determine the impact of financial literacy on financial inclusion in college students, especially students in the city of Surakarta. The purposive sampling method was used to select the research sample, namely respondents who are 18 years old and above and have income. Preliminary data was collected through questionnaires which then constituted the main data source for this study. The data collected in this study will be analyzed and

explained in the form of numerical data. By using quantitative methods, this research can provide a better understanding of the extent to which financial literacy contributes to the financial inclusion of college students and identify factors that may influence the relationship.

Table 1. Dissemination Gender of Respondents

| No. | Gender | Frequency (Person) |
|--------------|--------|--------------------|
| 1. | Male | 61 |
| 2. | Female | 173 |
| Total | | 234 |

Source: Data processed by the author, 2023

From Table 1. presented, this study involved 234 respondents who were student samples. In looking at the overall gender distribution of respondents, it can be identified that 74% of the total sample are female, while the remaining 26% are male. This result reflects the dominance of female respondents in this study. Further analysis of this gender comparison can provide valuable insights related to students' perceptions and responses to the variables studied.

Table 2. Respondent Income Dissemination

| No. | Income (IDR) | Frequency (Person) |
|--------------|---------------------|--------------------|
| 1. | <1.000.000 | 150 |
| 2. | 1.000.000-2.500.000 | 68 |
| 3. | 2.500.001-4.000.000 | 13 |
| 4. | >4.000.000 | 3 |
| Total | | 234 |

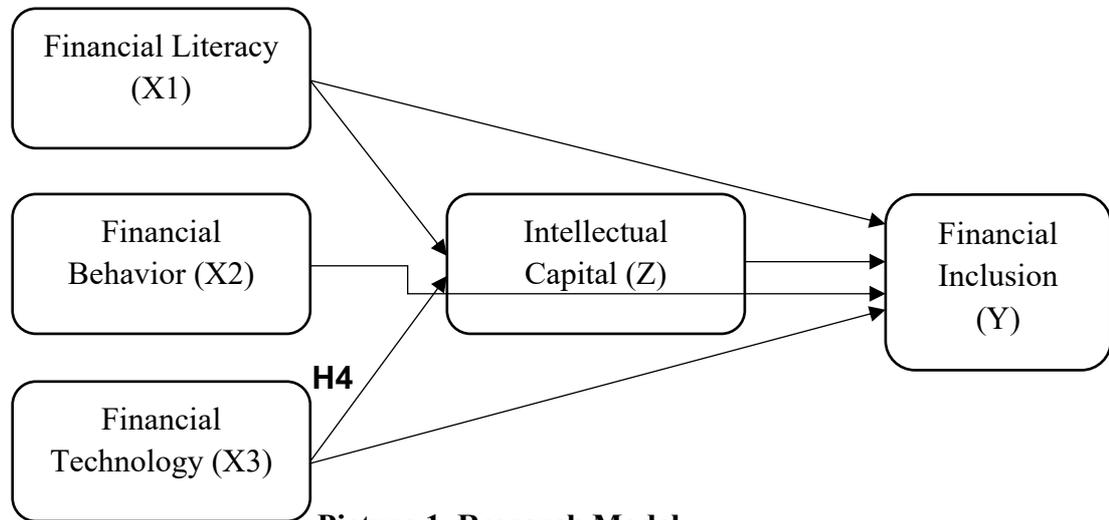
Source: Data processed by the author, 2023

From the data listed in Table 2 above, analysis of respondents' income shows that overall, the majority of respondents are dominated by those with incomes in the range of <Rp1,000,000. This result reflects the income profile of the respondents in this study, and can be an important aspect in understanding students' financial perspectives that may be related to the variables studied. Special attention to lower income groups may provide greater insight into the financial challenges and opportunities faced by these groups, and the implications for financial inclusion among university students.

This study uses three types of variables, namely dependent variables, independent variables and intervening variables. The dependent variable that is the focus of this research is financial inclusion. Financial inclusion is measured and analyzed as a result of the interaction between independent variables. The independent variables in this study include three main aspects, namely financial literacy, financial behavior, and financial technology. Financial literacy reflects students' level of understanding of financial concepts. Financial behavior includes the pattern of financial decisions and actions taken by students in managing their finances. Financial technology includes the use of technology to access and manage financial services.

This study adds an intervening variable, namely intellectual capital, to strengthen the relationship between the independent and dependent variables. Intellectual capital is considered a mediating factor that modulates the interaction between financial

literacy, financial behavior and financial technology with financial inclusion. The addition of this intervening variable aims to provide a better understanding of the role of intellectual capital in influencing the relationship between variables. By identifying and understanding the contribution of intellectual capital, this study can provide a more complete understanding of the mechanisms and processes that affect student financial inclusion.



Picture 1. Research Model

RESULTS AND DISCUSSION

Validity Testing

Validity testing is an important step in evaluating the effectiveness of a questionnaire. The validity of the questionnaire reflects the extent to which the questions in the questionnaire are able to measure precisely and accurately the variables to be measured. In this context, a questionnaire is considered valid if each question item can adequately reveal the intended aspects or dimensions of the variable. The validity testing process is carried out on each question contained in each variable being investigated. The success of this validity test provides confidence that the data collected through the questionnaire can be relied upon to provide an accurate description of the variable being studied. Convergent validity is fulfilled when each variable has a high loading factor value, which is >0.7 (Abdillah, W. & Jogiyanto, 2015), for each related question item. Loading factor is an indicator of how much a question item contributes to the dimension or construct being measured. Results that reach the value limit of >0.7 indicate that each question in the questionnaire plays a strong role in measuring the concept it represents.

Table 3. Outer Loadings Value

| Variable | Indicator | Outer Loadings | Description |
|-------------------------|-----------|----------------|-------------|
| Financial Literacy (X1) | X1.1 | 0,843 | Valid |
| | X1.2 | 0.806 | Valid |
| | X1.3 | 0.843 | Valid |
| | X1.4 | 0.743 | Valid |
| Financial | X2.1 | 0.745 | Valid |

| | | | |
|-----------------|------|-------|-------|
| Behavior (X2) | X2.2 | 0.804 | Valid |
| | X2.3 | 0.732 | Valid |
| | X2.4 | 0.812 | Valid |
| Financial | X3.1 | 0.832 | Valid |
| Technology (X3) | X3.2 | 0.803 | Valid |
| | X3.3 | 0.739 | Valid |
| | X3.4 | 0.737 | Valid |
| Intellectual | Z1.1 | 0.774 | Valid |
| Capital (Z) | Z1.2 | 0.750 | Valid |
| | Z1.3 | 0.777 | Valid |
| Financial | Y1.1 | 0.754 | Valid |
| Inclusion (Y) | Y1.2 | 0.713 | Valid |
| | Y1.3 | 0.843 | Valid |

Source: Data processed by the author, 2023

From Table 3. presented, it can be observed that the outer model value provides the results of all loading factor values having a value of >0.7 so that each variable indicator is confirmed to be valid because it is able to effectively reflect the measured construct. It can be interpreted that each variable indicator has a strong and significant relationship with the construct or dimension it represents.

Reliability Testing

Reliability in the context of research is defined as a test conducted to assess the level of reliability or consistency of statement items in a measuring instrument. The reliability test is intended to determine the consistency of the measuring instrument so that it can be relied upon in measuring a particular concept or variable. This also includes an evaluation of the consistency of the responses of the respondents to the statement items in the questionnaire or research instrument. Cronbach's Alpha (CA) is an indicator of the reliability of research instruments to strengthen the composite reliability value. A research instrument is said to be reliable or reliable if its CA value exceeds or is equivalent to 0.60 (Ghozali, 2016).

Table 4. Cronbach's Alpha Value

| No | Variable | Cronbach's Alpha | Description |
|----|---------------------------|------------------|-------------|
| 1. | Financial Literacy (X1) | 0.824 | Reliable |
| 2. | Financial Behavior (X2) | 0.777 | Reliable |
| 3. | Financial Technology (X3) | 0.784 | Reliable |
| 4. | Intellectual Capital (Z) | 0.652 | Reliable |
| 5. | Financial Inclusion (Y) | 0.659 | Reliable |

Source: Data processed by the author, 2023

The interpretation that can be taken from Table 4. is the CA value of each variable >0.60 so that each variable in the analysis has met or exceeded the accepted reliability criteria threshold, in accordance with the guidelines suggested by (Ghozali, 2016). So that each variable from this study has good reliability and can strengthen the composite reliability results above.

Coefficient of Determination

The coefficient of determination or R-square (R²) is a statistical parameter used to determine the amount of variation owned by endogenous variables that can be explained by the research model. Chin (1998) classifies the R-square value in three limits: namely 0.67 has a substantial value; 0.33 has a moderate value and 0.19 has a weak value.

Table 5. Coefficient of Determination

| No | Variable | Coefficient of Determination |
|----|--------------------------|------------------------------|
| 1. | Intellectual Capital (Z) | 0.336 |
| 2. | Financial Inclusion (Y) | 0.406 |

Source: Data processed by the author, 2023

The interpretation that can be taken from Table 5. is that the independent variable is able to explain the variation in the intervening variable by 33.6% and by 40.6% for the variation in the dependent variable. Thus, the R Square value on both variables can be categorized as having a moderate value. Although it has not reached a substantial level, the model still provides a significant explanation of the variation in endogenous variables.

Q-Square

The Q-Square value is an indicator that provides an overview of the extent to which the model fits or matches the observational data in the context of SEM. The Q-Square value measures the quality of the model's predictions on data that is not used in the construction of the model, namely data that is not used in parameter estimation. The larger the Q-Square value, the better the model is considered to fit the data used. This value provides information on how well the model is able to generalize its results to data not used in model development, which can indicate the model's ability to provide accurate predictions.

$$\begin{aligned}
 \text{Q Square} &= 1 - ((1 - R^2_1) \times (1 - R^2_2)) \\
 &= 1 - ((1 - 0,336) \times (1 - 0,406)) \\
 &= 1 - (0,664 \times 0,594) \\
 &= 1 - 0,394 \\
 &= \mathbf{0,606}
 \end{aligned}$$

From the above calculations, the Q-Square value is 0.606 or equivalent to 60.6%. This value reflects the extent to which the research model can explain the variability in the research data. With this interpretation, it can be interpreted that about 60.6% of the

variability of the research data can be explained by the model, of which about 39.4% is attributed to other variables outside the model. So it can be concluded that the model used in the study has a good goodness of fit value.

Multicollinearity Test

Multicollinearity test is an evaluation in multiple regression analysis to determine the linear relationship between independent variables. This test is intended to identify the extent of the level of correlation or strong relationship between independent variables in the regression model. In the multicollinearity test, the VIF value <10 indicates that the independent variables have an acceptable level of correlation and do not cause serious problems in estimating regression coefficients (Ghozali, 2018).

Table 6. Multicollinearity Test Results

| No | Inner VIF Values | VIF | Description |
|----|---|-------|------------------------------|
| 1. | Financial Literacy (X1) → Financial Inclusion (Y) | 1.466 | <i>Non multicollinearity</i> |
| 2. | Financial Behavior (X2) → Financial Inclusion (Y) | 1.014 | <i>Non multicollinearity</i> |
| 3. | Financial Technology (X3) → Financial Inclusion (Y) | 1.352 | <i>Non multicollinearity</i> |
| 4. | Financial Literacy (X1) → Intellectual Capital (Z) | 1.225 | <i>Non multicollinearity</i> |
| 5. | Financial Behavior (X2) → Intellectual Capital (Z) | 1.011 | <i>Non multicollinearity</i> |
| 6. | Financial Technology (X3) → Intellectual Capital (Z) | 1.237 | <i>Non multicollinearity</i> |
| 7. | Intellectual Capital (Z) → Financial Inclusion (Y) | 1.506 | <i>Non multicollinearity</i> |

Source: Data processed by the author, 2023

Based on the information contained in Table 6. the Collinearity Statistics results show that the Variance Inflation Factor (VIF) value of each variable is <10. The conclusion that can be drawn is that the multiple regression model in the study does not violate the multicollinearity test and can be considered stable in terms of correlation between independent variables.

Hypothesis Testing

Husein (2015) states that hypothesis assessment can be done by looking at the t-statistic value and the variable probability value. For an alpha significance level of 5%, the t-statistic value used is 1.967. Therefore, Ha is accepted and H0 is rejected if the t-statistic value is >1.967. In addition, Ha will be accepted if the p (probability) value is <0.05, which indicates a significance level of 5%.

Table 7. Hypothesis Test Results

| No | Variable | T-statistics | P-values | Description |
|----|--|--------------|----------|---------------|
| 1. | Financial Literacy (X1) → Financial Inclusion (Y) | 4.649 | 0.000 | Significant |
| 2. | Financial Behavior (X2) → Financial Inclusion (Y) | 4.856 | 0.000 | Significant |
| 3. | Financial Technology (X3) → Financial Inclusion (Y) | 3.584 | 0.000 | Significant |
| 4. | Intellectual Capital (Z) → Financial Inclusion (Y) | 2.227 | 0.026 | Significant |
| 5. | Financial Literacy (X1) → Intellectual Capital (Z) → Financial Inclusion (Y) | 2.166 | 0.031 | Significant |
| 6. | Financial Behavior (X2) → Intellectual Capital (Z) → Financial Inclusion (Y) | 0.632 | 0.528 | Insignificant |
| 7. | Financial Technology (X3) → Intellectual Capital (Z) → Financial Inclusion (Y) | 1.973 | 0.049 | Significant |

Source: Data processed by the author, 2023

The interpretation that can be taken from Table 7. is that the influence between variables can be explained as follows:

The effect of Financial Literacy on Financial Inclusion, the t-statistic value is 4.649, so it is greater than the t-table value of 1.967 for a significance level of 5%. Then with a significance level of 0.05, the P-value is 0.000. So, it can be concluded that Financial Literacy has a significant impact on Financial Inclusion. These results are in accordance with previous research by Hutabarat (2018), Pulungan & Ndruru (2019), and Bongomin et al. (2016), which show financial literacy has a significant and positive effect on financial inclusion.

The effect of Financial Behavior on Financial Inclusion, the t-statistic value is 4.856, so it is greater than the t-table value of 1.967 for a significance level of 5%. Then with a significance level of 0.05, the P-value is 0.000. So, it can be concluded that Financial Behavior has a significant impact on Financial Inclusion. This result is in accordance with previous research by Okello et al. (2015) and Okello et al. (2020), which shows financial behavior has a significant and positive effect on financial inclusion.

The effect of Financial Technology on Financial Inclusion, the t-statistic value is 3.584, so it is greater than the t-table value of 1.967 for a significance level of 5%. Then with a significance level of 0.05, the P-value is 0.000. So, it can be concluded that Financial Technology has a significant impact on Financial Inclusion. These results are in accordance with previous research by Durai & Stella (2019), Hutabarat (2018), Fanta & Makina (2019) which show financial technology has a significant and positive effect on financial inclusion.

The effect of Intellectual Capital on Financial Inclusion, the t-statistic value is 2.227, so it is greater than the t-table value of 1.967 for a significance level of 5%. Then

with a significance level of 0.05, the P-value is 0.026. So, it can be concluded that Intellectual Capital has a significant and positive effect on Financial Inclusion.

The effect of Financial Literacy on Financial Inclusion mediated by Intellectual Capital, the t-statistic value is 2.166, so it is greater than the t-table value of 1.967 for a significance level of 5%. Then with a significance level of 0.05, the P-value is 0.031. So, it can be concluded that Intellectual Capital has a significant and positive effect in mediating the effect of Financial Literacy with Financial Inclusion.

The effect of Financial Behavior on Financial Inclusion mediated by Intellectual Capital, the t-statistic value is 0.632, so it is smaller than the t-table value of 1.967 for a significance level of 5%. Then with a significance level of 0.05, the P-value is 0.528. So, it can be concluded that Intellectual Capital has an insignificant and negative effect in mediating the effect of Financial Behavior with Financial Inclusion.

The effect of Financial Technology on Financial Inclusion mediated by Intellectual Capital, the t-statistic value is 1.973, so it is greater than the t-table value of 1.967 for a significance level of 5%. Then with a significance level of 0.05, the P-value is 0.049. Thus, it can be concluded that Intellectual Capital has a significant and positive effect in mediating the effect of Financial Technology with Financial Inclusion.

CONCLUSION

This study was conducted to explore the impact of financial behavior, financial literacy, and financial technology in improving financial inclusion by considering the role of intellectual capital as a mediator. Financial inclusion is considered crucial in supporting the country's economic growth. However, the reality shows that the participation of Indonesians in efforts to improve financial inclusion is still low, especially reflected in the high number of unbanked people. The results of this study reveal that financial behavior, financial literacy, financial technology, and intellectual capital have an influence on increasing financial inclusion, both partially and simultaneously. The limitation of this study is that the independent variables are only able to explain the dependent variable by 40.6% which is still categorized as a moderate level. Therefore, future research should consider using additional independent variables that can more effectively cover variations in the dependent variable. Overall, the findings of this study provide an important understanding of what factors influence financial inclusion, with an emphasis on the role of financial literacy, financial behavior, financial technology and intellectual capital. Therefore, in the process of policy making and strategy development, the results of this study can be used as a reference to increase financial inclusion among university students.

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