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# The behavioral finance of MSMEs in the advancement of financial inclusion and financial technology (fintech)

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## ABSTRACT

This study aims to determine empirical evidence of the effect of financial inclusion and financial technology (fintech) on the behavioral finance of MSMEs. This study uses a quantitative method with a positivist paradigm approach. The population of this study is all MSMEs in Indonesia. The sample used in this study is 205 respondents (MSME owners) from all over Indonesia. Sampling is carried out using a random technique. Data collection is carried out by distributing questionnaires, both manual-ly and online using Google Forms, and is measured using a 5-point Likert scale. The data processing is carried out using Partial Least Square (PLS) software with a Structural Equation Modeling (SEM) model. The results of this study show that financial inclusion and financial technology (fintech) have a direct positive effect on the behavioral finance of MSMEs. Financial technology (fintech) can mediate and increase the effect of financial inclusion on the behavioral finance of MSMEs.

## ABSTRAK

Penelitian ini bertujuan untuk mengetahui bukti empiris pengaruh financial inclusion dan financial technology (fintech) terhadap behavioral finance UMKM. Penelitian ini menggunakan metode kuantitatif dengan pendekatan paradigma positivis. Populasi penelitian ini adalah seluruh UMKM yang ada di Indonesia. Sampel yang digunakan dalam penelitian ini adalah 205 responden (pemilik UMKM) dari seluruh Indonesia. Pengambilan sampel dilakukan dengan menggunakan teknik acak. Pengumpulan data dilakukan dengan menyebarkan kuesioner, baik secara manual maupun online menggunakan Google Forms, dan diukur menggunakan skala Likert 5 poin. Pengolahan data dilakukan dengan menggunakan software Partial Least Square (PLS) dengan model Structural Equation Modeling (SEM). Hasil penelitian ini menunjukkan bahwa financial inclusion dan financial technology (fintech) berpengaruh langsung positif terhadap behavioral finance UMKM. Financial technology (fintech) dapat memediasi dan meningkatkan pengaruh financial inclusion terhadap behavioral finance UMKM.

## 1. INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) are an important part of the country's economic activities (Lestari et al., 2022; Pangarso et al., 2022; Purwanto et al., 2022; Sindhvani et al., 2022; Endris & Kassegn, 2022; Klein & Todesco, 2021; Rodrigues et al., 2021). MSMEs have a big role in the economy during the COVID-19 pandemic because they are able to absorb more workers from the

formal business sector that went bankrupt due to the COVID-19 pandemic. MSMEs, especially Micro & Small Enterprises (SMEs), are flexible for various types of businesses and do not require large capital. Therefore, SMEs have different characteristics from other economic actors, especially large companies.

In MSMEs, most micro and small businesses are not yet legal entities, while most medium-sized businesses are already

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legal entities. Therefore, MSMEs have unique financial management characteristics, as a transition from personal financial management to corporate financial management. This is an interesting phenomenon for researchers in the field of financial management. On the one hand, MSME financial management is handled personally by the business owner so that the behavioral finance of MSMEs cannot be separated from the business owner's behavioral personal finance. On the other hand, the MSME financial management is also a corporate financial management that cannot be separated from the behavioral corporate finance.

There are several factors related to MSME management that can affect MSME financial behavior, one of which is the technology factor. Technology is a situational factor that influences individual behavior (Sampson, 1976). Two technological factors that are currently of concern are financial inclusion and financial technology (fintech). The development of financial inclusion can be a stimulus for changing attitudes (Hovland et al., 1953) and an antecedent of intentions that can influence behavior (Ajzen, 1985).

Financial inclusion is believed to be able to improve people's welfare and has become the target of all countries (Risman et al., 2021; Pazarbasioglu et al., 2020; Durai & Stella, 2019). Achievement of financial inclusion targets through MSMEs is considered very effective. In addition, the availability of Financial Technology (Fintech) is considered capable of encouraging the achievement of financial inclusion and growth targets, thereby influencing the financial behavior of the MSMEs themselves. Therefore, research on the topic of the effect of financial inclusion and fintech on the behavioral finance of MSMEs is a novelty in research and attracts the interest of many parties.

Studies on the effect of financial inclusion on financial behavior are still very limited. The results of research conducted by Pinem & Mardiatmi (2021), Nurohman et al. (2021), Rahmawati et al. (2020), and Herispon (2019) show that financial inclusion has a positive effect on behavioral finance. However, the results of studies conducted by Parangin-Angin et al. (2022) and Anisyah et al. (2001) show that financial inclusion has no effect on behavioral finance.

There have been many researchers who examined the effect of technology on the performance and behavioral finance of MSMEs, such as Lestari et al. (2022); Singh et al. (2020); Novika (2021); Yao et al. (2021); Andaregie & Astatkie (2021); Daqar et al. (2020); Albar & Hoque (2019); Talom & Tengeh (2019); Kossai & Piget (2014); and Selase et al. (2019). However, only a few researchers have examined more specifically the influence of financial technology (fintech) on the behavioral finance of MSMEs, such as Junianto et al. (2020), Tukan et al. (2020), Anisyah et al. (2021), and Apriyanti & Ramadita (2022). The results of research conducted by Junianto et al. (2020) show that fintech is a factor that influences a person in making investment decisions. Meanwhile, the results of studies conducted by Tukan et al. (2020), Anisyah et al. (2021) and Apriyanti & Ramadita (2022) show the opposite that fintech has no effect on behavioral finance.

Due to the limited number of previous studies and differences in research results, this study aims to find out new empirical evidence regarding the effect of financial inclusion and financial technology (fintech) on the behavioral finance of MSMEs.

## 2. THEORITICAL FRAMEWORK AND HYPOTHESIS

### **Behavioral Finance of MSMEs**

Micro, small and medium enterprises (MSMEs) are business entities like other business entities in general. However, MSMEs have certain criteria that differ in each country. According to Khrystina et al. (2010), the criteria for MSMEs include employees, assets, turnover, and investment. MSMEs have different definitions depending on the country, articular authorities, and the organization or party that define them. Abawa & Raghurama (2017) distinguish the definition of MSMEs based on two parameters of the MSME criteria by Khrystyna et al. (2010). The first definition is based on the number of employees and the second definition is based on assets/turnover/investment.

Based on differences in understanding and parameters, and referring to the definition of business entities, in general MSME can be defined as activities carried out by individuals and/or individual business entities that produce or add value to a product (goods), where the business meets certain criteria or parameters, such as asset value, number of employees, turnover, and so on.

MSMEs have unique financial management characteristics, as a transition from personal financial management to corporate financial management. This is an interesting phenomenon for researchers in the field of financial management. On the one hand, MSME financial management is handled personally by the business owner so that the behavioral finance of MSMEs cannot be separated from the business owner's behavioral personal finance. On the other hand, MSME financial management is also a corporate financial management that cannot be separated from the behavioral corporate finance.

Because MSMEs have unique financial management characteristics, as a transition from personal financial management to corporate financial management, the behavioral finance of MSMEs includes two perspectives: behavioral personal finance and behavioral corporate finance. From the perspective of behavior personal finance, the following behavioral theories apply:

- a. Theory of Planned Behavior (Ajzen, 1985)  
This theory focuses on three core components, consisting of attitudes, subjective norms, and perceived behavioral control, which are based on beliefs as antecedents of attitudes that affect intentions to change behavior.
- b. Stimulus Organism Response (S-O-R) Theory by Hovland et al. (1953)  
This theory states that reactions or responses (behavior) arise due to a stimulus in humans.
- c. Situational factors (Sampson, 1976)  
Situational factors can influence human behavior. One of the situational factors is technology.

From the perspective of behavioral corporate finance, there are two potentials as follows:

- a. Heuristic (behavior)  
Heuristic is a decision-making process using the rule of thumb so that it is faster, more effective, and more efficient.
- b. Managerial Bias  
Ease of making decisions will encourage managers to make decisions that are more influenced by emotions (emotional bias), such as excessive self-confidence (overconfidence bias), so that they are more daring to make risky decisions (Risman et al., 2021).

Based on the theories of behavioral personal finance and behavioral corporate finance, the indicators of behavioral finance of MSMEs can be formulated using the following dimensions:

- a. Financial planning
- b. Financing decisions (capital)
- c. Investment decisions (budgeting)
- d. Financial control.

### **Financial Inclusion**

Currently, financial inclusion is a target that must be achieved by all countries. Financial inclusion is believed to have a positive impact on economic growth and people's prosperity. Therefore, studies and discussions on the importance of financial inclusion for economic growth and people's welfare are new topics and attract the attention of researchers (Durai and Stella, 2019; Pazarbasioglu et al., 2020; Risman et al., 2021).

Financial inclusion is a condition in which every member of society has access to effective, efficient and quality financial services. Increasing public access to financial service products will further reduce the level of economic and social inequality in society and increase economic growth, which is ultimately expected to improve people's welfare (Risman et al., 2021).

The indicators that a country is developing financial inclusion are as follows (Bank Indonesia, 2014):

- a. Availability/access: measuring the ability to use formal financial services in terms of physical affordability and price.
- b. Usage: measuring the actual use of financial products and services (a.i. regularity, frequency, and duration of use).
- c. Quality: measuring whether the attributes of financial products and services have met customers' needs.
- d. Welfare: measuring the impact of financial services on the level of life of service users.

The main benefits of financial inclusion for MSMEs include facilitating MSME management in making funding decisions or obtaining funds, facilitating installment payments, obtaining low (competitive) capital costs, and so on. Financial inclusion is a change that can trigger a belief in the existence of convenience or ease. Therefore, according to the perspective of behavioral personal finance, in this case the Theory of Planned Behavior,

belief is the antecedent of attitude that affects intention to change behavior (Ajzen, 1985). Financial inclusion can also be a stimulus for behavior change. According to the Stimulus Organism Response (S-O-R) theory, there is a reaction or response (behavior) due to stimulation in humans (Hovland et al., 1953). Meanwhile, from the perspective of behavioral corporate finance, financial inclusion can encourage heuristic behavior and managerial bias in making MSME financial decisions, such as decision in finding sources of financing and decision in investment.

These behavioral finance theories are in line with empirical evidence from several previous studies that used descriptive and causal methods, such as research conducted by Pinem & Mardiatmi (2021), Nurohman et al. (2021), Rahmawati et al. (2020), and Herispon (2019). The results of these previous studies indicate that financial inclusion has a positive effect on the behavioral finance of MSMEs. Therefore, the first hypothesis is formulated as follows:

H1: Financial inclusion has a positive effect on the behavioral finance of MSMEs.

### **Financial Technology (Fintech)**

Financial technology (fintech) is a combination of financial services and technological innovation which ultimately changes business models from conventional to modern and digital. Financial technology (fintech), as an advancement in technology, facilitates the needs of people's lifestyle changes which are dominated by the use of information technology (internet & gadgets) and the demands of a fast-paced life (Risman et al., 2021).

Financial technology (fintech) was originally intended to meet needs to help solve problems in buying and selling transactions and payments due to busyness or limited time looking for needs (goods and services). With the presence of financial technology, buying and selling transactions and payment systems become more efficient, effective and economical. However, in its development, this fintech also serves investment, financing, and management of public funds by bringing together those who have funds and those who need funds, or often referred to as Crowdfunding (Biancone et al., 2019; Kim and Hann 2019).

In general, there are three types of fintech (Hsueh and Kuo, 2017):

- a. Third-party payment systems  
Examples of payment systems through

third parties are cross-border e-commerce, online-to-offline (O2O), mobile payment systems, and payment platforms that provide services such as bank payments and transfers.

- b. Peer-to-Peer (P2P) Lending  
Peer-to-Peer Lending is a platform that brings together lenders and borrowers via the internet. Peer-to-Peer Lending provides a credit mechanism and risk management. This platform helps lenders and borrowers meet their needs and use money efficiently
- c. Crowdfunding  
Crowdfunding is a type of financial technology in which a concept or product, such as design, program, content and creative work, is published to the public, and people who are interested in and wish to support the concept or product can provide financial support. Crowdfunding can be used to reduce the financial needs of entrepreneurs and predict market demand.

The indicators of financial technology (fintech) are the of payment facilities through third parties and the use of loan or credit facilities.

Financial technology (fintech) is innovation and technological advancement. In the perspective of behavioral personal finance, financial technology is a situational factor that influences individual behavior (Sampson, 1976). Meanwhile, in the perspective of behavioral corporate finance, financial technology (fintech) can encourage decision making using the rule of thumb (heuristics) and can encourage managerial decision making that is more influenced by emotions (emotional bias), such as excessive self-confidence, so that the managers are more courageous in making risky decisions (Risman et al. 2021: 89). The use of fintech will help MSMEs in marketing their products by providing an easy, fast and efficient payment system. In addition, MSMEs can also take advantage of Peer-to-Peer (P2P) Lending and Crowdfunding to meet their capital needs.

Based on these theories and reasoning, financial technology (Fintech) tends to have a positive effect on the behavioral finance of MSMEs. This is in line with the empirical evidence of previous studies conducted by Junianto et al. (2020), Anisyah et al. (2021), Daqar et al. (2020), and Singh et al. (2020) that financial technology (fintech) has a positive effect on the behavioral finance of MSMEs.

Therefore, the second hypothesis can be formulated as follows:

H2: Fintech has a positive effect on the behavioral finance of MSMEs.

In addition, the use of financial technology (fintech) by MSMEs can also help accelerate the achievement of financial inclusion because fintech facilitates MSMEs in obtaining access and financial services. Therefore, fintech can mediate the effect of financial inclusion on the behavioral finance of MSMEs. Therefore, the third hypothesis can be formulated as follows:

H3: Fintech mediates the effect of financial inclusion on the behavior finance of MSMEs.

### 3. RESEARCH METHOD

This study uses a quantitative method with a positivist paradigm approach. This approach is carried out by interpreting each variable and the relationship between variables based on quantitative measurements.

The population of this study is all MSMEs in Indonesia. Based on data from the Indonesian Ministry of Cooperatives and SMEs, the number of MSMEs in 2019 was 65,471,134 units.

Sampling is carried out using a random technique. Questionnaires are distributed to respondents (MSMEs) using an online platform and measured with a 5-point Likert scale. The number of samples is determined based on the Slovin formula as follows:

Where:

n: Minimum sample size

N: Population, which is 65.471.134

e: Error margin, which is assumed to be 10%

Based on the Slovin formula, the number of samples received in this study is as follows:  $n = 99.9998$  or rounded to 100.

Based on these calculations, the minimum number of samples is 100, but this study uses more than 100 samples. The number of respondents in this study is 205 respondents (MSME owners) from all over Indonesia.

Data collection is carried out by distributing questionnaires, both manually and online using Google Forms, and is measured using a 5-point Likert scale. Data collection is carried out directly by the researcher to protect the privacy of the respondents and reduce the doubts of the respondents when answering questions. Data processing is carried out using Partial Least Square (PLS) software with the Structural Equation Modeling (SEM) model.

The following is a research framework with Structural Equation Modeling (SEM) as a conceptual model (Figure 1).

### 4. DATA ANALYSIS AND DISCUSSION

#### Description of Respondents

The results of the data survey are summarized in table 1 below.

The total number of respondents is 205 people (MSME owners). The majority of respondents are female (148 respondents or 72%). The type of business most respondents handled is culinary (43%). The majority of MSME owners have bachelor's degrees (59%). Most of the businesses run by respondents are classified as micro businesses (62%) because their assets are below IDR 1 billion.

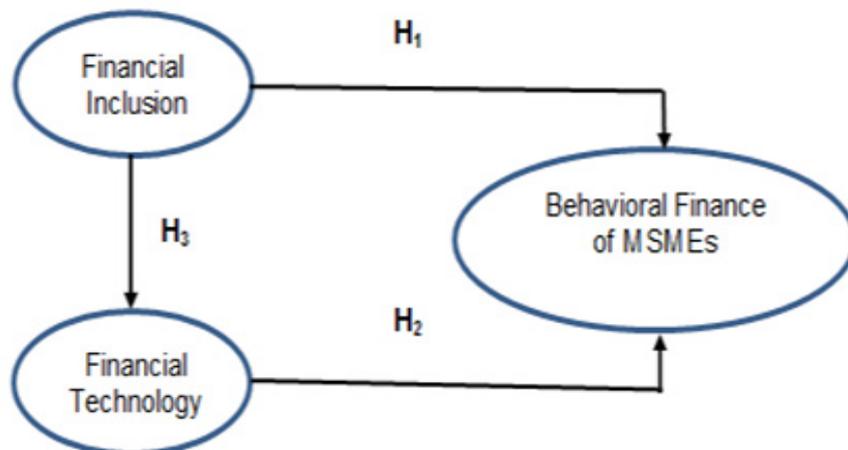


Figure 1  
Conceptual Model

**Validity Test**

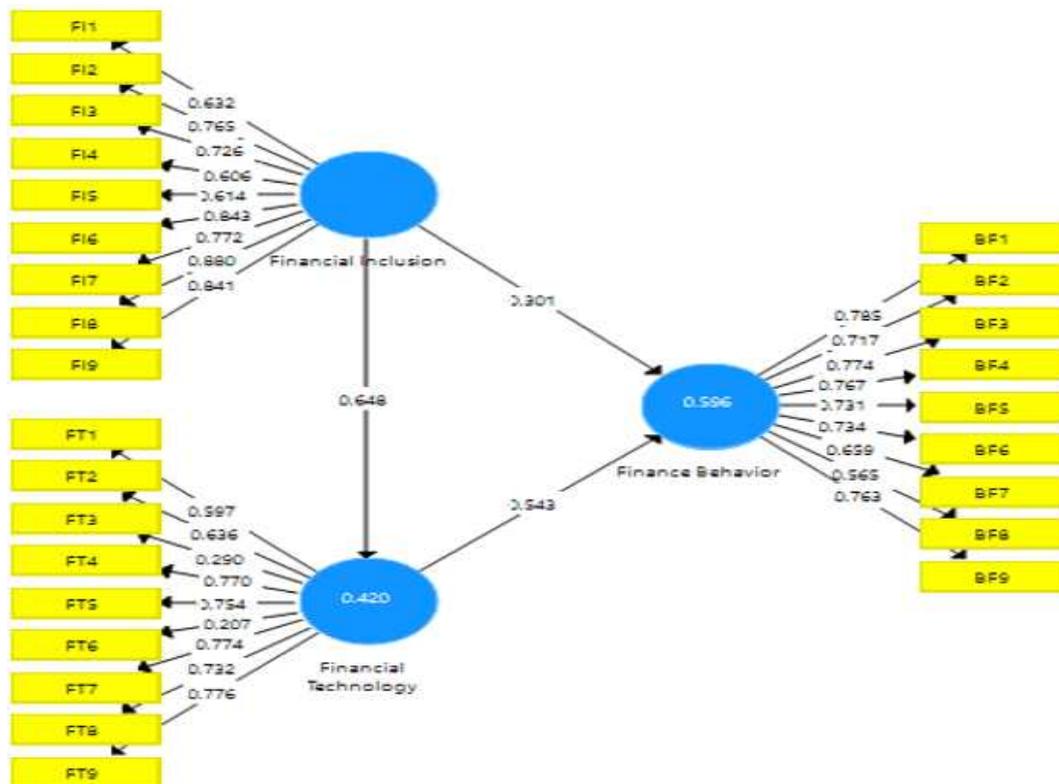
In this study, the convergent validity test is carried out twice because in the first validity test there are still two invalid indicators that

have to be discarded. In the second validity test, all indicators are declared valid because all indicators have a loading factor value above 0.50.

**Table 1**  
**Respondent Profile**

Profile		Freq.	%
Gender	Male	57	28%
	Female	148	72%
Type of business	Culinary	88	43%
	Fashion	57	28%
	Agribusiness	10	5%
	Etc	49	24%
	High school	53	26%
Last Education	Diploma Degree	14	7%
	Bachelor Degree	121	59%
	Master Degree	10	5%
	Etc	6	3%
Assets (excl. land, buildings)	< IDR 1 Billion	127	62%
	IDR 1 to 5 Billion	59	29%
	IDR 5 to 10 Billion	18	9%

Source: Data Processed



**Figure 2**  
**Measurement Model Output**

Source: Data Processed

**Table 2**  
**Composite Reliability & Cronbach's Alpha**

Variable	Composite Reliability	Cronbach's Alpha	Conclusion
Financial Inclusion	0.918	0.902	Reliable
Financial Technology	0.884	0.846	Reliable
Behavioral Finance of MSMEs	0.908	0.885	Reliable

Source: Data Processed

**Table 3**  
**Hypotheses for Direct & Indirect Relationships**

Variable	Origin Sample	P values	Conclusion
Financial Inclusion → Behavioral Finance	0.290	0.010	Positive, Significance
Financial Technology → Behavioral Finance	0.558	0.000	Positive, Significance
Financial Inclusion → Financial Technology → Behavioral Finance	0.362	0.000	Positive, Significance

Source: Data Processed

### Reliability Test

The composite reliability testing aims to test the reliability of the instrument in a research model. A construct is declared to have good reliability or the questionnaire used as a research tool is consistent, if the value of composite reliability and Cronbach's alpha of all variables is  $\geq 0.70$ .

Based on the results in table 2, all latent variables are reliable because the value of composite reliability and Cronbach's alpha is  $\geq 0.70$ .

### The Goodness of Fit Test

The Goodness of Fit Test is used to determine if if sample data fits a distribution from a certain population. The structural model on the inner model uses the predictive relevance value ( $Q^2$ ). A Q-square value greater than 0 (zero) indicates that the model has predictive relevance. The R-square value of each endogenous variable in this study can be seen in the following calculations.

The predictive relevance value is obtained using the following formula:

$$Q^2 = 1 - (1-R1) (1-R2)$$

$$Q^2 = 1 - (1-0.421) (1-0.606)$$

$$Q^2 = 0.772$$

Based on the calculation results above, predictive relevance has a value of 0.772 or greater than 0. Therefore, the model is declared feasible and has a relevant predictive value. The dependent variable of behavioral finance can be explained by the independent variables of financial inclusion and financial technology (0.772 or 77.7%).

### Hypothesis Testing

In the direct relationship hypothesis test in table 3, the original sample value is 0.290 and the P value is 0.010. This is empirical evidence that financial inclusion has a positive effect on the behavioral finance of MSMEs. The results of this study indicate that the ease of access to financial services has made it easier for MSME managers to obtain funding, easy installment payments, low capital costs (competitive), and others. Financial inclusion encourages MSME managers to be able to make funding decisions quickly and easily according to the rule of thumb, without having to perform complex financial calculations, determine the capital structure, calculate the Weighted Average Cost of Capital (WACC), and perform complicated financial analysis calculations and reporting which also take a long time.

This finding supports the results of Planned Behavior Theory and Stimulus Organism Response (S-O-R) Theory. In addition, this finding is also in line with the results of previous studies, both using descriptive and causal methods, conducted by Pinem & Mardiatmi (2021), Nurohman et al. (2021), Rahmawati et al. (2020), and Herispon (2019) that financial inclusion has a positive effect on the financial management behavior of MSMEs.

Based on the hypothesis test in table 3, the original sample value is 0.362 and the P value is 0.000. This is empirical evidence that financial technology (fintech) has a positive effect on the behavioral finance of MSMEs. The results of this study indicate that the use of technological

advances, especially in financial services that use technology in running business, triggers the behavioral finance of MSMEs in making financial decisions, both financing and investment. The existence of fintech makes it easier for MSMEs to get financing quickly and easily.

Fintech also encourages MSME managers to be to make investment decisions quickly according to practical rules, without having to make complex financial calculations, such as Risk-Return Relationships, investment assessments, and feasibility studies by carrying out innovations including opening new businesses and products and expanding their businesses, because several fintechs have collaborated with other service providers needed by MSMEs. All of these are heuristic attitudes and are the basis of behavioral finance.

This finding is in line with the results of research conducted by Sampson (1976) that technology is a situational factor that influences individual behavior. In addition, this finding also proves that fintech can facilitate financial decision making using practical rules (heuristics) and emotional bias so that MSME managers dare to take risky decisions. The results of this study support the results of previous studies conducted by Junianto et al. (2020), Anisyah et al. (2021), Daqar et al. (2020), and Singh et al. (2020).

In the indirect relationship hypothesis test in table 3, the original sample value is 0.362 and the P value is 0.010. This indicates that financial technology (fintec) mediates the effect of financial inclusion on the behavioral finance of MSMEs. In fact, financial technology (fintec) increases the effect of financial inclusion on the behavioral finance of MSMEs. In the direct relationship, the effect of financial inclusion on the behavioral finance of MSMEs is only 0.290 or 29.0%, but with the existence of financial technology (FinTech), the effect of financial inclusion on the behavioral finance of MSMEs increases to 0.362. The use of financial technology (fintech) helps MSMEs accelerate the achievement of financial inclusion because fintech facilitates MSMEs in obtaining access to financial services.

## 5. CONCLUSION, IMPLICATION, SUGGESTION AND LIMITATION

This study aims to prove the effect of financial inclusion and financial technology (fintech) on the behavioral finance of MSMEs. The

financial management of MSMEs has unique characteristics, as a transition from personal financial management to corporate financial management, so that the behavioral finance of MSMEs includes two perspectives: behavioral personal finance and behavioral corporate finance. Based on the theories of both behavioral personal finance and behavioral corporate finance, technological advancement has an impact on the behavioral finance of MSMEs.

The results of this study show that financial inclusion has a positive effect on the behavioral finance of MSMEs. Financial inclusion encourages MSME managers to be able to make funding decisions quickly and easily according to the rule of thumb, without having to perform complex financial calculations, determine the capital structure, calculate the Weighted Average Cost of Capital (WACC), and perform complicated financial analysis and reporting which also take a long time.

The results of this study also show that financial technology (fintech) has a positive effect on the behavioral finance of MSMEs. This is in line with the research conducted by Sampson (1976) that technology is a situational factor that influences individual behavior. This finding also proves that fintech can facilitate financial decision making using practical rules (heuristics) and emotional bias so that MSME managers dare to take risky decisions.

In addition, financial technology (fintech) mediates and increases the effect of financial inclusion on the behavioral finance of MSMEs. In the direct relationship, the effect of financial inclusion on the behavioral finance of MSMEs is only 0.290 or 29.0%, but with the existence of financial technology (fintech), the effect of financial inclusion on the behavioral finance of MSMEs increases to 0.362. The use of financial technology (fintech) helps MSMEs accelerate the achievement of financial inclusion because fintech facilitates MSMEs in obtaining access to financial services.

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